

# **GAZETTEER OF INDIA**

## **ARUNACHAL PRADESH**

---



# **STATE GAZETTEER OF**

## **ARUNACHAL PRADESH**

**VOLUME-I**

**GOVERNMENT OF ARUNACHAL PRADESH**  
**GAZETTEERS DEPARTMENT**



सत्यमेव जयते

# **GAZETTEER OF INDIA ARUNACHAL PRADESH**

**STATE GAZETTEER OF ARUNACHAL PRADESH**

**Volume – I**

**GOVERNMENT OF ARUNACHAL PRADESH  
GAZETTEERS DEPARTMENT**

**ARUNACHAL PRADESH  
GAZETTEERS**



सत्यमेव जयते

**STATE GAZETTEER  
OF  
ARUNACHAL PRADESH (VOLUME -I)**

*by*

**SOKHEP KRI**  
Editor

**GOVERNMENT OF ARUNACHAL PRADESH**  
**2010**

© Government of Arunachal Pradesh

Price : Rs.

ISBN- 978-81906587-3-7 (Volume-I)

*Compiled by*

Shri Hage Nobin, Sr. Compiler (Gazetteers),  
Shri C.S. Namchoom, Compiler (Gazetteers) and Shri Duyu Tale,  
Research Assistant (Gazetteers) Government of Arunachal Pradesh,  
Chimpu, Itanagar

Published by the State Editor (Gazetteers),  
Gazetteers Department, Government of Arunachal Pradesh  
Chimpu, Itanagar.

Cover-design and Art-work by : Bablu Kr Dey  
Printed by : Himalayan Publishers, Legi Shopping Complex,  
Bank Tinali, Post Box No. 177, Itanagar-791 111  
Arunachal Pradesh-New Delhi.





**GENERAL J.J. SINGH**  
PVSM, AVSM, VSM (Retd)  
Governor  
Arunachal Pradesh



सत्यमेव जयते

RAJ BHAWAN  
ITANAGAR-791111  
TEL : +91 360 2212432  
FAX : +91 360 2212442  
genjjsingh@rediffmail.com

## FOREWORD

It gives me immense pleasure to know that the first State Gazetteer of Arunachal Pradesh (Volume-I) is going to be published very soon.

The State Gazetteer is a compendium, depicting a fairly comprehensive picture of this frontier State, its physical and geographical aspects, the indigenous populace, their socio-cultural traditions, rich heritage and vibrant economy. The Gazetteer also highlights the proud history and tremendous development of the State since independence.

In the multi-faceted scenario of North Eastern India, Arunachal Pradesh, comprising of 16 districts is a unique and enchanting entity. The hills and valleys of Arunachal are indeed a rare spectacle inhabited by number of brave and peace loving tribes belonging to different ethnic and cultural traditions, who have been living for centuries in their cloistered seclusion and following diverse ways of life, yet in harmonious relationship and mutual dependence on one another. Nevertheless, the barriers of their age old isolation no longer exist and today they in unison, are moving forward towards integration with the national mainstream.

I commend the compendium with the hope that it would be a valuable referral document for policy makers, administrators, academicians, research scholars, social scientists and general readers. I trust, it will be extensively used by all and I appreciate the efforts put in by all the officials in bringing out this compilation.

**General J.J. Singh**  
PVSM, AVSM, VSM (Retd)

## PREFACE

Etymologically a gazetteer means a geographical dictionary which en- folds many more subject matters than mere geography. It presents in a sche- matic manner factual, objective and well-documented accounts of different facets of peoples' life and indicates the trend of socio-economic and cultural developments that take place in a region. In short gazetteer is a storehouse of valuable and worth knowing information relating to a district or a State for which it is written. It is a dependable source of information for the administra- tors and research workers, for the readers at large, and the explorers and tourists seeking knowledge of people and place.

Arunachal Pradesh had to go through series of constitutional process and development to acquire the present status, which may be traced back to early second decade of 20th Century. In 1914, this province was known as North East Frontier Tract. In 1919, the North East Frontier Tract was divided into three divisions namely, *Balipara Frontier Tract*, *Sadiya Frontier Tract* and *Lakhimpur Frontier Tract*. In 1937, these three frontier tracts came to be known collectively as the Excluded Areas of the Province of Assam under the provision of Section 91(1) of the Government of India Act, 1935. In 1943, a new administrative unit called the Tirap Frontier Tract comprising certain areas of the Lakhimpur Frontier Tract and the Sadiya Frontier Tract came into exist- ence. During the same year, a post of Adviser was also created to administer these divisions. In 1954, all these frontier tracts excluding some plains portion which were transferred to the administrative jurisdiction of the Government of Assam constituted the North East Frontier Tract (or NEFT). From 1948, it was placed under direct administration of the Union Government and was again divided into *Sadiya Frontier Tract*, *Lakhimpur Frontier Tract*, *Tirap Fron- tier Tract*, *Se La Sub- Agency*, *Subansiri Frontier Tract* and *Tuensang Frontier Tract*. Each of these region was administered by a Political Officer. In 1950, this territory was included in the 6th Schedule. Constitutionally it was a part of Assam, and specially administered by the Governor of Assam, who acted as an agent of the President of India. The Governor had an Adviser. The Secretariat of the Adviser was situated in Shillong (Meghalaya).

In 1954, North East Frontier Tract (NEFT) was renamed as North

East Frontier Agency (NEFA). In 1957, the Tuensang Frontier Division was excluded from NEFA to join Nagaland. The remaining five divisions were converted into district in 1964. In 1965, Union Home Ministry took over NEFA Administration. On 20th January, 1972, NEFA was named as Arunachal Pradesh by Mrs. Indira Gandhi, the Prime Minister of India and granted the status of Union Territory. Till 1980, Arunachal Pradesh consisted of only five districts have now sixteen districts. On 20th February, 1987, Arunachal Pradesh got its Statehood and became 24th State of Union of India.

The present volume is the sixth in the series of gazetteer published so far and the first in the series of Arunachal Pradesh State Gazetteer, which is the first of its kind. The department is publishing the State Gazetteer in two volumes. The present volume is the first one, carrying seven chapters viz. General, History, Agriculture, Industries, Economic Trends, Communication and Banking Trade and Commerce. The old volumes of the Assam District Gazetteer, namely B.C Allen's Lakhimpur District Gazetteer published in 1905 and the Sadiya and Balipara Frontier Track Gazetteers brought out in 1928 besides our already published district gazetteers are, however, our important sources. We have tried within our limited means to give in this volume every possible information on the chapters included. The account is based on available material, and hence we make no claim that this covers all facets of life in the state in every detail.

It needs to be mentioned in this context that in former times the term 'Dafla' was mistakenly or derogatorily used to address the Nyishis. This erroneous use of the term 'Dafla' had been modified as 'Nyishi' through the Constitution (Scheduled Tribes) Order (Amendment) Act, 2008. As such the term occurring in passages which have been quoted in this volume has been changed into Nyishi, by which name the tribe is known and should be properly called. The word Dafla or its variants, however, appear only in quotations of passages from some old documents, particularly of the 19th Century only are retained.

The draft gazetteer was seen by the Members of Screening Board. The preliminary draft gazetteer which was prepared decade ago by the predecessors had to be reconstructed and in many cases it has been re-written, for some of the information incorporated have lost its relevance. The present volume comprises statistical data up to the year 2005-06, and a good deal of important information ranging from early times to the recent past has been incorporated in it. However, some additional statistical and census figures con-

cerning developmental activities of the Government Department have also been appended up to the year 2008.

I would like to take this opportunity of expressing my deep gratitude to General J.J. Singh, PVSM, AVSM, VSM (Retd) Governor of Arunachal Pradesh, who has kindly written the foreword of this Gazetteer.

My heartfelt gratitude is due to Shri Dorjee Khandu, Chief Minister, and the Chief Secretary to the Government of Arunachal Pradesh for their support.

*I am particularly grateful to Shri Y. D Thongchi, Commissioner (Gazetteers) who has been quite perennial in extending worthy support and encouragement during the compilation of the gazetteer. It would not have been easy for us to get over multitude of problems and publish this gazetteer without the help, guidance and support given by him as the Commissioner/ Secretary-in-Charge of the Gazetteers Department.*

I am grateful to the Members of Screening Board for Arunachal Pradesh Gazetteer; Shri Tage Tada, Director (Research) and Dr. D. K Duarah, Assistant Director (Culture), Rtd for their valuable suggestions and comments. My sincere thanks are due to all the connected organizations, including Government departments and private institutions and to all the officers of the Government of Arunachal Pradesh for their help and active co-operation.

For the valuable and important reports on geology, flora, fauna and climatology, I am thankful to the officers-in-charge, Arunachal Pradesh Field Stations, Geological Survey of India, Botanical Survey of India and Zoological Survey of India and to the India Meteorological Department respectfully for support and help. My special gratitude is due Dr. Ramakrishna, Director, Zoological Survey of India, Kolkata; Dr. G. Maheswaran, Scientist-C and Officer-in-Charge, APFS, ZSI, Itanagar and to Dr. Anil Kumar of APFS, ZSI, Itanagar for taking keen interest on contributing comprehensive report on vertebrate and invertebrate fauna of Arunachal Pradesh for this gazetteer. I am also thankful to the Director (Information and Public Relations), Government of Arunachal Pradesh for providing photographs for this gazetteer.

The original draft volume of the Gazetteer was prepared by my predecessors Shri S. Dutta Chowdhury, Late R.N Baghchi and Late C.K Shyam, State Editors (Gazetteers) Retd and Shri K. Ghosh, Compiler (Gazetteers), Retd. However, some of the chapters had to be written afresh to conform to

the recent changes and development.

I extend my hearty thanks to all my colleagues, the officers and staff members of Gazetteers Department particularly to Shri Hage Nobin and Chow Sujing Namchoom, Compilers, Shri Duyu Tale, Research Assistant (Gazetteers) for their untiring assistance in revision and re-writing of draft and checking and editing of draft volume at different stages. I also express my sincere appreciation to Shri T.K Dey, Stenographer and Shri Brena Kri, LDC for typing the manuscript within a short period.

**Itanagar**  
**The 11th August, 2010**

**SOKHEP KRI**  
**State Editor (Gazetteers)**  
**Arunachal Pradesh**

# TABLE OF CONTENTS

	Page
FOREWORD ...	i
PREFACE ...	ii
LIST OF ILLUSTRATIONS ...	viii
GUIDE TO SPELLINGS OF PLACE AND OTHER NAMES ...	x
MAPS ...	xv

## CHAPTER I : GENERAL

Origin of the name of the State: Location, General boundaries, area and population, Districts, Sub-divisions and circles: Topography: River system and Water Resources: Lakes and springs: Geology : Mineral wealth : Earth quakes :Flora: Vegetation: Fauna : Climate. ...

## CHAPTER II : HISTORY

1-76

Prehistory and Archaeology : Neoliths : Megaliths : Historical Archaeology and Early Exploration : Historical Forts : Antiquities in Arunachal Pradesh : Ancient period : Early migrations : Kiratas : Account of Hiuen Tsang : Medieval period : Ahom Ascendancy : Ahom – Tribal Relations : Ahom policy : Modern period : British – Tribal Relations : Administrative policy and Developments : Main events of national importance after 1947. ...

## CHAPTER III : AGRICULTURE

77-192

Introduction : Mode of agriculture : Shifting cultivation : Permanent and Terrace cultivation : Crops : Food habits : Land ownership pattern : Land reclamation and utilization : Community fencing : Soil : Crops under HYV : Agricultural implements : Seeds and manures : Horticulture and spices : Agricultural diseases and pests : Progress of Scientific agriculture : Agriculture products : Agriculture Policy of Arunachal Pradesh,2001 : Irrigation : Animal Husbandry : Fishery : For-

estry : Forest Divisions and Forest Areas – Fauna – Flora – Forest produce and its Value: Measures to Secure Scientific Exploitation and Development of Forests.	... 193-274
--	-------------

#### CHAPTER IV : INDUSTRIES

Old time industries : Cottage industries : Craft centre : Development of Modern Industries : Industrial Development and Financial Corporation : Role Of State Government in Industrialisation : The State Industrial Policy 2008 : Status of Small Scale Indus- tries Sector: Arunachal Pradesh Khadi and Village Industries Board : Geology and Mining: Power.	... 275-319
--	-------------

#### CHAPTER V : BANKING, TRADE AND COMMERCE

Banking and Finance : Evolution of Regional Banking in Arunachal Pradesh : APRB & APSCAB and National Banks : Trade and Commerce : Early Trade Relations : Development of Trade and Commerce : Weights and Measures : Public Distribution System : Cooperative Movement.	... 320-376
--	-------------

#### CHAPTER VI : COMMUNICATIONS

Introduction : Old time trade routes : Internal trade routes : Communication during the British days : Development of Trans- port and Communication after Independence : Vehicles and Conveyances : Water ways : Transport by Air : Railways : Travel and tourist facilities : Posts and Telegraphs : Telecom- munication : Radio, Wireless Stations and Television : Infor- mation Technology.	... 377-414
---	-------------

#### CHAPTER VII : ECONOMIC TRENDS

Introduction : Livelihood Pattern : General level of Prices and Wages : Public Distribution System : Wages : Employment in Differ- ent Occupations : The Fourth Economic Census : Manpower and Employment : Employment : Unemployment : Govern- ment Employees : Trends in Economic development : New Agricultural Policy 2001 : Industry : Transport & Communi- cations : Education and Human Resource Development : Power : Mining.	... 415-458
--	-------------

## LIST OF ILLUSTRATIONS

<b>Art Plates</b>	<b>facing page 458 ff</b>
1. Nyishi man working on cane and bamboo	
2. Crafts from Tirap	
3. Motif of Apatanis	
4. Carpets From Bomdila	
5. Nocte wood curving	
6. Bead cap of Wanchos	
7. Women weaving	
8. Textile of Akas	
9. Ornament of various patterns	
10. Silver bangle (nyimi kori)	
11. Elephant ploughing in Arunachal	
12. Orange Cultivation	
13. Kiwi plantation in West Kameng	
14. Kiwi Plantation at Ziro	
15. Pisciculture	
16. Tomato harvesting	
17. Paddy field at Ziro	
18. Itafort	
19. Malinithan at Likabali, West Siang Dist	
20. Hollock Gibbon, The State Animal of Arunachal Pradesh	
21. Hornbill, State Bird of Arunachal	
22. Mithun (Bos Frontalis)	
23. Yellow spotted wolf snake Lycodon jara	
24. Pied Kingfisher Ceryle Rudis	
25. Yak	
26. Red-necked keelback Rhadophis subminiatus	
27. Goral Naemorhedus goral	
28. Arunachal Pradesh Legislative Assembly at Naharlagun	



29. Entrance Gate AP civil Secretariat, Itanagar
30. Raj Bhawan
31. Chief Minister's Official Bungalow
32. Science Centre at Itanagar
33. Itanagar Permanent Bench, Naharlagun Guwahati High Court
34. Ramakrishna Mission Hospital at Itanagar
35. Rajiv Gandhi Polytechnic at Itanagar
36. Arunachal State Hospital at Naharlagun
37. Dera Natung Government College, Itanagar
38. North-Eastern Institute of Science and Technology, Nirjuli
39. Jawaharlal Nehru State Museum, Itanagar
40. Tawang Monastery
41. *Dendrobium devonianum* – a rare endigenous orchid
42. *Esmeralda cathcartii* – endangered endigenous orchid
43. *India arunachalensis* – an endemic & critically endangered orchid from Ar.P
44. *Sarcoglyphis arunachalensis* – an endemic orchid of Arunachal Pradesh
45. *Biermannia jainiana* – an endemic orchid of Arunachal Pradesh
46. *Paphiopedilum fairieanum* – the lost lady's slipper orchid, Critically endangered
47. *Galeola lindleyana* – Rare saprophytic orchid
48. Myanmarese traders en-route to Nampong
49. Road to Tawang
50. Parshuram Kund Bridge, Lohit District
51. Suspension Bridge
52. View of mountain

## GUIDE TO SPELLINGS OF PLACE AND OTHER NAMES

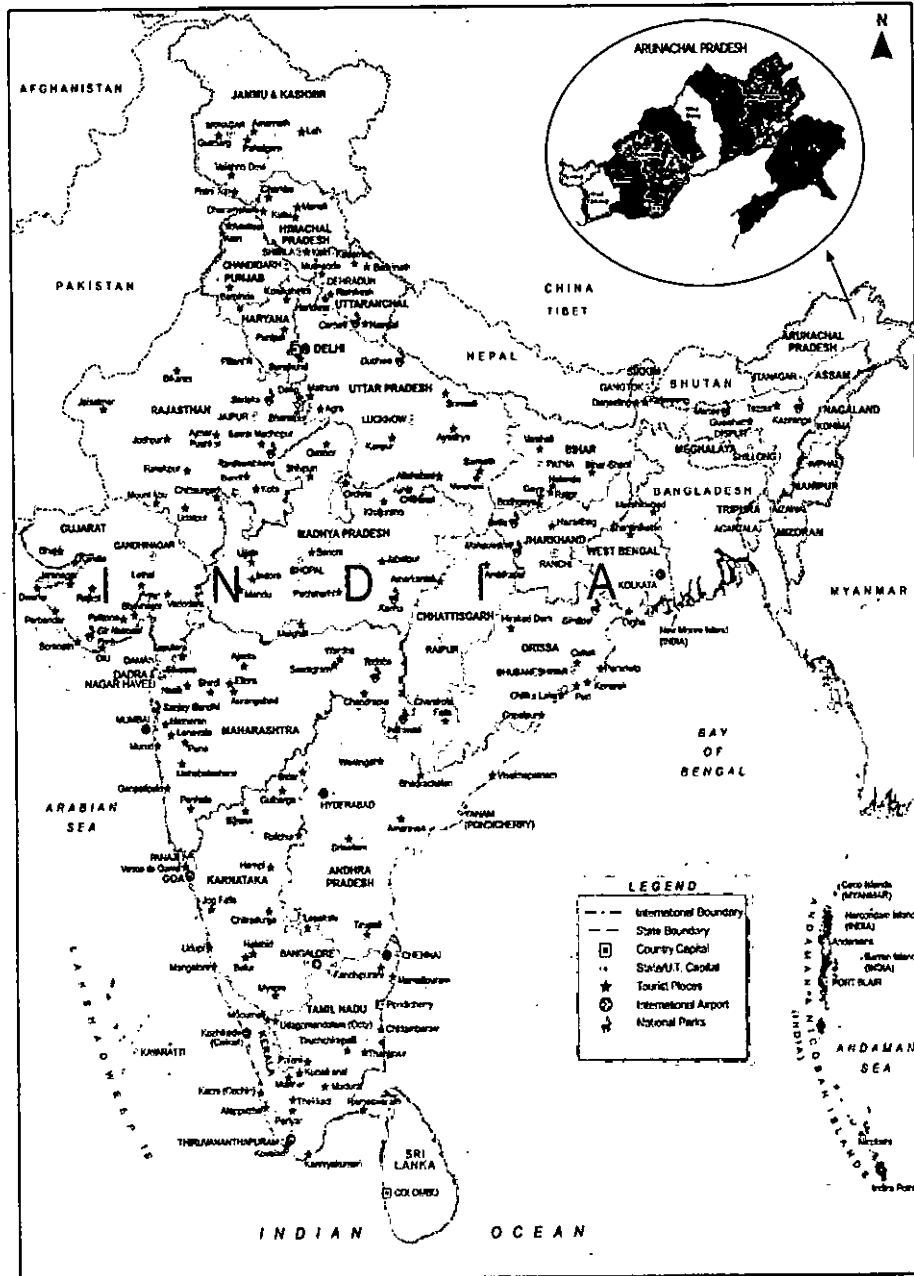
NAME		CORRECT VERSION	NAME		CORRECT VERSION
Arunachal	...	Arunâchal	Manthun	...	Mâthûn
Chaglagam	...	Châglogâm	Mayu	...	Mâyû
Chappri	...	Châppri	Namsai	...	Nâmsâi
Charduar	...	Charduâr	Nizamghat	...	Nizamghât
Chowkham	...	Chowkhâm	Pasighat	...	Pâsighât
Dambuk	...	Dâmbuk	Patkai	...	Pâyâ
Deopani	...	Deopâni	Paya	...	Pâyâ
Dibang					
(or Dihong)	...	Dibâng	Santipur	...	Sântipur
Digaru	...	Digârû	Sitpani	...	Sitpâni
Dihang					
(or Dihong)	...	Dihâng	Talon	...	Tâlon
Dillee	...	Dilli	Tengapani	...	Tengapâni
Dirak	...	Dirâk	Timai	...	Tîmâi
Disang	...	Disâng	Twang	...	Twâng
Etalín	...	Etâlin	Waket	...	Wâket
Galai	...	Galâi	Wakro	...	Wâkro
Ghalum	...	Ghâlum	Walong	...	Wailâng
Glao Hawel	...	Glâo Hawel	Zayul	...	Zâyul
Granli	...	Grânli	Pangin	...	Pângin
Hawai	...	Hawâi	Mechuka	...	Menchuka
Hayuliang	...	Hayuliâng	Basar	...	Bâsâr
Kamakhya	...	kâmâkhyâ	Dibang	...	Dibâng
Kamlang	...	kâmlâng	Karko	...	Kârko
Kibithoo	...	Kibitho	Payum	...	Pâyum

NAME		CORRECT VERSION	NAME		CORRECT VERSION
Lallichapri	...	Lâli Châpari	Rumgong	...	Rumgong
Man Bum	...	Mân Bum	Kaying	...	Kaying Dolung
Darak	...	Dârâk	Tirap	...	Tirâp
Tato	...	Tâto	Namsing	...	Nâmsing
Likabali	...	Likâbâli	Nepal	...	Nepâl
Kadai	...	Kâdâi	Tada Dege	...	Tâdâdege
Yang Sang Chhu	...	Yang Sâng Chu	Peri	...	Peri Dolung
Yingkiyong	...	Yingkiong	Kambang	...	Kamba
Monigong	...	Manigong	karbak	...	Kâr bâk
Ganu	...	Gânu	Yomcha	...	Yomcha
Tatamori	...	Tâtâmori	Gamlin	...	Gâmlin Pâtâk
Daring	...	Dâring	Esi	...	Esi Rite IB
Dali	...	Dâli	Rapum	...	Râpum
Sirapathang	...	Sirapathang	Dorjeeling	...	Darjiling
			Or Sirong		
Pango	...	Pângo	Shimang	...	Simang
Patkoi	...	Pâtkai	Tungula Pass	...	Tungu La
Naga	...	Nâga	Gesing	...	Gâsheng
Cachar	...	Câchâr	Pangri	...	Pangri
Garó Hill	...	Gâro hills	Karle	...	Kâte
Pakam	...	Payam	Kark	...	Kârle
Miguing	...	Miging	Papigro	...	Pâpigro
Kapang la'	...	'Kepang La'	Namasiba	...	Namâsib
Dihang	...	Dihang	Pulom	...	Pulam
Liromopa	...	Liromoba	Yomgong	...	Yomgo
Dihong	...	Dihâng	Yiyo	...	Yio
Dibong	...	Dibâng	Pame	...	Pâme
Disang	...	Disâng	Gasheng	...	Gâsheng
Gatte	...	Gâtte	Renging	...	Rengging
Gameng	...	Gâmeng	Yambung	...	Yembung

NAME		CORRECT VERSION	NAME		CORRECT VERSION
Paying	...	Pâying	Monku	...	Mongku
Yapuik	...	Yâpuik	Kamarupa	...	Kâmarûpa
Irgo	...	Hirgo	Dimapur	...	Dimâpur
Tagur	...	Tâgur	Kacharis	...	kacharis
Ramsing	...	Râmsing	Yembopani	...	Yembung
Ninging	...	Nîngguing	Balek	...	Kâlek
Pango	...	Pângo	Memsipu	...	Memsiba
Bombo	...	Bomda	Bordak	...	Badak
Mînging	...	Miging	Simong	...	Shimong
Jedo	...	Jidu	Parong	...	Pâreng
Paling	...	Pâlîng	kobo	...	Kabu
Rikor	...	Rîkor	Sille	...	Silli
Puging	...	Pugîng	Silapathar	...	Silâpâthâr
Anging	...	Angguing	Taliha	...	Tâliha
Gobuk	...	Gobuik	Yapik	...	Yapuik
Gosang	...	Gosaing	Poyom	...	Pâyam
Riu	...	Riew	Yomsa	...	Yomcha
Domroh	...	Dumro	Yapik	...	Yâpik
Ringong	...	Rungong	Tagur	...	Tâpur
Bordak	...	Bodak	Herong	...	Hirong
Dambuk	...	Dambuk	Raksap	...	Râksâb
Sissiri	...	Sesseri	Shikar	...	Shikâr
Gekku	...	Geku	Gasheng	...	Gâsheng
Pan-kang	...	Pangkang	Gameng	...	Gâmeng
Bame	...	Bâmeng	kanubari	...	Kânubâri
Gusar	...	Gusâr	Kathang	...	kâthâng
Itanagar	...	Itanagar	Koriapani	...	Koriâpâni
Jinning	...	Jining Moku	Kumlao	...	Kûmlâo
Kambang	...	Kombong Dolung	Laju	...	Lâju
Rumgong	...	Rungang	Lekhapani	...	Lekhâpâni

NAME		CORRECT VERSION	NAME		CORRECT VERSION
Komba	...	Kâmba	Makum	...	Mâkum
Tego-Gamlin	...	Hego Gâmlin	Manabam	...	Mânâbum
Yinkion	...	Yinkiong	Manmao	...	Mânmao
Changlang	...	Chângtâng	Megherita	...	Mâgherita
Gauhati	...	Guwahâti	Miao	...	Miâo
Titabar	...	Titâbar	Nagaland	...	Nâgâland
Tabasora	...	Tâbâsora	Naharkatiya	...	Nâhorkatiya
Bilatat	...	Bilât	Namchik	...	Nâmchik
Telam	...	Telam	Namdapha	...	Nâmdapha
Banfera	...	Banfara	Namphai	...	Nâmphai
Barhat	...	Barhât	Namphuk	...	Nâmphuk
Bogapani	...	Bogâpâni	Nampong	...	Nâmpông
Bordumsa	...	Bardumsha	Namrup	...	Nâmrup
Changlang	...	Chânglâng	Namsai	...	Nâmsâi
Dadam	...	Dâdam	Namsang	...	Nâmsang
Deban	...	Debon	Nazira	...	Nâzira
Disang	...	Disâng	Pangsau	...	Pangsâu
Disangmukh	...	Disângmukh	Pritnagar	...	Prîtnagar
Gandhigram	...	Gânghigrâm	Rangkatu	...	Rângkâtu
Goalpara	...	Goâlpâra	Sibsagar	...	Sibsâgar
Jairampur	...	Jairâmpur	Sonari	...	Sonâri
Tewai	...	Tewâi	Nirke	...	Niyârke
Tikak	...	Tikâk	Nirpung	...	Niyârpung
Vijaynagar	...	Vijaynagar	Pamluk	...	Pâmluk
Wakka	...	Wakka	Pange	...	Pânge
Balipara	...	Bâliparâ	Pangen	...	Pângen
Balu	...	Bâlo	Panior	...	Pânyor
Doimukh	...	Duimukh	Pannyu	...	Pânyu
Godak	...	Gadâk	Papu	...	Pâpu
Hamching	...	Hâmching	Par	...	Pâr

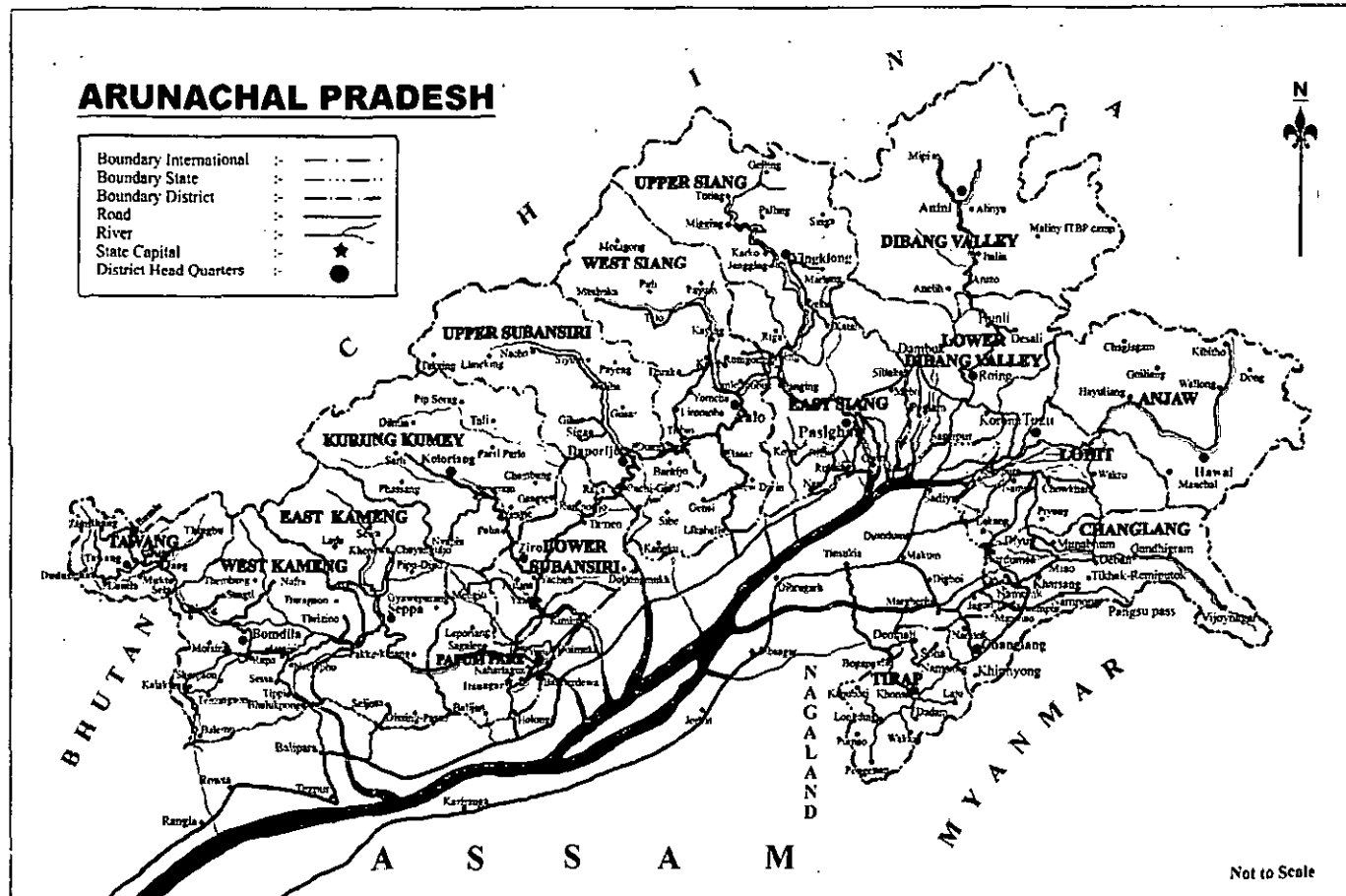
NAME		CORRECT VERSION	NAME		CORRECT VERSION
Hapoli	...	Hâpoli	Polosang	...	Pullosâng
Harmuti	...	Hârmati	Raga	...	Râga
Hema	...	Hâma	Sagalee	...	Sâgâli
Sengkhi	...	Senkhi			
Jahing	...	Jâhing	Chyangtajo	...	Chyâng Tâjo
Jorum	...	Jorâm	Silonibari	...	Silanibâri
Kalimpong	...	Kâlimpang	Tale	...	Tâle
Kali	...	Kâle	Talo	...	Tâlo
Khetabari	...	Kherbâri	Tsari	...	Tsâri
Khru	...	Kurung	Yachuli	...	Yâchuli
Koloriang	...	Koloriâng	Yazali	...	Yâzali
Laij	...	Lâmâk	Pakke-Kessang	...	Pâkke Kessâng
Layang	...	Lâyang	Lada	...	Lâda
Mara	...	Mâra	Para river	...	Pâra river
Menga	...	Menga	Pachi river	...	PÂCHI RIVER
Nacho	...	Nâcho	Pacha river	...	Pâcha river
Niorchi	...	Niyârchi	Papu river	...	Pâpu river
Pake river	...	Pâke river	Bargang river	...	Bargâng river
Ghiladhari river	...	Gilâdhâri river	Sangti Chu	...	Sângti Ri
Buragaon	...	Burâgaon	Zemithang	...	Zimithâng
Dirang	...	Dirâng	Kalaktang	...	Kâlâktâng
Bhalukpong	...	Bhâlukpong			



# ARUNACHAL PRADESH

Boundary International	---
Boundary State	- - - - -
Boundary District	- · - · -
Road	==
River	~~~~~
State Capital	★
District Head Quarters	●

(1A)





## **CHAPTER – I**

# **GENERAL**

### **PHYSICAL FEATURES AND NATURAL RESOURCES**

#### **Origin of the name of the State**

The name of the State Arunachal Pradesh is of recent origin. The word 'Arunachal' is combination of two words viz. 'Arun' and 'Achal'. Arun means Sun or the rising Sun; Achal means border or edge. The name of this State was not derived from any previously existing name. Arunachal Pradesh (Pradesh = Province) is a new name given aptly to this magnificent mountainous region of the extreme north-east extending over the eastern Himalayas, where the sun in its diurnal motion first rises over India.

This province had to go through series of constitutional process and development to acquire the present status, which may be traced back to early second decade of 20th Century. In 1914, it was decided by the Government of India that the Assam Frontier Tracts Regulation of 1880 would extend to some hill tracts inhabited by the tribes of what is now known as Arunachal Pradesh. These tracts were separated from the then Darrang and Lakhimpur districts of the province of Assam to form the North-East Frontier Tract which consisted of three administrative units, namely the Central and Eastern Sections, the Lakhimpur Frontier Tract and the Western Section.

In 1919, the Central and Eastern Sections was renamed as the Sadiya Frontier Tract and the Western Section as the Balipara Frontier Tract. In 1937, these three frontier tracts came to be known collectively as the Excluded Ar-

east of the Province of Assam under the provision of Section 91(1) of the Government of India Act, 1935. In 1943, a new administrative unit called the Tirap Frontier Tract comprising certain areas of the Lakhimpur Frontier Tract and the Sadiya Frontier Tract came into existence. During the same year, a post of Adviser was also created to administer these divisions. In 1954, all these frontier tracts excluding some plains portion which were transferred to the administrative jurisdiction of the Government of Assam constituted the North East Frontier Tract (NEFT). From 1948, it was placed under direct administration of the Union Government and was again divided into *Sadiya Frontier Tract*, *Lakhimpur Frontier Tract*, *Tirap Frontier Tract*, *Se La Sub-Agency*, *Subansiri Frontier Tract* and *Tuensang Frontier Tract*. Each of these regions was administered by a Political Officer. In 1950, this territory was included in the 6th Schedule. Constitutionally it was a part of Assam, and specially administered by the Governor of Assam, who acted as an agent of the President of India. The Governor had an Adviser. The Secretariat of the Adviser was situated in Shillong (Meghalaya).

In 1954, NEFT was renamed as North East Frontier Agency (NEFA) as already said with six Frontier Divisions : *Kameng Frontier Division*, *Subansiri Frontier Division*, *Siang Frontier Division* (Daporijo Sub-Division, Along Sub-Division, Pasighat Sub-Division), *Lohit Frontier Division* (Roing Sub-Division, Tezu Sub-Division), *Tirap Frontier Division* and *Tuensang Frontier Division*. In 1957, the Tuensang Frontier Division was excluded from NEFA to join Nagaland. The remaining five divisions were converted into district in 1964. In 1965, Central Home Ministry took over NEFA Administration.

This frontier province which was known as North East Frontier Agency (NEFA) since 1954 was named Arunachal Pradesh by Mrs. Indira Gandhi, the then Prime Minister of India on 20th January, 1972 at Ziro, the then district headquarter of undivided Subansiri district to be functioned as Union Territory under Chief Commissioner. Five Councillors were appointed on 6th October, 1972, for each of the districts. On 20th April, 1974, the capital of this territory was shifted from Shillong to Itanagar. Till 1980, Arunachal Pradesh consisted of only five districts. In due course, under Arunachal Pradesh Re-organisation of Districts Act, 1980, as many as eleven more districts were created by bifurcating the areas of Kameng District, Subansiri District, Siang District and Lohit District. These are *Tawang*, *West Kameng*, *East Kameng*, *Kurung Kumey*,

*Papum Pare, Lower Subansiri, Upper Subansiri, West Siang, East Siang, Upper Siang, Dibang Valley, Lower Dibang Valley, Lohit, Anjaw, Changlang and Tirap. All the districts are administered by Deputy Commissioner (formerly called Political Officer). The post of Chief Commissioner was re-designated as Lt. Governor, which was created on 15th August 1975 and the Pradesh Council got converted into a Legislative Assembly. The post of Governor came into being on 20th February, 1987, the day on which Arunachal Pradesh got its Statehood to become twenty-fourth State of Union of India. The State is having sixty members in Legislative Assembly. The State also sends three elected Members to Indian Parliament; two in Lok Sabha and one in Rajya Sabha.*

***Location, General Boundaries, Total Area and Population***

The traditional and customary boundary of India in the Eastern Sector obtained the added sanction of treaties in 1914 when the Indo-Tibetan Boundary Agreement of 24 – 25 March, 1914 and the Shimla Agreement of July 3, 1914 were concluded.

Arunachal Pradesh is situated in the north-eastern tip of India approximately between the latitudes 26°28' E and 29°30' N and longitudes 90° 30' E and 97°30' E.

Bounded on the north by China, on the east by Myanmar, on the south by Assam and Nagaland and on the west by Bhutan, the State of Arunachal Pradesh has about 1630 kms long international border; 160 km with Bhutan, 1030 kms with China and 440 km with Myanmar. The State consists of 16 (sixteen) districts, all of which have international border except East Siang, Papum Pare, Lower Subansiri and Lohit District.

Arunachal Pradesh occupies an area of approximately 83,743 Sq. km inhabited by 10,79,968 persons of whom 5,79,941 are males and 5,78,027 females (2001 Census). A total of 7,05,158 persons constituting 64.22 percent of the total population belong to the Scheduled Tribes and 6,188 person (0.56 percent) to the Scheduled Castes. The State is thinly populated compared to other areas; the density of population per sq km being 13 persons is quite low as compared to the country's population density of 324 person per sq km. Barring only 17 towns, the entire area is rural. The rural population of 8,70,087 constitute 79.24 percent of the total population. The State is a home for as many as 26 different tribes and 110 sub-tribes and minor tribes speaking as

many as 42 different dialects. The State has achieved a literacy rate of 54 percent in 2001.

The district wise population is as follows:-

Sl. No.	Name of district	Population (1991)	Population (2001)	Remarks
1.	Tawang	28,287	38,924	
2.	West Kameng	56,421	74,599	
3.	East Kameng	50,395	57,179	
4.	Papum Pare	72,811	1,22,003	
5.	Lower Subansiri	83,167	98,244	
6.	Kurung Kumey			Read with Lower Subansiri
7.	Upper Subansiri	50,086	55,346	
8.	West Siang	89,936	1,03,918	
9.	East Siang	99,643	87,397	
10.	Upper Siang	-	33,363	
11.	Dibang Valley	43,068	57,720	
12.	Lower Dibang Valley			Read with Dibang Valley
13.	Lohit	1,09,706	1,43,527	
14.	Anjaw			Read with Lohit
15.	Changlang	95,530	1,25,422	
16.	Tirap	85,508	1,00,326	
10,97,968				

Source: Arunachal Pradesh, Census of India 2001, Population Totals.

#### DISTRICTS, SUB-DIVISIONS AND CIRCLES

Under the provision of the Arunachal Pradesh (Re-organization of Districts) Act, 1980 (Act No. 3 of 1980) effected from June, 1, 1980 and by bringing out Arunachal Pradesh (Re-organization of Districts) Amendment Ordinances and Acts during last two decades, Arunachal Pradesh has been divided into sixteen districts. The sixteen districts thus formed are Tawang, West Kameng, East Kameng, Kurung Kumey, Papum Pare, Lower Subansiri, Upper Subansiri, West Siang, East Siang, Upper Siang, Dibang Valley, Lower

Dibang Valley, Lohit, Anjaw, Changlang and Tirap. The brief account of district are as follows:

### **Tawang District**

Adorned with about 400 years old the Tawang Monastery, which is 2nd largest and oldest in Asia, the Tawang District with its Headquarters at Tawang lies in the extreme western corner of Arunachal Pradesh is bounded by China in the north, Bhutan in the south and west and West Kameng district in the east. The district occupies an area of 2172 sq. km. The district was created on 6th October, 1984 by carving out Tawang Sub-Division from West Kameng District. The Monpas are the dominant tribes. The district is also sporadically inhabited in border areas by numbers of nomadic communities like Angchenpa, Thingbupa, Nagopa and Lethangpa. Total population of the district as per census-2001 is 38924 consisting of males 21,846 and females 17,078. Out of which 29191 are Scheduled Tribe and 128 belong to Scheduled Castes. The literacy rate is 41.14 percent. The density of population being 16 people per sq km. The sex ratio is 963.

The district has three Sub-Divisions namely; Tawang, Jang and Lumla. There are again seven Administrative Circles namely; Zemithang, Lumla, Dudunghar, Tawang, Jang, Mukto and Thingbu.

### **West Kameng District**

The West Kameng District with its headquarters at Bomdila is bounded by Bhutan in the west, Tawang district in the north, East Kameng district in the east and Assam in the south. The district has an area of 7422 sq. km. The district which was established in 1st June, 1980 occupies an area of 7422 sq km. The tribes like Monpas, Sherdukpens, Akas, Khowas (Bugun) and Mijis or Sajalongs are the indigenous habitants of the district. The total population of the district as per census-2001 is 74,599 consisting of 42,542 males and 32,057 females. The Scheduled Tribes and Scheduled Castes living in the district are 36,951 and 372 respectively. The literacy rate of the district is 61.67 and, the sex ratio being 749. The density of population in the district is 10 per sq km.

The district has three Sub-Divisions namely; Bomdila, Thrizino and Rupa. There are altogether ten Administrative Circles namely, Dirang, Nafra, Kalaktang, Rupa, Singchung<sup>1</sup>, Jamiri, Thrizino, Bhalukpung and Balem.

---

<sup>1</sup> Upgraded to Addl. Deputy Commissioner headquarters vide No.DAD- 90 dt 6th June, 2006.

### **East Kameng District**

The East Kameng District with its Headquarters at Seppa is bounded by West Kameng District in the west, in the north by Kurung Kumey District, towards the east is Papum Pare and Assam in the south. This district was created on 1st June, 1980 by bifurcating Seppa Sub-Division from the erstwhile Kameng District. The total geographical area of the district is 4134 sq km. The total population of the district as per 2001 Census is 57,179 persons consisting of 28,802 males and 28,377 females. The Scheduled Tribes and Scheduled Castes people living in the district are 49585 and 97 persons respectively. The principal tribes of the district are Nyishi, Puriok (Sulung), Aka and Khowa. The literacy rate of the district is 40.6%. The density of population being 14 person per sq km. The sex ratio is 985 per 1000 male.

The District has Seppa and Chayangtajo as two Sub-Divisions. There are ten Administrative Circles namely; Seijosa, Pake-Kesang, Richukrong, Seppa, Lada, Bameng, Pipu, Khenewa, Chayangtajo and Sawa.

### **Papum Pare District**

The Papum Pare district with its Headquarters at Yupia was created under the Arunachal Pradesh (Re-Organisation of Districts) Amendment Ordinance dated 22nd September, 1992 by carving out few Circles from Lower Subansiri District to become 12th District of the State. The district is bounded by East Kameng District in the west, Kurung Kumey and Lower Subansiri in the north and by Assam in the east and south. The State capital Itanagar is situated in this district. The district has an area of 2875 sq.km. The total population of the district according to 2001 Census is 121750; consisting of 64122 male and 57628 female souls, with a density of population of 35 per sq.km. The total number of Scheduled Tribes and Scheduled Castes living in the district is 69007 and 1397 souls respectively. The Nyishis are the original inhabitants of the district. The district is having the literacy rate of 70.89 percent. The sex ratio is 899 female per 1000 male.

Itanagar and Sagalee<sup>1</sup> are the two Sub-Divisions. The district is administered under eleven Administrative Circles namely, Balijan, Itanagar, Naharlagun, Doimukh, Toru, Sagalee, Laporiang, Mengio, Kimin, Tarasso and Banderdewa.

<sup>1</sup> SDO Headquarters. Sagalee was upgraded to Independent Addl Deputy Commissioner, Headquarters vide Notification No. DAD- 35/ 2003 dt 22nd December, 2005.

### **Kurung Kumey District**

The Kurung Kumey district was created by curving out the Circles from Lower Subansiri district on 16th April, 2001. The administration of the district is being carried out from Koloriang, the district headquarters of Kurung Kumey. The district is bounded by China on the north, Papum Pare and Lower Subansiri districts on the south, East Kameng and Upper Subansiri districts on the east and west respectively. It has an area of 6675 sq.km. The total population of the district is 42518 (2001 Census), with 21117 male and 21401 female. The Scheduled Tribes and the Scheduled Castes living in the district are 41619 and 28 souls respectively. The density of population is 5 per sq.km. The district is predominantly inhabited by the Nyishi tribe. The literacy rate is 25.7%. The district has an astonishing sex ratio figure of 1013 females per 1000 males.

Koloriang and Nyapin are the two Sub-Divisions of the district. The district has all together thirteen Administrative Circles namely; Palin, Yangte, Sangram, Nyapin, Koloriang, Chambang, Sarli, Parsi Parlo, Damin, Pipsorang<sup>1</sup>, Tali, Phassang<sup>2</sup> and Gangte<sup>3</sup>.

### **Lower Subansiri District**

Until 1961, the whole Subansiri now divided in many districts was administered under Subansiri Frontier Division. By 1971, this Frontier Division was declared as district. On 1st June, 1980, the district of Subansiri was curved into two district namely, Upper and Lower Subansiri district. Lower Subansiri district was again curved into two more districts viz. Papum Pare and Kurung Kumey. The district is bounded by Kurung Kumey district on the north, Papum Pare district on the south and west and West Kameng district on the east.

Ziro is the headquarter of this district. The total geographical area of the district is 3460 sq. km. As per 2001 Census, the total population of the district is 55726; of which 28425 are males and 27301 females. The Scheduled Tribes and Scheduled Castes living in the area are 46893 and 169 respectively. The density of population stands at 42 and sex ratio at 960 per 1000 males. The district is predominantly inhabited by the Apatanis, Nyishis and the Hill Miris.

Ziro and Raga are the two Sub-Divisions. The other six Administrative

<sup>1</sup> Created as Longding-Koling Circle, vide Notification No. GA(B) 43/80 dt 6.12.94 was renamed as Pip-Sorang, vide Notification No. DAD-43/80 dt 27/10/2001.

<sup>2</sup> Created vide Notification No. DAD-29/98 dt 17/12/2002.

<sup>3</sup> Created vide Notification No. DAD-68/2003 dt 9/12/2003.

Circles are; Ziro, Yachuli, Pistana, Kamporijo, Dollungmukh and Raga.

### **Upper Subansiri District**

The Upper Subansiri district was created on 1st June, 1980 by curving out the Daporijo Sub-Division from the erstwhile Subansiri district. Daporijo was retained as the Headquarter. The district is bounded by the Tibet Autonomous Region of China in the north, Kurung Kumey in the north-west, Lower Subansiri district in the south-west and West Siang district in the east. It has an area of 7032 sq. km. The population of the district is 55346 including 28240 males and 27106 females (2001 Census). The population is overwhelmingly dominated by the Scheduled Tribe, which is 49552 as against 99 Scheduled Caste. The district has a population density of 5 per sq. km. The literacy rate is placed at 50.3 and, the sex ratio counted 960 per 1000 males. The Tagins, Hill Miris, Nyishis, Galos and Nahs are the principal inhabitants of the district.

Daporijo and Nacho are the two Sub-Divisions and, the entire district is administered under eleven Administrative Circles namely, Taksing, Limeking, Nacho, Siyum, Taliha, Paying, Giba, Daporijo, Puchigeko, Dumporijo<sup>1</sup>, Baririjo and Gusar<sup>2</sup>.

### **West Siang District**

The area lying between the Siyom river and the Dibang, which is on the northern frontier of Assam majorly inhabited by the Adis and the Galos was administered under different names, such as Abhor Hills, Siang Frontier Division, erstwhile Siang District. The Siang district got divided into two district namely, East Siang and West Siang on 1st June, 1980. Along (now Aalo) remained the Headquarters of the West Siang district. It is bounded by Upper Subansiri district on the west, China on the north, Upper Siang and East Siang districts on the east. The district has an area of 8325 sq.km., and a population of 103918; of which 54349 are males and 49569 are females. The Scheduled Tribes and Scheduled Castes living in the area are 84922 and 379 respectively, with a population density of 13 person per sq.km. The literacy rate of the district is 59.5% and a sex ratio 912 per 1000 males.

The tribal groups, such as Galos, Adi-Ramos, Pailibos, Boris, Bokars, Membas and Khambas constitutes the population of the district.

<sup>1</sup> Upgraded to Extra Asstt. Commissioner Headquarters vide Notification No. DAD-75/81 dt 22nd December, 2005.

<sup>2</sup> Created vide Notification No. DAD-26/2001 dt 21/08/2002.



The district is having six administrative Sub-Divisions namely, Along (now Aalo), Rungong<sup>1</sup>, Basar<sup>2</sup>, Likabali, Yomcha and Mechuka. There are again twenty administrative Circles in the district namely, Mechuka, Monigong, Pidi, Payum, Tato, Kaying, Darak, Kamba, Rungong, Jomlomobuk, Liromoba, Yomcha, Along, Tirbin, Basar, Daring, Gensi, Likabali, Kangku and Bagra.

### **East Siang District**

The erstwhile Siang district was bifurcated into two separate districts, namely East Siang and West Siang on 1st June, 1980, and thus East Siang district came into being. Pasighat which is one of the oldest towns of the State is headquarter of East Siang district. The district is bounded by Upper Siang on the north, Assam in the south, Lower Dibang Valley in the east and West Siang in the west. The total geographical area of the district is 3322 sq. km. As per census 2001, a total of 87397 souls are living; including 45265 males and 42132 females. The total number of 60420 souls of Scheduled Tribes and 531 souls of Scheduled Castes are also the constituents of the population. The literacy rate is 61.22% and the sex ratio is 937 per 1000 males. The density of population is 22 persons per sq.km.

The Adi, Pasi, Padam and Minyong and the Mishng are the principal inhabitants of the district.

The district is administered under five Sub-Divisions namely Pasighat, Mebo, Ruksin, Nari and Boleng - and twelve Circles, viz Boleng, Riga, Panging, Rebo, Koyu, Nari, New Seren, Bilat, Ruksin, Sile-Oyan, Pasighat and Mebo.

### **Upper Siang District**

The Upper Siang District with its headquarter at Yingkiong became the 13th district of the State which was formally inaugurated by His Excellency, the Governor of Arunachal Pradesh, Shri Mata Prasad on 12th May, 1995. The district was created by curving out from East Siang District. It is bounded by China on the north, East Siang district on the south, Dibang Valley and Lower Dibang Valley districts on the east and West Siang district on the west. It has an area of 6590 sq.km. The population of the district as per 2001-Census is 33363; of which 18057 are males and 15306 females. The Scheduled Tribe and Scheduled Caste population of the district is 26094 and 124 respectively. The district is having a density of population of 5 and literacy rate of 40.2%. The sex ratio is recorded as 848 per 1000 sq.km.

<sup>1</sup> Upgraded to Addl Deputy Commissioner (Independent Charge) vide No. DAD-10/90 dt 22nd December, 2005.

<sup>2</sup> Upgraded to Addl Deputy Commissioner headquarters vide No. DAD-52/86 dt 16th March, 2006.

The major tribes in the district are the Adis comprising of Pasi, Padam, Karko, Panggi, Ashing, Shimong, Komkar, Tangam and Millang.

The other tribes like Idus, Membas and Khambas also constitute the main inhabitants of the district.

The district is administered through three Sub-Divisions, namely Yingkiong, Mariyang and Tuting. There are altogether eleven Administrative Circles namely; Tuting, Migging, Paling, Gelling, Singa, Yingkiong, Jengging, Geku<sup>1</sup>, Katan, Mariyang and Mopom.

### **Dibang Valley District**

The Dibang Valley district was created on 1st June 1980 by curving out from erstwhile Lohit District. The Lt. Governor of Arunachal Pradesh, Shri R.N. Haldipur inaugurated the district. Anini is the district headquarters. The district faces China towards north and east, in the west is Upper Siang district and down to the south is Lower Dibang Valley district. The district has an area of 9029 sq km. There are 7272<sup>2</sup> souls living in the district as per 2001 Census (4286 males and 2986 females). The total number of Scheduled Tribes and Scheduled Castes people living in the district is 4827 and 59 souls respectively. The density of population is 4 person per sq. km; which is lowest in the State. The literacy rate and sex ratio of the district are 53.0 percent and 697 male per 1000 female respectively.

The district is wholly peopled by Idu Mishmis. Anini is the only Sub-Division. The district is having five Administrative Circles, namely Mipi, Anini, Etalin, Aneli and Kronli.

### **Lower Dibang Valley District**

The Lower Dibang Valley District with its headquarters at Roing was created by carving out from Dibang Valley district, which was inaugurated by Chief Minister of Assam, Shri Tarun Gogoi in presence of Arunachal Pradesh Chief Minister, Shri Mukut Mithi on 16th December, 2001. It has an area of 3900 sq km. The district has a population of 50448 souls (2001 Census) of which 27156 are males and 23292 females. The total number of Scheduled Tribes and Scheduled Castes people living in the district is 22005 and 448 souls respectively. The literacy rate of the district has been recorded at 60.34 per-

<sup>1</sup> Upgraded to Extra Asstt. Commissioner headquarters vide Notification No. DAD- 6/76 dt 10th July, 2006.

<sup>2</sup> Statistical Abstract of Arunachal Pradesh 2006.

cent and sex ratio being 858 male per 1000 female.

The Idu Mishmis and Adi (Padams) are the principal inhabitants of the district. The district is administered through three administrative Sub-Divisions namely, Roing, Dambuk and Hunli. There are again six administrative Circles, namely Hunli, Desali, Roing, Dambuk, Koronu and Paglam.

### **Lohit District**

The whole mountainous stretch along the upper Brahmaputra region, inhabited by the Mishmis came to be known as Mishmi Hills since 1948. In 1954, it was renamed as Lohit Frontier Division and was declared district in 1964. Tezu has been the district headquarter since 13th August, 1952. The district has an area of 2802 sq km. The district is bounded by Lower Dibang Valley district in the north, Anjaw district in the east, Tinsukia district (Assam) in the west and Changlang district in the south. Total of 125086 souls are living in the district as per 2001 Census; of which 67150 are male and 57936 female. The total number of Scheduled Tribes and Scheduled Castes people living in the district is 40552 and 1796 respectively. The density of population is accounted at 13 per sq km. The literacy rate and sex ratio of the district are 58.7 percent and 863 male per 1000 female respectively.

The Taraons (also called Digaru Mishmis), the Kamans (also called Miju Mishmis), Khamptis and Singphos are the inhabitants of this district.

Tezu and Namsai are the two Sub- Divisions. There are all together eight Administrative Circles, namely Sunpura, Tezu, Wakro, Chowkham, Namsai, Piyong, Lekang and Lathao<sup>1</sup>. Parshuram Kund – the famous Hindu pilgrimage is located in this district under Wakro Circle.

### **Anjaw District**

The Anjaw<sup>2</sup> district is the youngest district of the State so far with its headquarter at Hawai was created on 16th February, 2004 under the Arunachal Pradesh Re-Organisation of District Amendment Bill (though it was deemed to have come into force on 4th December, 2003). The district has an area of 8600 sq km. The district is bounded by China in the north and east, Myanmar in the south and Lohit District in the west. The population of the district according to

<sup>1</sup> Created vide Notification No. DAD/AP-23/93 dtd 19th July, 2005.

<sup>2</sup> Created vide Govt. Notification No. DAD- 16/ 2002 dt 3rd December, 2003.

2001 census is 18441; of which 10164 are male and 8277 are female. The total number of Scheduled Tribes and Scheduled Castes people living in the district is 14249 and 19 respectively. The literacy rate of the district is 38.4 per cent, and the sex ratio is 814 male per 1000 female as per 2001 census.

The district is inhabited by the two sects of Mishmis namely Kaman (also called Miju Mishmi), Taraon (also called Digaru Mishmi) and Meyors.

Hayuliang is the only Sub-Division. There are altogether seven Administrative Circles in the district, namely Hayuliang, Manchal, Goiliang, Chaglagam, Kibithoo, Walong and Hawaii.

### **Changlang District**

The Changlang district with its headquarters at Changlang was created on 14th November, 1987 by carving out from Tirap district. Shri R.D. Pradhan, His Excellency, the Governor of Arunachal Pradesh inaugurated the 11th district of the State. The district is bounded by Lohit district in the north, Myanmar in the south and east, Assam and part of Tirap district in the west. The total geographical area of district is 4662 sq. km, and the population according to 2001 census is 125422 (Male: 65821, Female: 59601). The total number of Scheduled Castes and Scheduled Tribes people living in the district is 372 and 45351 souls respectively. The literacy rate as recorded is 51.98 percent. The sex ratio is accounted at 905 female per 1000 male and density of population being 27 persons per sq. km.

The Tangsas (with its sub-groups like Moklum, Yugli, Longchang etc), Singphos, and Lisus are the main inhabitants of the district.

The district is administered through four Sub- Divisions, namely Changlang, Jairampur, Miao and Bordumsa. These Sub-Divisions are further strengthened by thirteen Administrative Circles, namely Khimiyang, Changlang, Yatdam, Namtok, Manmao, Nampong, Rima-Putok, Jairampur, Vijoynagar, Miao, Kharsang, Diyun and Bordumsa.

### **Tirap District**

The Tirap district with its headquarters at Khonsa is spread over an area of 2362 sq km. It is bounded by Assam in the north, Nagaland in the west, Myanmar in the south and Changlang district in the east. In 1943, this region, which was created as Tirap Frontier Tract was re-designated as Tirap district

on 1st September, 1965. The population as per 2001 census is 100326 (Male: 52557, female 47789). The total number of Scheduled Castes and Scheduled Tribes people living in the district is 170 persons and 83940 persons respectively. The density of population of the district is 43 per sq km; which is highest in the State. The literacy rate and sex ratio are 41.7 percent and 910 per 1000 male respectively.

The Noctes and the Wanchos are the principal inhabitants of the district.

There are four Sub- Divisions, namely Khonsa, Deomali, Longding and Kanubari<sup>1</sup>. And again, there are ten Administrative Circles, namely Namsang, Khonsa, Kanubari, Longding, Pumao, Panchao, Wakka, Laju, Dadam<sup>2</sup> and Soha<sup>3</sup>.

## TOPOGRAPHY

Arunachal Pradesh is bounded in a semicircular manner by the eastern extension of the great Himalayas; on the north the Patkai and other associated hill ranges on the east and the hills of Bhutan on the west. A rugged terrain of extremely variegated nature with wooded and precipitous hills, huddled and jagged relieved casually by dales and deep glens making passage for crystal streams and rumbling rivers it is one of the most formidable but fascinating mountainous regions of the world.

‘The elevation of the region varies from the outer Siwalik type<sup>4</sup> hills attaining a height of 300 meters or so from the foothills belt across the north bank of the Brahmaputra covered by a tropical rain forest about 80 km broad to the Inner or Greater Himalaya ranging in height from 4,900 metres to 6,400 metres. It conforms to the picturesque description made by W. Robinson (1841) that Mountain beyond mountains hurled together in wild confusion, seems to be spectator like wrecks of a ruined world; and whilst the eye is gratified with the pleasing panorama a series of hills innumerable is presented to view, retiring far away in fine perspective, till their blue conical summits are relieved by the proud pinnacles of the Himalaya towering their lofty magazines of tempests and snow midway up to the vertex of the sky,...

<sup>1</sup> Upgraded from EAC Hqs to SDO Hqs. Vide Order No. DAD-53/2001 dtd 22th December, 2005.

<sup>2</sup> Created Administrative Circle vide Order No. DAD-53/2001 dtd Ita. The 23rd August, 2002.

<sup>3</sup> Created new Administrative Circle vide Order No. DA- 13/2002 Dtd Ita the 7th January, 2004.

<sup>4</sup> The Siwalik Hills are in the north-western part of India. As similar geological formation is seen in this part of north-eastern India, the name Siwalik has been used.

The height of the mountain running from the west to the east along the international border adjoining Tawang, Kameng, Subansiri, Siang, Dibang Valley and Lohit region varies greatly. The east of the mountain peaks ranges from 6,400 meters to 1,829 meters. In the Tirap and Changlang regions stretching along the border with Burma (Myanmar) in the east, the west of the Patkai Hills descends from 4,572 meters to a mean of 1,829 meters.

The elevation of the terrain and the contour of the hills and mountains vary remarkably over short distances as one traverses the territory. The main ridges and spurs fan out to the plains generally in the north-south direction except in the western-most district of West Kameng where the prominent ridges tend to run from west to east. Here, the three distinctive ranges of the Himalayan formation, the outer, the middle and the inner, are visible. Ascending from the foothills on the south, one comes across the Bomdila ridges rising to a height of 2,743 meters, which descends into a valley where the Dirang area lies between high ridges soaring to 4,267 meters. The tract rises further to the towering height of the Se La Pass at an altitude of 4,419 meters through the pass itself is situated little below at 4,267 meters. Beyond this lies the lofty Thagla ridge, at the foot which at about 3,048 meters stands the great Buddhist Monastery of Tawang.

The Kameng region is the east-north-eastward extension of the Bhutan Himalaya. The 10 to 20 km width of Sub-Himalaya tract is made up of east-west east-north-east: west-south-west Tertiary (Siwalik) ranges rising to altitudes from about 1,500 meters to 2,000 meters. There are longitudinal out ill defined 'Dun' type of valleys particularly to the east of Kameng (Bhareli) river. The lesser Himalayan ranges of Arunachal Pradesh to the north of the Sub-Himalayan belt lie broadly east-north-east: west-south-west adjacent to Bhutan, almost east-west in the middle part of the region, swinging to a east-northeasterly direction further eastward. The Kameng river cutting across this terrain receives the eastward flowing waters of the Bichom and Tenga rivers and the westward flowing Papu, Pacha and other rivers. To the north of this lower Himalayan terrain, the country is rugged and through numerous north-south ridges joins the east-north-east: west-south-west *Great Himalayan ranges* known for towering peaks, such as the Gorichon (6,538 m or 21,445 ft) and Kangte (7,090 m or 23,255 ft). The Kangte is the highest peak in Arunachal Pradesh. In the north-western corner of this region beyond the Se La pass (4,267 m or about 14,000 ft) is the Tawang valley, the drainage of which flows into Bhutan.

The general west-east alignment of the Himalaya is disturbed as the scenario changes towards the east, where the ridges tend to run from north to south. 'This is in the mountains around the Sino- Indian-Burma (Myanmar) plexus, from which radiate three or four great ranges like the spokes of a wheel'.

The physical features of the Subansiri region may be described under the following for natural divisions,

1. ***Foothill Region:*** Stripes of level area all along the foothills adjoining the northern border of Assam form the plains belt of the district. In this area the plains end and the hills begin as if to delineate a natural borderline, which almost coincides with the 'Inner Line' of the territory. Here elevation gradually rises as one proceeds to the north. This foothill region is covered with dense tropical evergreen forests, and receives heavy rainfall during the monsoon.
2. ***Rolling Grassland:*** The area above the foothills region is marked by rolling grasslands. This is featured by a number of hillocks, undulating hills and flat valleys on which grass and ferns grow in abundance. The grasslands stretch out over wide areas dissected by gullies and streams which are fringed by trees. Roughly the grasslands extend from Yazali to the hills that separate the settlement of Jorum and Jara from the woods of the Apa Tani valley. This belt has the appearance of an inverted triangle bounded on the south-east by the Pangen river and the south-west by the Panior river. Such patches of grassland are also found in other areas of the district. A section of the Kamla valley near Tamen, for instance, and the adjoining valley of the Pangen are also marked by grassland.
3. ***Plateau:*** On the northern side of the triangle grassland described above lie two plateaus, namely the Apa Tani plateau and the Tale plateau.
  - (a) ***The Apa Tani Plateau:*** The plateau is situated in the heart of the district at an altitude of about 1,524 meters fringes by high hills. The plateau is confined to approximately an area of about 32 sq. km lying between the valley of Kamla and Khru on the north and Panior on the south. The plateau is itself a single small valley, uneven and dotted with a number of hillocks of which Ziro and Sulaila are particularly important. On the east, high ridges

extend from the wooded hills of the lower region. The ridge is having some important peaks. The Salin peak is on the old Apa Tani trade route to North Lakhimpur. This route was frequently used by the Apa Tanis before the opening of the Ziro-Kimin road. Ekhadi is another peak, and the highest peak is Ghuggu. Often most of these ranges remain covered with thick clouds.

- (b) **The Tale Plateau:** Situated at an altitude of about 2,438 meters the plateau lies nearly 32 km north-east of Ziro behind a ridge which, as already stated extends for a length of about 16 km. Like the Apa Tani plateau, the Tale Plateau is also very uneven. It is covered with dense forests marked by giant silvery fir trees. Other trees are birch, maple, oak and horse-chestnut. The forest also contains thin pliable bamboo in abundance. Besides these, a variety of *rhododendrons*, medicinal plants like *gaultheria fragrantissima*, orchids and ferns are other resources of the forests of this plateau. There are small lakes and large swamps. There are also some beautiful streams rippling through the plateau. Table-land, other than the two plateaus, are rare. Although a few small flat lands lie scattered here and there, the district in its northern, eastern and western parts is a tract of high hills and forests.

4. **Northern and North-Eastern Hill Regions:** This region comprises the Kamla and Khru valleys. The Kamla valley is separated from the Subansiri valley by a range of high hills extending in an approximate west-east direction. The peaks are high, and the highest mountain of this region is called Keradadi.

A long range of lofty mountains rising from the confluence of the Kamla river and its tributary the Tapa stretches out towards north-west up to the Phura river which is another tributary of the Kamla. The range then turns towards north-east and joins the Chimpong mountains. There is another prominent chain of mountains on the right bank of the Kamla river. The Tadikiri is the highest peak of this range on the left bank of the Kamla and a peak called Yabi rises to the great height.

The upper basin of the Kamla river is demarcated from that of the Khru by the watershed running along the Fate, Tugrung and Hamching hills. In the Khru valley near Koloriang a towering hill with vertical face leaning to-



wards the direction of the Khru is called Gelo Dumcho. The Hamching range is on the left bank of the Khru.

The tangle of hills and mountains throwing a series of spurs and towering to majestic height of eternal snow is the most imposing topographic feature of Siang. The hill ranging generally from 305 to 3,050 meters high configure the region extensively. The tract to the right of the Siang river is less hilly than the are lying between the Siang and the Dibang, which has mountains ranging from 3,050 to 4,572 meters. There are lofty snow-clad mountains in the north. Strips of flat land lie interspersed in the riverine tracts, of which the most prominent is the level area of Pasighat. The hills are decked with wooded forests. The lower regions and foot hill areas adjacent to the plains of Assam have luxuriant growth of vegetation with tall trees and thick undergrowth scrubs.

“..... Moreover, the outer-hills of the Siang District, which enclose the drainage of the Siang or the Dibang river, are comparatively small and of unimpressive height, the bigger ridges and peaks being is greater in this and in the next three areas – the Dibang, the Lohit and the Tirap river basins – particularly in the last, where there is a comparatively large area of plains country which gradually merges into the hill ranges and ends on the Burma (Myanmar) border in comparatively low mountains. This flattening out of the near ranges is more pronounced as mountains take a turn around the head of the Noa Dehing which come from the junction point of India and Burma (Myanmar).

The last two hilly areas- Changlang and Khonsa- are of typical Patkai formation and akin to the adjoining Naga Hills. The shattered nature of the mountains and rivers of the Dibang and Lohit area is the result of the affects of the earthquake of 1950, which played havoc with the physiography of the terrain, heavy landslides, some of which are still ‘alive’, and deeply silted rivers mark this part of NEFA.<sup>1</sup>

The region comprising the Dibang Valley and Lohit district extends over the easternmost stretch of the Himalayas flanked by the Patkai<sup>2</sup> and other associated ranges on the east. The region contains many lofty ranges and towering peaks; some of which rise above 5000 meters. The mountains are precipitously steep, the altitudes varying from 610 meters to 5182 meters. The ranges along the northern border are perpetually snow-clad. On the southern

---

<sup>1</sup> Techno-Economic Survey of NEFA by the National Council of Applied Economic Research, New Delhi (1967).

fringe of this region, a strip of land rise gradually northward from the plains to the foot of the hills. The Man Bum (range) spurs out from the Patkai and descends to the plain belt on the south-eastern part of this region. Between the forested and craggy hills the dales open out at some places to form plateaus with bold undulations intersected by glens and ravines from the higher elevation of the mountainous tract, spring forth a number of rivers of which the Dibang Valley, in particular is a rugged area of steep hills and mountains spreading out to the northern border. The ranges along the border are snow-clad. The valley is most formidable for its difficult terrain marked by sharp contours of pointed hills and precipitous slopes.

The region comprising the Tirap and Changlang districts is on the whole a mountainous area except a stretch of plains of the Brahmaputra Valley on the north. The Patkai mountain system forms the eastern and southern heights which descend into the plains westward through a series of hill constituting the highland. The Dapha Bum is the highest point of the region; its summit remains snow-covered for most of the year. About 85 km to the east of Dapha Bum lies the Hpunggan Bum. The Patkai range has a number of passes across it, of which the Pangsau Pass is particularly important. There are a few grasslands in comparatively less humid areas.

## RIVER SYSTEM AND WATER RESOURCES

**River System:** Arunachal Pradesh lies in the catchments area of the great river Brahmaputra from this area descend innumerable streams and many rivers down to the plains of Assam mingling with the one another they form the major river of this area, namely the Kameng (known in the lower course as Bhareli), Subansiri, Siang, Dibang and Lohit. These rivers are the main tributaries of the Brahmaputra, and the name of most of the districts of Arunachal Pradesh are derived from them. The Brahmaputra in Assam is actually the confluence mainly of the rivers flowing from Arunachal.

Most of the rivers of East and West Kameng and Tawang districts take rise in the northern and eastern highlands of this region. According to the fall of hill slope, the rivers descend down from north to south, but those originating from the eastern heights of the East Kameng District take a east-west course and the others from the western elevation of the West Kameng District flow in a west-east course. Almost all these rivers merge with the Kameng River (called Bhareli in its lower course) which forms the main drainage. The

Kameng with its many tributaries finally loses itself in the great river the Brahmaputra. The rivers of this region are not all large, but most of them are torrential and turbulent. They are usually not navigable, because of their deep rocky gorges and innumerable rapids. During the rainy seasons, they rise in spate and sometimes overflow their banks, when the rushing water sweeps through the roads; the rapids wash away bridges and disrupt the lines of communications.

**Kameng (Bhareli):** The artery of the river system is the Kameng. The head-water of the river rising from the remote northern mountain ranges of the East Kameng District is fed by a number of effluents. Near Bameng it widens and flows due south up to Seppa. Then in a winding west-south-west-south course it descends into the plains of Assam, where it meets the Brahmaputra about 11 km east of Tezpur. The gorge through which the rivers make its way is of great natural beauty. The hills covered with forest rise steeply from the water's edge, and the noble river hurries on over its rocky bed, now dashing down a rapid and foaming and boiling round a sunken rock, and anon lingering in still deep pools where the *mahseer* love to lie".<sup>1</sup>

In its course through the East Kameng District, the Kameng river receives many tributaries, of which the Bichom is a major river. The other notable tributaries are Pake, Pachok, Pural, Pacha and Papu.

**Bichom:** The Bichom river called Humschu by the Akas, rises from the Himalayan watershed in the extreme north-east corner of the West Kameng District. Flowing tortuously due south and passing through the Miji and Akas hills it takes an eastward course. The Bichom is fed by its two major tributaries- the Tamapu chu and the Tenga rivers, before it joins the Kameng. This river is fordable for the greater part of the year.

The principal rivers of Lower and Upper Subansiri Districts are the Subansiri, Kamla and Khru.

**Subansiri:** The artery of the river system of this region is the Subansiri. The headwater of the river in Tibet is formed by Char Chu, Chayul Chu and Yume Chu rivers. It flows west-east across the Upper Subansiri District where for some length it goes by the name of Siniak, Near Taliha (Upper Subansiri District) it bends sharply and descends on to the south and merges with the

<sup>1</sup> B.C. Allen, Assam District Gazetteers, Vol.-V, Darrang (1905), streams and rivulets. The Subansiri has many rapids and falls for which it is not easily navigable.

Brahmaputra in Assam.

In its long course the Subansiri receives many tributaries of which the Kamla merits special mention as the main feeder. The Kamla meets the Lower Subansiri at a point some 25 km east of Raga, a little far from the border of Assam. In the upper course, the Subansiri is meeting by a number of snow-fed tributaries, namely Tsari Chu (also called Gelen) Meni, Kabu, Kobit Sebar, Sichi etc. Other important tributaries in the middle course are Sipi, Menga and Sigen. These tributaries in their turn are fed by innumerable.

**Kamla:** The River Kamla plays an important part in the Subansiri drainage system. It emerges from the confluence of a number of small rivers cascading down from the north-western snowy heights of the Lower Subansiri District. It flows from the north-west to the south-east intersecting the district. Before meeting the Subansiri of which it is the principal feeder, it receives its main tributary, the Khru. The Kamla is also fed by a numbers of other tributaries; the important are the Selu and Hema on the north bank, the Pein and Persin on the south bank from the point of its meeting the Khru, the Kamla flows almost in a west-east course.

The Kamla valley like that of Subansiri is a difficult terrain, particularly beyond Huri. The river rumbles through steep cliffs and ravines of high mountains. The middle and lower Kamla valleys are fairly populated, while the population in the upper reaches is sparse.

**Khru:** The Khru river takes rise from the lofty mountain in the north-west of the Lower Subansiri District, where its head water is formed by a number of rivulets. It meets its tributaries the Pannyu and Palin before it joins the Kamla River near the village of Balu. The Khru is a turbulent river and like the Kamla it too cuts through precipitous gorges.

Like other region of Arunachal Pradesh, the West and East Siang Districts and Upper Siang District are watered by countless rivers. The major rivers are the Siang and Siyem. Yamne and Yang Sang Chu are also important rivers. The Siang being the river artery constitutes the main drainage system.

**Siang:** The Siang (or Dihang) known in its upper course in Tibet as Tsangpo, as already mentioned, is the principal river, which has given the districts of East and West Siang and Upper Siang their names. After the river breaks through the mountain ranges along the international border and makes

its way into the Indian territory east of Gelling, it flows south-west and south-south-east until it takes a southerly turn. At Pangin the river bends towards the south-east and runs up to Pasighat where it again sharply turns due south. Finally, the Siang descends down into the plains of Assam and becomes the Brahmaputra after it is joined by the Lohit and Dibang. The course of the river in these districts covers a length of about 250 kms, and through this course it is fed by many tributaries, of which the Siyom, Yamne and Yang Sang Chu with numerous feeders of their own are large rivers, the downstream of the river, a little south of Pasighat divides into two main channels and it is navigable throughout the year.

**Siyom:** The Siyom, next to the Siang, is the second largest river. It rises from the Pari Mountains in the Mechuka Sub-Division. The headwater of the river is formed mainly by two streams, the Si and Yom. The Siyom flows east through the country inhabited by the Membas, Ramos, Pailibos and Bokars, and then taking a turn due south it flows through the Bori area until it again turns towards the east near Aalo in the Galo country. The rivers finally merges with the Siang near Pangin. The Siyom is fed by many streams and rivulets in its course.

The Dibang is arterial river of Dibang Valley and Lower Dibang Valley and so is Lohit river for Lohit and Anjaw district.

**Dibang:** A number of small rivers namely Ahui, Eura, Adjon, Dri, Tangoa and Ithun from the headwater of the Dibang river. It flows from north to south and meets the Lohit river near Sadiya. All the tributaries of the Dibang are fed by perennial streams. The Dibang is called Talon by the Idus. It changes its course very often in the foothill regions and erodes its bank wherever it is in spate.

**Sessiri:** The Sessiri an important river, flows north to south in the south western part of the Dibang Valley District. Descending into the plains of Assam the river merges with the Dibang.

**Lohit:** The Lohit River rises from the mountain ranges across the northern border of the Anjaw District, where it is known as Zayul Chu. The Mishmis call it Tellu flowing southward it enters to district through a gorge approximately 8 km north of Kibithoo. The river has a course of about 190 km through precipitous hills and narrow valleys before its reaches near the plains at Parshuram Kund, a place of Hindu pilgrimage near Tezu - the Headquarters of

Lohit District. It receives in its course many tributaries of which Dichu, Chalum (Kallung) Dau (Dou), Delli (Delai), Tidding, Kamlang, Digaru, and Noa-Dihing are important. These rivers are perennial water-channel, and before they join the Lohit River they are also fed by many rivulets.

Most of the rivers of Tirap and Changlang Districts flows east to west according to the gradient of the terrain.

The Noa-Dihing river originating from the Patkai range, the Namphuk and other tributaries of the Burhi-Dihing in Assam and the Tirap which change their course frequently constitute the principal drainage system. These rivers become turbulent during the monsoon. The Noa-Dihing flows east-west through the entire north-eastern and northern stretch of the Tirap District and meeting the Lohit river near Namsai in the adjacent Lohit District. The Dapha is one of its main tributaries.

The Namphuk, the Namchik, the Namsang, the Namphai and Tirap are the tributaries of the Burhi-Dihing flowing south-west by Ledo, Margherita, Jaipur and Naharkatiya in Assam and merging with the Brahmaputra.

**Tirap:** The Tirap river rises from a high peak between Laju and Wakka in the south-western part of Tirap District. It flows from south-west to north-east through both the districts of Tirap and Changlang and then turns due west in the Assam plains to join the Burhi-Dihing near Ledo.

The Namphuk river takes rise from the Patkai hill and flows east to west to meet the Burhi-Dihing

### **Lakes and Springs**

Arunachal Pradesh is on the whole a rugged terrain of lofty mountains and lower hills, which conceals in its nooks and corners beautiful lakes and natural springs. Some of these lakes and springs are well-known but there may be many more such hydrographic features which are still to be known.

In the Thangabe region of the Tawang district there are some famous lakes. The basin of Thangabe lies at a very high altitude near Hathongla. The place is ringed on three sides by towering cliffs of black granite. Among the lakes of this basin, the Guisang Lake is believed to be sacred. Another placid natural lake is situated amidst High Mountain on the way to Tawang. There are also two natural lakes on the Se La Pass. Existence of some hot spring in

Tawang is reported. In the Lower Subansiri District there is a beautiful lake called Yachuk in the upper reaches of the Kamla River. The lake is fringed by silver-fir trees. The Gyekar Sinyi (popularly known as Ganga Lake) is situated near Itanagar, the State Capital of Arunachal Pradesh.

In the Dapha Bum region of the Lohit District bordering the Changlang District lies a large natural lake called Glao Hawel at an altitude of about 1,400 meters. A team of geologists visited the lake to ascertain whether its origin lay in the Pleistocene glaciations. They observed that a dyke of rock running across a basin of marble and gneiss dams up the water into a lake. It is situated on the upper reaches of one of the tributaries of the Kamlang river. On the high watershed of the Tellu valley on the east and west of the Walong area in Anjaw District, there lie many lakes large and small within an orbit of 1,200 sq. km. Most of these lakes are situated above 3,000 meters. Another noticeable hydrographic feature of the lower regions is the large beels or shallow lakes formed by the shifting rivers. The beels serve as natural fish ponds. There are two hot springs in the upper reach of Lohit river on the right bank of the river Dichu at a distance of 39 km from the confluence of Lohit and Dichu river about 64 km east of Kibithoo and the other on the right bank of Lohit river at a distance of 4 km north of Walong on the way to Kibithoo.

**Hot Springs:** A number of hot springs are located in the Subansiri region. The temperature of the spring waters varies from 37°C to 49°C and the discharge is 0.5 to 5 litres per second. 2 km west of Dirang in West Kameng district, a hot spring is found to discharge sulphurous water and its temperature ranges from 34.5°C to 37.5°C.

The Namsang-Borduria area of the Tirap District has a number of brine springs and wells which the Noctes used to manufacture salt for their local consumption and trade.

## GEOLOGY

The history of geological explorations in Arunachal Pradesh can be traced back to 1832 when Wilcox, an army officer went deep into the Mishmi hills and made a brief note of the rocks that he encountered. Subsequent geological observations in other parts of the territory were made in course of a few punitive expeditions and explorations carried out by Rowlatte (1874), Godwin Austin (1875), La Touche (1885), MacLaren (1904) and Coggin Brown (1912).

Occasional exploratory works continued till the forties of the nineteenth century which brought to light the existence of various groups of rocks ranging in age from Precambrian to Recent. Due to the several traverses in different parts of the territory by A.K. Dey and G.C. Chatterjee (1949), T. Banerjee (1952), M.S. Balasundaram (1956) and B. Laskar (1953) has generated a good amount of geological data in the region.

The systematic geological mapping of the territory is continued by the Assam circle of Geological Survey of India with its office at Shillong from 1961 and later as Arunachal Pradesh Circle office at Tezpur in 1969. A number of exploratory traverses were taken, which also include two major expeditions, namely the Dapha Bum Expedition (1969 – 70) and the Subansiri Expeditions (1974 – 75). To accelerate the geological exploratory works, the Arunachal Pradesh Circle was shifted to Itanagar in 1978 and divided into two divisions. In the course of time, the occurrences of base metal sulphides, iron-ore, limestone, marble, graphite, peat, coal etc. are reported in different parts of the territory.

Geologically, the Arunachal Pradesh can be divided into three major litho-tectonic belts (i) Himalayan Belt, (ii) Mishmi belt of Mishmi hills and (iii) Assam Tertiary belt of Naga-Patkoi ranges each separated from the other by major tectonic planes or lineaments. The overall litho-stratigraphic succession of the Arunachal Pradesh presented in Table-I.



**Table – I**  
**(Stratigraphic Succession of rocks in Arunachal Pradesh)**

Group	Formation	Member	Lithology	Age
<b>SIWALIK GROUP ASSAM TERTIARIES</b>	River Terraces Hapoli		Sand, boulders, cobbles, pebbles, Sand, Clay beds with carbonaceous matter	Middle Pleistocene
	Upper Siwalik (kimin/Dihing 'Namsang)		Boulder conglomerate/pebbly beds, soft friable sandstone and clay stone	Plio- Pleistocene
	Lower Siwalik (Dafla)		Micaceous sandstone with clay bands.	Miocene
	Barali		Sandstone with shale intercalations	Oligocene
	Lohit Granitoid Complex		Granodiorites, leuco- granitic granite, metanorite	Tertiary
	Tourmaline Granite		Tourmaline bearing biotite granite	
	Tuting volcanics		Basic volcanic	Palaeocene to Eocene
<b>ABOR GROUP</b>	Yinkiong	Dalbuing	Limestone. Alternating limestone and shale. Grey and purple shale	
	Abor volcanics	Intertapean beds	Sedimentary beds	
	Mayudia complex		Serpentine and basic rocks	Cretaceous
	Tidding/Hinli/Yang Sang chu		Quartz-chlorite schist/staurolite- sillimanite schist with carb. Phyllite & limestone bands.	
	Ithun		Hornblende schist and quartzite	
<b>GONDWANA GROUP</b>	Rengging		Felspathic sandstone & carbonaceous hale	Permo- carboniferous
	Bhareli		Arkosic, silicified sandstone & carbonaceous hale	
	Bichom		Phyllite and calcareous conglomerate	

Miri group			Orthoquartzite & phyllite/slate conglomerate, and thin bands of limestone & dolomite	Lower Palaeozoic
Bomdila/Siang Group	Lumla/Rumgong/Marigong		Schistose quartzite, biotitic garnet schist, calc silicate	Proterozoic
	Dirang/Potin-khetabari		Garnet mica schist, quartzite, dolomite/marble	
	Bomdila/Ziro/Daporijo /Roing/Parimountain Gnesis		Biotite gnesis	
SE LA GROUP	Central crystal lines		Kyanite-sillimanite $\pm$ staurolite gnesis, schist, calc silicate	

### Himalayan Belt

It is the easternmost part of the Great Himalayan chain extends from Darjeeling-Sikkim-Bhutan through western Arunachal Pradesh in the west to Siang Valley in the east. The ENEWSW trending Himalayan belt swerves to N-S and NW-SE in the Siang Valley and truncates/abuts with the NW-SE trending Mishmi complex – Tidding suture in the Lohit-Dibang Valley. The swerving of these trends is attributed as the 'Eastern syntaxial bend'. Physiographically, the Himalayan belt from south to north in the increasing order of altitudes is further differentiated into Sub-Himalaya, Lesser Himalaya and Higher Himalaya.

The Himalayan belt of Arunachal Pradesh exposed in five different tectonic belts. Each belt is separated from one another by the regional thrust planes. From south to north, these are (i) Siwalik belt, (ii) Gondwana belt, (iii) Dedza-Menga belt, (iv) Bomdila belt and (v) Se La Belt.

The Siwalik belt is the southernmost litho-tectonic belt and is delineated against the Brahmaputra Alluvium in the south and the Gondwana belt in the north by a system of frontal faults and the Main Boundary Thrust (MBT) respectively. The Siwalik belt comprises predominantly the rocks belonging to Siwalik Group, which on the basis of lithological characteristics are differentiated into lower Dafla, middle Subansiri and Upper Kimin Formations. The Dafla Formation comprises hard sandstone, claystone and siltstone with plant fossils. The Subansiri Formation has almost same lithologies, but characterized by cal-

carious concretions and pseudo conglomerates. The boulder beds dominate in the Kimin Formation and a record of vertebrate fossil - BOS Sp in it.

The Hapoli Formation is the youngest rock sequence in Arunachal Pradesh and is represented by sand rock, clay, boulders and cobbles and lignite. It is of localized extent around Hapoli in Ziro valley.

The Gondwana belt is a very thin, linear and discontinuous parallel belt north of the Siwalik belt along the MBT. It extends from Kameng in the west to Siang in the east, but does not appear further east due to tectonic elimination by structurally higher tectonic belts. These rocks are well exposed in the Bhalukpong-Sessa, Khuppi-Bana sections in the Kameng, Kimin-Yazali section in the Subansiri, Garu-Igo-Daring sections and around Rengging in the Siang district, and near Lichi in Ranga valley. The Gondwana belt is made up of the Gondwana Group of rocks, and which are differentiated into Continental Bhareli Formation and Marine Bichom Formation. The Bhareli Formation is made up of sandstone, shale, impersistent coal lenses and is characterized by abundance of plant fossils of Permian age. The Bichom Formation comprise sandstone, carbo Shale, nodular shales, diamictite, etc. and has yielded marine invertebrate fossils of lower Permian age.

Dedza-Menga belt tectonically succeeds the Gondwana belt and extends almost parallel to other litho-tectonic belts. It occur as a persistent belt in the south and as a tectonic window further north. NE - SW trending Dedza-Menga belt is exposed from Menga in the east to Dedza-Rupa in the west with its maximum width in the Subansiri valley. It is composed of mainly quartzite-limestone-dolomite-phyllite sequence to which various nomenclatures have been assigned, such as Tenga Group, Buxa-Miri Group, Miri Group, Yazali zone etc. In Siang Valley, these rocks are closely associated with the Abor Volcanics and are exposed in a tectonic window known as 'Siang window'. The Abor Group of volcanics are considered to be intrusive into the Miri Group of rocks and these have been dated to be  $93 \pm 3$  to  $98 \pm 3$  Ma in age (i.e. late Cretaceous). A number of intertrappean beds (sandstone, siltstone and shale) are associated with the Abor Volcanics. The Yingkiong Formation is the upper most stratigraphic unit of the Abor Group in Siang Valley and is made up of sandstone, siltstone and phyllite with volcanoclastic sediments. It contains well preserved plant fossils of Lower Eocene age. A nummulitic limestone is exposed around Dalbuing in Yamne Valley and yielded marine faunal contents of lower to middle Eocene age.

The Bomdila belt is exposed over a vast expanse of the Arunachal Himalaya. It over rides the Dedza-Menga belt along a thrust plane. The Bomdila belts is made up of low to medium grade metamorphic rocks (Meta sedimentaries) and are designated as Bomdila Group in the west and as Siang Group in the east respectively. The Bomdila Group includes Khetabari-Potin Formation, Dirang and Lumla Formations. In Siang-Subansiri areas, the Siang Group of rocks are differentiated as Rungong, Marigong, Taliha, Nacho Formations, etc. The schistose quartzite, schist, phyllite and occasional carbonate bands account the bulk litho logical composition of Bomdila/Siang Group.

The Se La belt is exposed as the northernmost litho-tectonic belt in the western Arunachal Himalaya. It tectonically succeeds the Bomdila belt along the Main Central Thrust (MCT). The Se La belt is represented by high grade metamorphics such as Kyanite-sillimanite gneiss, sillimanitekyanite schist, graphite schist, calc-silicate rocks, etc. and is characterized by extensive feldspathisation and intruded by late tourmaline granites. The high grade gneisses and schists are well exposed near the Se La pass around Singing-Taksing, in northern part of Siang, around Singing-Angguing and in Galensiniak-Taliha area of Subansiri valley. In many places, the low to medium grade metasediments (Bomdila Group/Siang Group) are thrust over by the gneisses (Bomdila/Ziro Gneiss, Daporijo Gneiss, Parimountain Gneiss) where the gneisses and schistose rock, partly show high grade mineral assemblages and intruded by the tourmaline bearing granites. The exact extension of Se La belt and the disposition of different gneisses in Arunachal Himalaya is yet to be established.

#### **Mishimi belt of Mishimi Hills**

The Mishimi belt is exposed in parts of Dibang Valley, Lohit and East Siang districts of eastern Arunachal Pradesh. It abuts against the main Himalayan belt along the Tiding lineament/suture and considered to be a part of the Burmese (Myamarese) Plate. The Mishimi belt comprise Roing Gneiss (Meso-Proterozoic), Ithun Formation, Tidding / Hunli / Yang Sang Chu Formation and Mayudia Mafic-Ultramafic complex (cretaceous) and Lohit granitoid complex (Tertiary).

The Ithun Formation is an assemblage of basic schist and quartzite. The Tidding Fromation comprises mainly chlorite schist, actinolite schist and crystalline limestone. The serpentinite and the basic rocks in Dibang-Lohit valley are differentiated Mayudia mafic-ultramafic complex. The Lohit grani-

toid complex which tectonically succeeds the Tidding Formation along the Lohit Thrust, comprises high grade metasediments with granitoid rocks of batholithic dimensions.

### **Assam Tertiary Belt**

In the Tirap and Changlang districts, the tertiary rocks which make the northern extension of the Naga-Patakai hill ranges are well exposed. The lowest unit is the Disang Group comprising mainly shales and sandstone. The Barail Group overlies the Disang Group and is represented by sandstone shale, and clay with workable coal-seams. The Tipam Group of rocks succeeds the Barail Group and is made up of sandstone and clay. At places, the Tipam Group is overlain by Dupi Tila Group. The Dupi Tila Group comprises sandstone, clay and semi-carbonised plant remains. The Dihing Group overlies the Dupi Tila Group and is represented by boulder beds, loose sand and clays.

### **MINERAL WEALTH**

Arunachal Pradesh, in fact remained more or less a terra incognita so far as its mineral wealth and its development is concerned. This is chiefly because of the challenges imposed by *highly rugged nature of the terrain* combined with large cover of thick forests and limited land routes. However, intensified efforts by the Geological survey of India since the establishment of Arunachal Pradesh circle in 1969, a number of occurrences of clays, coal, peat, iron ore, polymetallic sulphide ores, graphite, limestone, dolomite etc. have come to light.

**Clay:** Pozzolanic clay has been recorded at many places in Arunachal Pradesh. It is associated with the middle and upper siwalik Group of rocks. The clay is grey to white and moderate to good in plasticity. The pozzolanic clay has been found in the Bhalukpong- Tippi area of West Kameng, Seijosa area of East Kameng and Doimukh area of Papum Pare. Analytical results show  $\text{SiO}_2$  - 54.10 to 77.75%,  $\text{Fe}_2\text{O}_3$  - 2.50 to 6.45%,  $\text{Al}_2\text{O}_3$  - 11.50 to 30.50%,  $\text{CaO}$  - 0.11 to 3.25%,  $\text{MgO}$  0.53 to 2.94% and  $\text{Na}_2\text{O} + \text{K}_2\text{O}$  - 0.66 to 1.34%. The estimated reserves are 0.063m tones in Doimukh, 0.18 m tones in Seijosa and 0.062 m tones in Bhalukpong - Tippi area down to 2 m depth.

Clays are found associated with Girujan Formation in Kharsang and Jairampur area in Changlang district. The clays of Kharsang area are acceptable for ceramic industry. In Raga village of Lohit district, quaternary clay is

noticed. This clay has good plasticity and can be used as raw material for the manufacture of cement. The reserve estimated in 11 m tones.

**Coal:** Coal is known to occur in the Assam Tertiary rock sequence in Changlang district. It is found in the Namchik-Nampuk and Miaso zum areas. Existence of five workable coal seams has been proved in the Namchik-Namchuk field. The thickness of coal seams ranges from 1 to 19 metres. The coal is highly volatile, sulphurous and sub-bituminous type. Reserve is estimated at 90 million tones, of which 17 million tones have been proved by drilling.

In the Miao coal field, two major coal seams are established. The cumulative thickness is about 10 m and the reserves are 6 million tones within a depth of about 200 metres down dip.

#### **Polymetallic Sulphide occurrences**

Sulphides of copper and iron are associated with cobalt, Nickel and Zinc and occur as pockets at number of places at Potin village in the Ranga River in Lower Subansiri district. The samples of these are tested and found to contain copper 0.5% to 1.0% and cobalt as high as 2.2% within the pyrite. Detailed exploration could not prove any economic suitability.

Lead, zinc and copper mineralisation is recorded from Pakro in East Kameng, Shergaon areas of West Kameng and in Menga in Upper Subansiri district. The economic potentiality of these occurrences is also not promising.

Minor occurrences of sulphides are seen near Yazali- Tago, Ziro- Tamen, Saddle and Lamdak in the Lower Subansiri district. Bara-Rupak, Liromoba and Kambang etc. in the West Siang district and Tellu Valley and Dibang Valley in Lohit, Anjaw, Dibang Valley and Lower Dibang Valley districts.

#### **Limestone and Dolomite**

Rich potential resources of limestone and dolomite are recorded in Arunachal Pradesh. The flux grade dolomite of Dedza is traced over a length of more than 1.5 km. With an average thickness of 300 metres. The tentative reserves have been estimated around 58 million tones. The flux grade dolomite at Rupa is about 400 metre thick on an average. A preliminary estimate puts the reserves at 320 million tones taking in consideration of all the dolomite bands that occur in the area.

Menga area in Upper Subansiri is also known for good reserves of chemical and cements grade limestone. Estimated reserves are in the order of 2.22 million tones down to the depth of 30 metres. Limestone at Tidding in Anjaw district extends over a length of 2.26 km with a width of 170 m and preliminary estimate of reserves have been worked out at 140 million tones. The limestone is of chemical and cement grade. It has fed the Mini Cement Plant at Tezu when it was functional. Cement grade limestone is also been recorded from Hunli where indicated reserves are of the order of 13.55 m tones up to a depth level of 30 m and 22.57 m tones upto a depth of 50 m.

**Graphite:** Small lenses of flaky graphite of low-grade (16.30% fixed carbon) occur near lamdak on the Ziro-Daporijo road in the Lower Subansiri district with an indicated reserve of about 25,000 tonnes. The preliminary beneficiation tests undertaken in the Regional Resource Laboratory, Jorhat have shown its upgrading upto 85% indicating its suitability in the manufacturing of common lead pencil. An amorphous variety of graphite occurs near Tai Village in Siang district. A preliminary estimate indicates that the reserve of low graphite rock (16.76% fixed carbon) within a depth of 130 m down dip may even go upto 10.35 million tones. Around Lalpani in the Anjaw district graphite occurs in schists in which fine to medium grained flakes of graphite are present in association with mica. The graphite bands are 1 m thick. Total estimated reserve down to a depth of 100 m is about 71 million tones. The average carbon content is 5.86%. Minor graphite occurrences are also known from Taliha and Khetabari areas of Upper Subansiri districts.

**Iron-Ore:** The iron ore is known from Laggi Gamlin area of Siang region. A magnetite-hematite band extends for a strike length of over 4.0 km. thickness varies from 10 to 60 metres. The ore zone measures 2 x 0.2 km and 1.5 x 0.01 km in Bana and Pichang areas of Kameng region respectively. Chemical analysis shows 51 to 61%  $\text{Fe}_2\text{O}_3$  content.

**Oil and Natural Gas:** The oil and natural gas are in operation in the state at two places Viz., Ningru (Kumchai) oil fields and Kharsang oil fields which is located in Changlang District. The Oil fields are operated by the different agencies namely Kumchai Oil fields is by MIS Oil India Limited in the areas of 540,686 Sq Km and the Kharsang Oil fields is jointly operated by a consortium of four companies Viz' Oil India Limited – 40%, Geopetrol International Inc – 25%, Enpro India Limited – 25% and Geo Enpro Petroleum Limited – 10% in 11 sq km area.

---

A petroleum Exploration License has also been granted for 295 sq km area to a consortium of three companies viz MIS NTPC limited, Geopetrol International Inc. and Canoro Resources Limited to Assam Gas Company Limited (AGCL) for construction of pipeline for transportation of natural gas from Kumchai Oil field to Dirak River within Arunachal Pradesh with a total length of 39 kms.

## **EARTHQUAKES**

India has had a number of the world's greatest earthquakes in the last century. In fact, more than 50% area in the country is considered prone to disastrous earthquake ground shaking. The northeastern region on the country as well as the entire Himalayan belt is susceptible to severe earthquakes of magnitude more than 8.0 on Richter scale. The main cause of earthquake in this region is due to the movement of the Indian plate towards the Eurasian plate at the rate of about 50 mm per year. Besides these, there are other regions, such as the area around Koyana, which are considered highly seismic.

India has also witnessed many great earthquakes of magnitude larger than 8.0. During the period 1897 to 1950, four such earthquakes hit the country: Assam earthquake of 1897 (magnitude 8.7); Kangra earthquake of 1905 (magnitude 8.0); Bihar-Nepal earthquake of 1934 (magnitude 8.4), and the 1950 Assam-Tibet earthquake (magnitude 8.5). Three moderate-sized, but enormously disastrous earthquakes hit India during the period 1988-1993: Bihar earthquake of August 21, 1988, (magnitude of 6.6 on the Richter scale about 282 deaths in India and 722 in Nepal); Uttarkashi earthquake of October 20, 1991 (magnitude 6.6; about 768 deaths); and the Killari (Latur) earthquake of September 30, 1993 (magnitude 6.3; about 10,000 deaths).

The Assam earthquakes of 1897 and 1950 may be briefly discussed as these earthquakes have caused a direct impact on Arunachal Pradesh.

### **The Assam earthquake of 1897**

The Assam earthquake of June 12, 1897 (magnitude 8.7) is considered as one of the greatest earthquakes that have taken place anywhere in the world. Two fault scraps were found after the earthquake. The earthquake caused extensive surface distortions in the area. The quake was perceived in an area of about 900 mile mean radius. An area of about 300 mile mean radius sustained severe damages.



Beside the surface distortions, another very notable feature of the earthquake was up throw of objects caused by the shaking. "This showed that the maximum acceleration during the earthquake exceeded that due to gravity (i.e. peak ground acceleration greater than 1.0 g). It was noticed that boulders, which underwent up throw, were in the range of 1 to 3 feet in diameter.

#### **The Assam-Tibet earthquake of 1950**

The epicenter located near Rima in Tibet, the Assam- Tibet earthquake of 1950 jolted with a magnitude of 8.5 on a Richter scale. This earthquake caused even more damage in terms of life and property than the earthquake of 1897. It also cause widespread topographical changes in the area. Sadiya — one of the flourishing administrative as well as commercial centre of India's eastern frontier then - disappeared during this earthquake. The original Parshuram Kund (pond) in Lohit District which is said to have existed little above the present site was also washed away due to massive slide caused by 1950 earthquake.

#### **LIST OF SOME SIGNIFICANT EARTH QUAKES IN INDIA AND ITS NEIGHBOURHOOD**

Date	Epicentre		Location	Magnitude
	Lat (Deg. N)	Lat (Deg. E)		
1819 JUN 16	23.6	68.6	KUTCH, GUJARAT	8.0
1869 JAN 10	25	93	NEAR CACHAR, ASSAM	7.5
1885 MAY 30	34.1	74.6	SOPOR, J&K	7.0
1897 JUN 12	26	91	SHILLONG PLATEAU	8.7
1905 APR 04	32.3	76.3	KANGRA, H.P	8.0
1918 JUL 08	24.5	91.0	SRIMANGAL, ASSAM	7.6
1930 JUL 02	25.8	90.2	DHUBRI, ASSAM	7.1
1934 JAN 15	26.6	86.8	BIHAR-NEPAL BORDER	8.3
1941 JUN 26	12.4	92.5	ANDAMAN ISLANDS	8.1
1943 OCT 23	26.8	94.0	ASSAM	7.2
1950 AUG 15	28.5	96.7	ARUNACHAL PRADESH- CHINA BORDER	8.5
1956 JUL 21	23.3	70.0	ANJAR, GUJARAT	7.0
1967 DEC 10	17.37	73.75	KOYNA, MAHARASHTRA	6.5
1975 JAN 19	32.38	78.49	KINNAUR, HP	6.2
1988 AUG 06	25.13	95.15	MANIPUR-MYANMAR BORDER	6.6
1988 AUG 21	26.72	86.63	BIHAR-NEPAL BORDER	6.4
1991 OCT 20	30.75	78.86	UTTARKASHI, UP HILLS	6.6
1993 SEP 30	18.07	76.62	LATUR-OSMANABAD, MAHARASHTRA	6.3

1997 MAY 22	23.08	80.06	JABALPUR,MP	6.0
1999 MAR 29	30.41	79.42	CHAMOLI DIST, UP	6.8
2001 JAN 26	23.40	70.28	BHUJ , GUJARAT	7.7
2004 DEC 26	03.34	96.13	OFF WEST COAST OF SUMATRA	9.3
2005 OCT 08	34.49	73.15	PAKISTAN	7.6

## FLORA

Arunachal Pradesh is entirely mountainous except for narrow strip of plain land, situated adjoining to the state of Assam. The elevation of hills, ranges from 200 m (Siwalik formations) from the plains of Assam to 7750 m (the Himalayas), along the Tibet-China border. Physiographically it can be divided into three zones from south to north viz., (1) Sub-Himalayan, (2) the lesser Himalaya and (3) the greater Himalayas. The Sub-Himalayan zone consists of Neogene molassic sediments (Siwaliks) whereas the lesser Himalayas comprises of Upper proterozoic to Lower Palaeogene shelf sediments (Bomdila Group, Buxa-Miri Formations) and the Greater Himalayas has been characterized by para and ortho metamorphites and acid to intermediate igneous intrusions from precambrian to Tertiary age (Sela Group, Lumla Formation etc). The Greater Himalayas are also characteristic in having high peaks, reaching heights of 6000 m and above.

Nature has been extraordinarily kind and has endowed Arunachal Pradesh with diverse flora. It has the distinction to be referred to as the "Cradle of flowering plants". In addition to the high degree of precipitation and varying degrees of altitudinal variations from foothills to high Himalayan peaks, located at the junction of the Paleoarctic, Indo-Chinese and Indo-Malayan biogeographic region, the flora is exceedingly rich and varied abounding in some of the tallest trees, tree ferns, bamboos, a large number of spectacular orchids, Rhododendrons, many curious, rare, endemic, primitive plants and a store-house of a large number of economically important species. The wide-ranging ecological habitats support almost all types of vegetation and it is estimated that the flora of this region will have ca 5000 species of flowering plants.

Despite its fabulous plant wealth this region was not able to attract as many plant collectors, explorers as compared to other regions within Eastern Himalaya which may be attributed mainly to its tough and inaccessible terrain. The extensive as well as intensive plant collection and survey work in the state was initiated after the reorganization of Botanical Survey of India in 1956,

however, there are some important explorations conducted prior to 1956 of which mention may be made of the following.

H. Wilcox for the first time explored the Mishmi Hills (Dibang valley) in 1826. Griffith's "Flora of Mishmi Hills" was based on the collections made by him during October-December, 1836 which dealt with 900 species of flowering plants and 22 species of ferns and fern-allies. Thomas J. Booth undertook several horticultural explorations between 1840 – 1850, from Bisnath (Assam) into the hills of Daphlas situated at the south-eastern corner of Bhutan and described some Rhododendrons from this area. With the advent of 20th Century, the plant explorations in this region gained momentum which resulted in the publication of some important floristic accounts of this region viz., "On the Botany of Abor Expedition" I.H. Burkill (1924 – 1925); "Botanical Expedition in the Mishmi Hills" Kingdom Ward (1929 – 1931); "Lohit Valley" Kingdom Ward (1953) and "A sketch of the vegetation of Aka Hills" based on the collections of N.L. Bor (1931 – 1934) and it included 1549 species of flowering plants, 9 species of Gymnosperms and 58 species of Ferns and Fern-Allies. S.K. Deka from Assam, Forest Department, in 1951 and K. Srinivasan in early 1955 surveyed along the Rupa valley in Kameng district. In the late 1955, R.S. Rao undertook plant explorations along the Rupa and Dirang valley upto Sela in Kameng district and Apatani Valley and surrounding areas in Subansiri district.

With the inception of the Eastern Circle of Botanical Survey of India at Shillong, various parts of Arunachal namely Kameng, Subansiri, Siang, Lohit, Tirap, etc., were surveyed by the botanists of Botanical Survey of India, Shillong for its vegetational wealth, of which Contributions made by R.S. Panigrahi (1958-1959); R.S. Rao and Joseph (1958); Panigrahi and Naik (1959); D.B. Deb (1961); Sastry (1964, 1965, and 1966); Joseph (1964, 1969); A.S. Rao (1969, 1970) and D.B. Deb and R.M. Dutta and botanists from Botanical Survey of India, Itanagar are worth mentioning.

Apart from these, Sahni (1964, 1969) has also made valuable contributions to the Flora of Arunachal Pradesh. The plants of ethno botanical significance were recorded by various workers Anonymous (1976), Pal (1984), S.K. Jain (1981), Pal and Thothathri (1987), Haridasan *et al.* (1990) and Chowdhory (1996) from the area.

## VEGETATION

Based on the climatic conditions and altitude the vegetation of Arunachal

Pradesh can broadly be classified into five major types, and a sixth type being the Secondary forest, which are developed in the place where the primary forest have been lost or degraded due to adverse biotic and abiotic factors. The five main forest / vegetation types, viz. the Tropical forest, Subtropical forest, Pine forest, Temperate forest and Alpine forest, are briefly dealt below.

### 1. Tropical Forest

These type of forest occur upto 900 m elevation all along the foot hills of the state and are full economically important plant species. These are further divided into two subtypes.

#### (a) Tropical Evergreen Forest

Based on the species composition these forests can be further subdivided into- South Bank Tropical Wet Evergreen Dipterocarpus forest and North Bank Tropical Evergreen Nahor-Jutli forest as follows.

##### (i) South Bank Tropical Wet Evergreen Dipterocarpus Forest

Corresponding to Assam Valley, tropical evergreen forest (Champion and Seth, 1968), these forest occur in Tirap and parts of Lohit district on the southern bank of Brahmaputra between 150-600 m altitude. These forests are rich in species diversity and have a distinct three storied pattern.

The top canopy is occupied by large trees with an average girth of 2-5 m and height of 30-50 m. *Dipterocarpus retusus*, *Shorea assamica*, *Altingia excelsa*, *Tetrameles nudiflora*, *Terminalia myriocarpa*, *Ailanthus integrifolia* etc., are some of the typical elements of this storey.

Second storey is composed of tree species gregariously forming a close canopy are about 20-30 m tall. Some of the common species are *Talauma hodgsonni*, *Mesua ferrea*, *Terminalia citrine*, *Turpinia nepalensis*, *Dysoxylum alliarium*, *Elaeocarpus aristatus*, *E. sphaericus*, *E. rugosus*, *Vatica lanceaefolia*, *Sapium baccatum*, etc.

The third canopy is occupied by species which are upto 5 m tall. *Ardisia* spp., *Blastus cochinchinensis* such some species are *Maesa indica*, *Strobilanthes*, *Boehmeria* spp., *Gnetum gnemon*, *Livistona jenkinsiana*, tree ferns (*Cyrtosperma* spp.), *Impatiens* spp., *Musa* spp. And members of the family Araceae. Among the lianas and climbers- *Raphidophora* spp., *Mucuna*

*macrocarpa*, *Thunbergia* spp., *Piper* spp., *Raphidophora* spp., *Hodgsonia macrocarpa* are prominent. The epiphytic species are very common and consist of a large number of Orchids and species of ferns along with *Aeschynanthus* spp., *Hoya* spp., *Dischidia* spp., etc. The abundant growth of herbaceous flora is seen during monsoon season.

### (ii) North Bank Tropical Evergreen Nahor-Jutli Forest

These forest corresponds to the Upper Assam Valley Tropical Evergreen Forest (Champion and Seth, 1968). Such forest are rich in species diversity and occur upto an elevation of 900 m in East and West Kameng, Lower and Upper Subansiri, East and West Siang districts on the northern bank of Brahmaputra. Many trees of these forest are buttressed.

The top storey is occupied by the tree species which are usually 20-40 m tall and 2-3.5 m in girth. *Altingia excelsa*, *Quercus milroyii*, *Syzygium formosum*, *Mesua ferrea*, *Cinnamomum glaucescens*, *Canarium strictum*, *Engelhardia spicata*, *Sapium baccatum*, *Elaeocarpus* spp., *Castanopsis* spp., *Echinocarpus assamica*, etc., are the dominant species.

The species of the second storey are 15-25 m tall and the dominant species are *Mallotus nepalensis*, *Sterculia hamiltonii*, *Gynocardia odorata*, *Turpinia nepalensis*, *Polyalthia jenkinsii*, *Saurauia cerea*, *Antidesma acuminatum*, etc. Similarly the dominant taxa of third storey are upto 5 m tall and include species like *Maesa chisia*, *Ixora* spp., *Clerodendrum wallichii*, *C. viscosum*, *Calamus* spp., *Elatostemma* spp., *Polygonum* spp., *Impatiens* spp., *Boehmeria* spp., *Phrynium pubinerve*, *Globba clarkeii*, etc. *Entada* spp., *Chonemorpha fragrans*, *Gnetum scandens*, *Gouania tiliaefolia*, *Beaumontia grandiflora*, *Raphidophora* spp., *Pothos* spp., *Hodgsonii macrocarpa* are other important climbing species in these forest.

The forest with tall, dense tree species provide ideal conditions for the profuse growth of epiphytic flora. Some of the most common species belong to genera *Aerides*, *Coelogyne*, *Cymbidium*, *Dendrobium*, *Eria*, *Oberonia*, *Pholidota*, *Rhynchostylis*, *Phalaenopsis* etc. Similarly common ferns here are the species of *Asplenium*, *Drymoglossum*, *Colysis*, *Nephrolepis* etc.

Apart from the epiphytic species, trees in these forest are infested with lianas and climbers of various kinds. The most significant amongst them are the species of *Acacia*, *Derris*, *Clematis*, *Dischidia*, *Gymnostemma*,

*Mucuna*, *Mezoneurom*, *Piper*, *Raphidophora*, *Pothos*, *Thunbergia*, *Tetrastigma*, *Trichosanthes*, *Toddalia*, *Unona*, *Vitis*, etc. Species of *Calamus* and *Entada* are commonly seen stretching long distances from one tree to another.

The forest floor is covered by a rich growth of herbaceous flora specially during the rainy season. Some of the common herbaceous elements of these forest are *Begonia* spp., *Commelina* spp., *Chirita* spp., *Polygonum* spp., *Oxalis corniculata*, *Deeringia amaranthoides*, *Exacum tetragonum*, *Floscopa scandens*, *Lindenbergia indica*, *Lobelia pyramidalis*, *Murdannia nudiflora*, *Rhynchoglossum obliquum*, *Asystasia neesiana* etc. along with terrestrial orchid species of *Goodyera*, *Calanthe*, *Phaius*, *Malaxis*, *Habenaria* etc. The bamboo orchid *Arundina graminifolia* is common along the road sides on hill slopes. *Angiopteris evecta* an endangered giant fern is also seen with its fronds measuring upto 5 m in length. Other common fern and fern allies are *Pteris*, *Diplazium*, *Lycopodium*, *Selaginella*, *Equisetum* spp. Root parasites like *Balanophora dioica* and saprophytes such as species of *Epipogium*, *Galeola*, *Monotropa*, occur in moist, shady, humus rich soils.

The other conspicuous elements of these forest are the rhizomatous monocotyledons, which are represented by the species of *Tacca*, *Arisaema*, *Colocasia*, *Gonatanthus*, *Hedychium*, *Zingiber*, *Ammomum*, *Curcuma*, *Phrynium*, *Musa*, etc.

#### **(b) Tropical Semi-Evergreen Forest**

These forests occur all along the foot hills and river banks upto an altitude of 600m in all the districts of the state. The top canopy of these forests is generally consists of deciduous trees, whereas the lower stories are dominated by evergreens. Such forests are known for their commercially important timber species. Based on the floral constituents, this type is again sub-divided into two distinct subtypes, Low hills and Plains Semi-Evergreen forest and Riverine Semi Evergreen forest.

##### **(i) Low Hills and Plains Semi-Evergreen Forest**

This type corresponds to Assam alluvial plains semi-evergreen forest and Himalayan light alluvial semi-evergreen forest (Champion and Seth, 1968).

The top canopy is represented by 30-40 m tall trees viz., *Acrocarpus*

*fraxinifolius*, *Ailanthus integrifolia* subsp. *Calycina*, *Altingia excelsa*, *Artocarpus lacucha*, *Canarium strictum*, *Castanopsis* spp., *Chukrasia tabularis*, *Bombax ceiba*, *Bischofia javanica*, *Cinnamomum glaucescens*, *Dillenia indica*, *Duabanga grandiflora*, *Dysoxylum* spp., *Elaeocarpus aristatus*, *Firmiana colorata*, *Gmelina arborea*, *Phoebe goalparensis*, *Pterospermum* spp., *Sterculia villosa*, *Stereospermum chelonoides*, *Terminalia mycricarpa*, *Tetrameles nudiflora*, etc.

The trees of the second storey are 15-25 m tall and represented by dominant species like *Crateva nurvala*, *C. religiosa*, *Croton chlorocalyx*, *Ficus* spp., *Gynocardia odorata*, *Litsea panamoaja*, *Picrasma javanica*, *Meliosma simplicifolia*, *Talauma hodgsonii*, *Sarauia cerea*, *Syzygium* spp., *Turpisia nepalensis*, etc.

The next storey of small trees and shrubs up to 10 m tall comprises the prominent species of *Ardisia*, *Boehmeria*, *Capparis*, *Clerodendrum*, *Strobilanthes*, etc.

The ground floor is dominated by a large number of small shrubs and herbs like species of *Phlogacanthus*, *Ageratum*, *Impatiens* spp., *Costus speciosus*, *Arisaema* spp., *Amorphophalus* spp., *Colocasia* spp., *Phrynium* spp., etc.

*Entada scandens*, *Conocephalus cochinchinensis*, *Gouania tiliaefolia*, *Roydsia suaveolens*, *Thunbergia* spp., *Stixis suaveolens* etc, are some of the common liana and climbers. Epiphytes are not common however, certain species of *Dendrobium*, *Papilionanthe teres*, *Hoya* spp., and some polypodiaceous ferns are found to occur scarcely in such forest.

## (ii) Riverine Semi-Evergreen Forest

Corresponding to East Himalayan moist deciduous forest and Eastern hillock forest (Champion and Seth, 1968), these forests occur along river banks, riverin plains and swamps. The trees in these forest are generally deciduous, buttressed and lack a dense canopy.

The upper storey of these forest having 25-40 m tall trees comprises the common species such as *Albizia* spp., *Artocarpus* spp., *Bischofia javanica*, *Bombax ceiba*, *Canarium strictum*, *Dalbergia sissoo*, *Dillenia indica*, *Daubanga grandiflora*, *Lagerstroemia speciosa*, *Radermachera gigantea*, *Sterculia villosa*, *Terminalia bellirica*, *T. myriocarpa*, etc.

The second storey is generally not found in such forest but sometimes small trees which are 10-20 m tall may form a second storey. The dominant species in such cases are species of *Magnolia*, *Ficus*, *Litsea*, *Meliosma*, *Turpinia nepalensis*, *Talauma hodgsonii*, etc.

The forest floor covered with profuse growth of shrubs and herbs usually comprises the species of *Murraya*, *Randia*, *Costus*, *Hedychium*, *Calamus* and various grasses.

## 2. Subtropical Forest

These forests occur in all the districts between the altitude of 900-2000 m and also floristically are rich in species diversity.

The top canopy of such forest is occupied by 25-40 m tall trees, dominated by species like *Acer oblongum*, *Actinodaphne obovata*, *Alnus nepalensis*, *Beilschmiedia roxburghiana*, *Byttneria grandifolia*, *Callicarpa arborea*, *Castanopsis indica*, *Dichroa febrifuga*, *Engelhardia spicata*, *Ficus* spp., *Kydia calycina*, *Magnolia ptercarpa*, *Manglietia insignnis*, *Prunus nepaulensis*, *Quercus* spp., *Saurauia panduana*, *Schima wallichii* var. *Khasiana*, *Sterculia hamiltonii*, *Ulmus lancifolium*, etc.

The next storey is composed of 10-20 m tall trees and dominated by the members of the family Araliaceae and Saurauiaceae associated with the species of *Hydrangea*, *Turpinia*, *Capparis multiflora*, *Lepisanthes senegalensis*, *Photinia integrifolia*, etc.

The third storey consists of small trees and shrubs that are upto 10 m tall. Some such species are *Eurya acuminata*, *Myrsine semiserrata*, *Ardisia* spp., *Camellia caudata*, *Symplocos* sp., *Luculia* sp., *Oxydendron* spp., etc.

The ground flora formed by the dense growth of small shrubs and herbs is represented by the species like *Cassia mimosoides*, *Dianella ensifolia*, *Drymaria diandra*, *Eurya acuminata*, *Lasianthus longicauda*, *Mahonia acanthifolia*, *Plectranthus griffithii*, *Rosa indica*, *Solanum erianthum*, *Sophora acuminata*, *Tephrosia candida*, *Vernonia saligna*, *Viburnum foetidum*, *Begonia* spp., *Impatiens* spp., *Oxalis* spp., *Campanula* spp., *Lobelia* spp., *Viola* spp., etc. Species of *Clematis*, *Naravelia*, *Jasminum*, *Codonopsis*, *Crawfordia* and *Holboellia latifolia*, *Tinospora sinensis* are some of the common climbers of these forest. Among the straggling shrubs



met are *Actinidia callosa*, *Argyreia wallichii*, *Clerodendrum* spp., *Combretum pilosum*, *Maesa* spp., *Phlogacanthus* spp., *Rubia cordifolia*, *Rubus moluccanus*, *Zanthoxylum oxyphyllum* etc.

The prominent herbs are *Anaphalis adnata*, *A. busua*, *A. contorta*, *Anemone vitivoia*, *Campanula khasiana*, *Cardamine hirsute*, *Cynoglossum glochidiatum*, *Exacum tetragonum*, *Inula cappa*, *Justicia khasiana*, *Osbeckia stellata*, *Plantago major*, *Polygonum* spp., *Potentilla* spp., *Viola* spp., and species of terrestrial orchids like *Goodyera*, *Habenaria*, *Malaxis*, *phaius*, *Diplomeris*, *Calanthe*, etc. and many species of ferns and grasses.

These forests also abound in good diversity of epiphytic flora, comprising a variety of ferns such as the species of *Asplenium*, *Drynaria*, *Lepisorus*, etc., and a large number of orchids species like of *Cymbidium*, *Bulbophyllum*, *Dendrobium*, *Coelogyne*, *Cleisostoma*, *Otochilus*, *Ritia*, *Oberonia*, etc.

### 3. Pine Forest

These forest occur between 1000-1800 m elevation and extend both in the subtropical and temperate belts mostly in the rain shadow areas. The three different species of *Pinus* found in these forest are *Pinus roxburghii*, *P. wallichiana*, *P. merkusii* which form either pure stands or in association with *Quercus* spp., *Prunus* sp., *Alnus nepalensis*, *Betula alnoides*, *Tsuga dumosa*, etc. However, these forest are poor in species diversity.

The species of the top storey are *Pinus roxburghii*, *P. wallichiana*, *Pinus mercussi*, *Tsuga dumosa*, *Betula alnoides*, etc.

The next storey species are 10-15 m tall and represented by *Lyonia ovalifolia*, *Alnus nepalensis*, *Rhus javanica*, *Quercus* spp., etc.

Amongst the available shrubs and herbs the species of *Rubus*, *Ajuga*, *Desmodium*, *Goriaria*, *Luculia*, *Elsholtzia*, *Indigofera*, *Pogostemon*, *Prunella*, *Potentilla*, *Plectranthus*, etc., are more prominent. The climbers are not common but species of *Clematis*, *Smilax*, *Vitis* are occasionally seen. The epiphytic species are extremely rare except for few species of orchids and ferns.

### 4. Temperate Forest

These forests occur in all the districts in the form of a continuous belt between 1800-3500 m altitude. Based on the constituent species these forest divided into two types.

### (a) Temperate Broad Leaved Forest

These forests corresponds to East Himalayan wet Temperate forest with its subtypes e.g. Lauraceae forest; Bak oak forest; High level oak forest and Naga hill wet temperate forest as classified by Champion and Seth (1968). Such forest occurs between 1800-2800m in colder regions.

The top canopy is represented by 20-30 m tall tree species like *Quercus lamellosa*, *Acer hookeri*, *A. oblongum*, *A. pectinatum*, *Betula alnoides*, *Exbucklandia populanea*, *Castanopsis* spp., *Quercus glauca*, *Magnolia campbellii*, *Michelia* spp., *Rhododendron arboreum*, *Populus ciliata*, *Euonymus* sp. Etc.

The middle storey is dominated by 3-15 m tall tree and shrubby species like *Illicium griffithii*, *Acer* spp., species of *Pyrus*, *Prunus*, *Spiraea*, *Acer*, *Symplocos* and *Rhododendron*, *Lyonia ovalifolia*, *Corylopsis himalayana*, *Myrsine semiserrata*, *Berberis wallichii*, *Mahonia* spp., *Ardisia* spp., *Caryopteris odorata*, *Debregeasia longifolia*, *Vaccinium sprenelii*, etc.

The ground flora is mainly consist of herbaceous species belonging to genera *Begonia*, *Carydalis*, *Sedum*, *Arisaema*, *Drymaria*, *Polygonum*, *Potentilla*, *Fragaria*, *Cardamine*, *Carpesium*, *Oenanthe*, *Pilea*, *Rorippa*, *Stellaria*, *Rhodiola* etc. Climber and twiners are extremely rare in these forest except for *Clematis* spp., and *Holbelia latifolia* which are occasionally seen in such forest.

### (b) Temperate Coniferous Forest

These forest generally occur between 2800-3500 m altitude. They are termed as East Himalayan mixed coniferous forest, *Abies delavayi* forest and East Himalayan subalpine birch/fir forest by Champion and Seth (1968). These forest are dominated by mixed coniferous species and show a succession of forest association like (i) *Tsuga dumosa* – *Pinus wallichiana* – *Rhododendron*, *Tsuga dumosa* – *Abies spectabilis*, *Tsuga dumosa* – *Taxus wallichiana* – *Abies spectabilis* or sometimes pure stands of *Cupressus torulosa* are encountered, (ii) *Abies spectabilis* – *Taxus wallichiana*, *Abies delavayi*, (iii) *Picea spinulosa* – *Larix griffithiana*, *Picea spinulosa* – *Abies delavayi*, *Abies spectabilis*, (iv) *Abies* – *Juniperus*.

The shrubby layer in such forest is represented by *Berberis asiatica*, *B. wallichiana*, *Mahonia* spp., *Euonymus* spp., *Eurya acuminata*, *Gaulth-*

*eria fragrantissima*, *Photinia integrifolia*, *Vaccinium venosum* and *Viburnum odorsatissimum* etc.

The herbaceous flora is mostly seasonal due to heavy snow fall during winter months. The most common species belong to genera *Corydalis*, *Cassiope*, *Primula*, *Pedicularis* etc.

The temperate coniferous forest are always found above the temperate broad leaved forest but it is surprising to observe a nearly reverse sequence of association at Tale Valley under Lower Subansiri where broad leaved elements occur at higher elevations and conifers at the valley bottom.

## 5. Alpine Forest

These occur between 4000-5500 m altitude and correspond to Alpine pasture, Dry alpine scrub, Dwarf Juniper scrub etc., of Champion and Seth (1968). However, between the temperate forest and alpine zone there exist sub-alpine zone (between 3500-4000 m). This sub-alpine zone is characterized by tree species like *Abies*, *Cupressus*, *Juniperus*, *Larix*, *Pinus*, *Rhododendron*, *Taxus*, *Tsuga* and shrubs like *Berberis*, *Eurya*, *Gaultheria*, *Photinia*, *Vaccinium* etc. beyond 4000 m for the major part of the year the alpine region remains covered under thick snow cover and the plant activity is restricted for a very short period when this snow cover melts. The vegetation in this region is scarce and is in the form of bushy, low lying or creeping shrubs/bushes, and a large number of herbs and grasses with bright coloured, attractive flowers giving this region a unique appearance. Among the bushes and shrubs *Rhododendron anthopogan*, *R. nivale*, etc., are prominent. The herbaceous diversity is represented by the species of *Saxifraga*, *Sedum*, *Primula*, *Polygonum*, *Arenaria*, *Gentiana*, *Rheum*, *Aconitum*, *Meconopsis*, *Saussurea*, *Aster*, *Rhodiola*, *Anemone*, *Anaphalis*, *Epilobium*, *Pedicularis*, *Cypripedium* and many others.

Beyond alpine zone plant life virtually ceases and barren snow capped peaks are seen.

## Interesting Plant Species

Certain plants on account of their special structure and other morphological characters evoke attention and interest among the biologists and students.

The rich and diverse flora of Arunachal Pradesh also harbours some

interesting and biologically curious plants. Amongst interesting and rare root parasites mention may be of *Sapri himalayana*, one of the largest root parasites first reported by Griffith from Mishmi Hills in Lohit District and subsequently by Bor (1938) from Aka Hills in Kameng District and *Ropalocnemis phalloides* in Namdapha in Changlang District. *Balanophora dioica* is commonly found associated with the roots or several tree species in dense humid forest whereas, *Aeginitia indica* is a common root parasite on grasses. Similarly *Boschniaekia himalaica*, a parasite on the roots of *Rhododendron* spp., is found in the alpine meadows.

Among the common saprophytes, *Monotropa uniflora* and species of orchids like, *Epipogium* and *Galeola* are found in dense humid forest on organic matter and humus rich soil. Unusual plants forms of high altitude regions which form cushions, snowballs, etc., like *Thylacospermum*, *Acantholemon* and *Saussurea gossypiflora*.

Certain plants viz., *Saussurea obvallata*, *Rheum nobile*, etc., have flowers which act as hot houses as the flowers are enclosed by large, transparent, leafy bracts. The flowers open inside the bracts, within these bracts insects take shelter for warmth during chilly winter nights and at the same time pollinating the flowers.

### Primitive Angiosperms

Arunachal Pradesh can be considered as a sanctuary of primitive angiosperms. A large number of primitive species that occur in Arunachal Pradesh are presented in Table below:

#### Primitive flowering plants

Name of the species	Family	Distribution
<i>Magnolia griffithii</i>	Magnoliaceae	Arunachal, N.E. India, Bangladesh, Myanmar
<i>M. gustavii</i>	Magnoliaceae	Arunachal, Assam
<i>M. hodgsonii</i>	Magnoliaceae	Arunachal, N.E. India, Sikkim, W.Bengal, Nepal, Bhutan, Bangladesh, Myanmar
<i>M. hookeri</i>	Magnoliaceae	Arunachal, N.E. India, Myanmar

<i>M. insignis</i>	Magnoliaceae	Arunachal, N.E. India.
<i>Tetracentron sinens</i>	Tetracentraceae	Arunachal, Sikkim, Nepal, N. Myanmar, S.W. China
<i>Euptelea pleiosperma</i>	Eupteleaceae	Arunachal, S.W. and C. China, Japan
<i>Decaisnea insignis</i>	Lardizabalaceae	Arunachal, Sikkim, Bhutan, China
<i>Holbellia latifolia</i>	Lardizabalaceae	Arunachal, Uttar Pradesh, Sikkim, N.E. India, Nepal, Bhutan, Myanmar
<i>Parvativa brunoniana</i>	Lardizabalaceae	Arunachal, N.E. India, Bangladesh
<i>P. elliptica</i>	Lardizabalaceae	Arunachal, Assam, Meghalaya
<i>Altiingia excelsa</i>	Hamamelidaceae	Arunachal, Assam, China Japan, Java
<i>Loropetalum chinensis</i>	Hamamelidaceae	Arunachal, Meghalaya, China
<i>Exbuchlandia populnea</i>	Hamamelidaceae	Arunachal, Assam Myanmar
<i>Corylopsis himalayana</i>	Hamamelidaceae	Arunachal, N.E. India
<i>Houttuynia cordata</i>	Saururaceae	Arunachal, Himalaya, N.E. India, Thailand
<i>Chloranthus offinalis</i>	Chloranthaceae	Arunachal, Meghalaya, Myanmar, W.S. China, Malaysia
<i>Haematocarpus validus</i>	Menispermaceae	Arunachal, Malaysia, New Guinea
<i>Aspidocaryauvifera</i>	Menispermaceae	Arunachal, S.E. Asia
<i>Pycnarrhena pleniflora</i>	Menispermaceae	Arunachal, N.W. Australia,
<i>Betula alnoides</i>	Betulaceae	Arunachal, Himalaya E. Asia
<i>Alnus nepalensis</i>	Betulaceae	Arunachal, Himalaya, China.

---

The presence of such a large number of primitive plants led Takhtajan (1969) to suggest this region as the “Cradle of flowering plants” where the evolutionary development of flowering plants might have taken place.

### ENDEMISM

The high mountain ranges of Arunachal Pradesh and the parallel deep valleys in between the mountains have created a number of ecological niches and isolated geographical islands. In addition, the presence of lofty mountain ranges and dry Tibetan plateau in the north, warm alluvial plains of Brahmaputra in the south act as natural barriers for plants to migrate.

The important microcenters of endemism in Arunachal are – Abor, Defla and Mishmis hills; Tirap Dibang; Namdapha; Tale Valley; Tawang Sela range; Dirang etc. Some of the endemic species occurring in Arunachal Pradesh are presented in the table, which is as follow:

**Endemic Species**

Name of the species	Family
<i>Acanthus leucostachys</i>	Acathaceae
<i>Acer oblongum</i> var. <i>microcarpum</i>	Aceraceae
<i>A. sikkimensis</i> var. <i>serrulatum</i>	Aceraceae
<i>Aconitum assamicum</i>	Ranunculaceae
<i>A. lethale</i>	Ranunculaceae
<i>Aconogonum pangianum</i>	Polygonaceae
<i>Aglaia eudulis</i>	Meliaceae
<i>Agapetes aborensis</i>	Ericaceae
<i>A. disper</i>	Ericaceae
<i>A. refracta</i>	Ericaceae
<i>A. subansirica</i>	Ericaceae
<i>Albizia arunachalensis</i>	Mimosoideae
<i>Anemone howelli</i>	Ranunculaceae

Name of the species	Family
<i>A. trullifolia</i>	Ranunculaceae
<i>Anoectochilus sikkimensis</i>	Orchidaceae
<i>Aeschynanthus parasiticus</i>	Gesneriaceae
<i>Aspidopterys glabriuscula</i>	Malpighiaceae
<i>Var. lohitensis</i>	
<i>Baliospermum micranthum</i>	Euphorbiaceae
<i>Bauhinia khasiana</i>	Caesalpinioidae
<i>B. ovalifolia</i>	Caesalpinioidae
<i>Begonia aborensis</i>	Begoniaceae
<i>B. iridescens</i>	Begoniaceae
<i>B. scintillans</i>	Begoniaceae
<i>B. silhetensis</i>	Begoniaceae
<i>Beilschmiedia aborensis</i>	Lauraceae
<i>B. deomalica</i>	Lauraceae
<i>Berberis dasyclada</i>	Berberidaceae
<i>Blechnidium melanopus</i>	Blechnaceae
<i>Boehmeria tirapensis</i>	Urticaceae
<i>Bulbophyllum ornatissimum</i>	Orchidaceae
<i>Bulleyia</i>	Orchidaceae
<i>Calamus leptospadix</i>	Arecaceae
<i>Calanthe</i>	Orchidaceae
<i>Caltha palustris</i> var. <i>purpurea</i>	Ranunculaceae
<i>Camellia siangensis</i>	Theaceae
<i>Capparis acutifolia</i>	Capparidaceae

Name of the species	Family
<i>C. pachyphylla</i>	Capparidaceae
<i>Carmanine acoriarum</i>	Brassicaceae
<i>Ceratostylis subulata</i>	Orchidaceae
<i>Cheirostylis munnacampansis</i>	Orchidaceae
<i>C. sessanica</i>	Orchidaceae
<i>Chirita macrophylla</i>	Gesneriaceae
<i>C. mishmiensis</i>	Gesneriaceae
<i>Cissus assamica</i>	Vitaceae
<i>Cleisostoma tricallosum</i>	Orchidaceae
<i>Clerodendrum lasiocephalum</i>	Verbenaceae
<i>Coelogyne arunachalensis</i>	Orchidaceae
<i>Coffia khasiana</i>	Rubiaceae
<i>Coptis teeta</i>	Ranunculaceae
<i>Corydalis oligacantha</i>	Fumariaceae
<i>Contoneaster assamensis</i>	Rosaceae
<i>Crculigo crassifolia</i>	Hyposidaceae
<i>Cymbidium eburneum</i>	Orchidaceae
<i>Dalbergia oliveri</i>	Fabaceae
<i>Dendrobium cathcartii</i>	Orchidaceae
<i>D. nareshbahaduri</i>	Orchidaceae
<i>D. sulcatum</i>	Orchidaceae
<i>D. hookerianum</i>	Orchidaceae
<i>Desmodium dioicum</i>	Fabaceae
<i>D. likabalium</i>	Fabaceae



Name of the species	Family
<i>Dicentra roylei</i>	Fumariaceae
<i>Didymosperma nana</i>	Arecaceae
<i>Dioscorea wattii</i>	Dioscoreaceae
<i>Dumasia villosa</i>	Fabaceae
<i>Diplomeris pulchella</i>	Orchidaceae
<i>Dysoxylum pallens</i>	Meliaceae
<i>D. reticulatum</i>	Meliaceae
<i>Echinocarpus tomentosus</i>	Elaeocarpaceae
<i>Elaeocarpus dubius</i>	Elaeocarpaceae
<i>Embelia subcoriacea</i>	Myrsinaceae
<i>Epipogium indicum</i>	Orchidaceae
<i>E. sessanum</i>	Orchidaceae
<i>Eranthaelum leptanthus</i>	Acanthaceae
<i>Eria clausa</i>	Orchidaceae
<i>E. ferruginea</i>	Orchidaceae
<i>E. jengingensis</i>	Orchidaceae
<i>E. lohitensis</i>	Orchidaceae
<i>E. sharmae</i>	Orchidaceae
<i>Euonymus glaber</i>	Celastraceae
<i>E. fortunei</i>	Celastraceae
<i>Eurya arunachalensis</i>	Theaceae
<i>Galeola falconeri</i>	Orchidaceae
<i>Gastrodia arunachalensis</i>	Orchidaceae
<i>Garcinia acuminata</i>	Clusiaceae
<i>Gleditsia assamica</i>	Caesalpinioideae

Name of the species	Family
<i>Globba multiflora</i>	Zingiberaceae
<i>Glycosmis boriانا</i>	Rutaceae
<i>G. cymosa</i>	Rutaceae
<i>Glycopetalum griffithii</i>	Celastraceae
<i>Gomphogyne macrocaspa</i>	Cucurbitaceae
<i>Gomphostemma aborensis</i>	Lamiaceae
<i>Grewia denticulate</i>	Tiliaceae
<i>Haematocarpus validus</i>	Menispermaceae
<i>Hedychium longipedunculatum</i>	Zingiberaceae
<i>H. radiatum</i>	Zingiberaceae
<i>Hedychium robustum</i>	Zingiberaceae
<i>H. wardii</i>	Zingiberaceae
<i>Herminium longilobatum</i>	Orchidaceae
<i>Hopea shingkeng</i>	Dipterocarpaceae
<i>Hypericum griffithii</i>	Hypericaceae
<i>H. wightianum</i>	Hypericaceae
<i>Illicium cambodianum</i>	Illiciaceae
<i>Impatiens assamica</i>	Balsaminaceae
<i>I. bracteolate</i>	Balsaminaceae
<i>I. citrine</i>	Balsaminaceae
<i>I. laevigata</i>	Balsaminaceae
<i>I. latiflora</i>	Balsaminaceae
<i>I. mishimiensis</i>	Balsaminaceae
<i>I. porrecta</i>	Balsaminaceae
<i>I. racemulosa</i>	Balsaminaceae

## FAUNA

### Vertebrate Fauna

#### 1. *Pisces (fishes) fauna*

Arunachal Pradesh forms a complex hill system of Siwalik and Himalayan origin and is crisscrossed by six major rivers and their tributaries flowing from west to east. The state has 7000 ha and 2000 Km of lentic and lotic water resources respectively. Of which, 30-40 % is falling in the cold water zone of the state. As per records of Zoological Survey of India (ZSI), fish fauna of Arunachal Pradesh composed of 143 species, under 61 genera, 21 families and 8 orders (Editor-Director, 2006). It includes 50 new records from the state. The family Cyprinidae forms the largest group with 65 species followed by Homolopteridae (17 species), Sisoridae (12 species), Bagridae (7 species), Channidae and Cobitidae (6 species each) and the rest with one, two or three species. Of the 50 new records, 12 species are recorded exclusively from the state of Arunachal Pradesh viz., *Barilius jayaramai*, *Danio (Brachydanio) horai*, *Garra gravelyi*, *Garra tirapensis*, *Puntius stevensonii*, *Semiplotus modestus*, *Kryptopterus indicus*, *Echinoglossus kamengensis*, *Exostoma berdmorei*, *Exostoma stuarti*, *Noemacheilus arrunachalensis* and *N. tikadari*. From the present investigation, it is clear that nearly 47 species of fishes share with the other eastern Himalayan states of northeast India.

An interesting pattern of distribution of fishes has been noticed during recent surveys conducted by ZSI, that the Tirap district adjacent to Myanmar, Assam and Nagaland exhibits highest diversity of fishes with 83 species followed by Changlang (47 species), Lohit (37 species), East Kameng (36 species), west Kameng (28 species), East Siang and Lower Subansiri (21 species each), Upper Subansiri (14 spp.), West Siang (12 spp.), Dibang Valley (4 spp.) and the least in Tawang district with 8 species. From the above studies, it is also clear that the distribution of fishes in the upper stretches of Himalaya are limited as evidenced from the species diversity in Dibang valley, Tawang, West Siang and Upper Subansiri districts. Nearly 55 species are hill stream cum torrential forms in the montane areas of the state represented by the distribution of species such as *Erethistoides montana*, *Euchiloglanis hodgarti*, *Exostoma berdmorei*, *Gagata cenia*, *Botia rostrata*, *Botia berdmorei*. It is for this reason that Cold Water fishery, especially the Trout fishery both Brown and Rainbow Trout variety being cultured for stocking. The occurrence of

### 3. *Reptilian fauna*

Abor expedition by Annandale (1912), Swiss Entomological expedition during 1961, Daphabum expedition in 1969 – 70, Subansiri expedition during 1974 – 75 and Namdapha Expedition by a group of scientist from Zoological Survey of India (1981 – 87) is the starting point in respect of the studies on distribution of reptiles from Arunachal Pradesh. Studies conducted by ZSI, indicate the distribution of 78 species under 46 genera and 12 families of reptiles, of this two species viz., *Ophites laoensis* and *Xenochrophis punctulata* are the first records to the country. However, Borang and Bhatt (2001) reported a checklist of 113 species belonging to 15 families and 57 genera. Borang *et al.* (2005) prepared a checklist of the snakes of Arunachal Pradesh. It is mainly based on the zoological expeditions conducted by Dr. Asham Borang and the material examined by Dr. Bharat B. Bhatt, in various museums in the state. This checklist includes 67 species of snakes belonging to five families and 31 genera. Studies by Zoological Survey of India reported the restricted distribution of snake (*Boiga gokool*) to the eastern Himalayas and wider distribution of *Trimeresurus monticola* in Southeast Asian countries extending up to Malaysia. The systematic list includes 4 species of testudines, 19 species of lizards and 55 species of snakes.

Among the four recorded testudines, *Pyxidie mouhoutii* is a Malayan element distributed in the state. *Kachuga tecta* becoming vulnerable due to over exploitation, *Kachuga sylhetensis*, endemic to northeastern India distributed in north and south of Brahmaputra River. Species such as *Kachuga smithi*, *kachuga dhongoka* and *Cyclomys debtata* are on record from the state, but not included as they are not collected during the survey. Among the order Squamata, the family Gekkonidae includes *Cyrtodactylus khasiensis*, *Cosymbotus platyurus*, *Ptyctolaemus gularis*, *Mictopholis austeniana*, *Oriocalotes paulus*, *Japalura andersoniana*, *Calotes jirdoni*, *Sphaenomorphus indicum*, *S. maculatum*, *S. courcyanum*, *Scincella sikkimensis*, *Tarkydromus sexlineatus khasiensis*, which are the eastern Himalayan representatives distributed in the state. Among snake family Typhlopidae represented by 3 species, Boidae (1 species), Colubridae (42 species), Elapidae (5 species) and Viperidae (4 species).

Species of snake such as *Pareas monticola*, *Elaphe taeniura*, *E. cantoris*, *E. porphyracea*, *E. prasina*, *Ptyas korros*, *Zaocys nigromarginatus*, *Leopeltis frenatus*, *L. stoliczkae*, *Oligodon albocinctus*,

*O. melanozotus*, *O. erythrocharis*, *Dendolaphis ahaetulla*, *D. cyanochloris*, *D. gorei*, *Ahaetulla prasina*, *Pseudoxenodon macrops*, *Amphiesma modesta*, *Trachyschium monticola*, *T. tenuiceps*, *Rhabdophis himalayanus*, *R. bicolor*, *Blythia reticulate*, *Boiga ochracea*, *B. gokool*, *B. quincuciata*, *B. cyanodon*, *Psammodynastes pulverulentus*, *Bungarus niger*, *Trimeresurus mucrosquamatus*, *T. monticola*, *T. stejnegeri* are the eastern Himalayan representatives distributed in the state of Arunachal Pradesh. In other studies, out of 55 species of snakes, nearly 33 species (60%) are the eastern Himalayan representatives distributed in the state. Besides above, *Elaphae mandarina* restricted to Arunachal Pradesh (recorded in the sub-continent after a lapse of nearly 75 years), *Ophites jara* and *Xenochrophis punctulata* recorded for the first time from Indian subcontinent from the study. *Oligodon (Prox) cinereus* is the other species exclusive to Arunachal Pradesh.

Of the 19 species of lizards recorded from the state, distribution in East Siang (17 species) followed by Changlang (9 species), Lohit, East and West Kameng (3 each), Lower Subansiri (2 species) and a lone species from Tirap districts. In contrast, of the 55 species of snakes distributed in the state, again East Siang dominates (26 species), Lower Subansiri (21 species) Changlang (15 species), East Kameng (10 species), Papumpare (9 species), West Siang (6 species), West Kameng (5 species), Lohit (2 species) and a lone species of *Trimeresurus monticola* (Blotched pit viper) from the district of Tirap.

#### 4. *Avian (birds) fauna*

Collections made by Mr. M.M.J. Ogle from the Lohit River area of Arunachal Pradesh are the first description from the area, which is compiled by Godwin-Austen (1876 and 1877). Collections made from Mishmi hills during 1913 were published by Baker (1913a and b). Publications of Stevens (1914 – 1915) on the birds of upper Assam, and publication by Betts (1956) on birds of Subansiri, are important from the point of description of the distributional pattern of birds from the state of Arunachal Pradesh. The ornithological work done by Ali and Ripley (1948 and 1987), is the key stone in our latest understanding on the diversity and distribution of birds, besides first hand information gathered by some other workers. Singh (1994) reported a checklist of 519 species of birds of Arunachal Pradesh based on extensive field surveys from 1988 to 1994, carried out by him throughout the state, along with 138 extra species recorded by other workers. Choudhury (2004) listed more than 700

species in his handbook on the birds of Arunachal Pradesh. As per the records of Zoological Survey of India, 964 species and subspecies of birds are likely to occur in the state of Arunachal Pradesh (Editor-Director, 2006 a). Which includes 473 species authentically collected and reliably sighted in the field by the scientists of the survey, out of this 416 are resident, 42 are winter visitors, and 11 are summer visitors. It includes 282 species and subspecies of birds distributed in the state of Arunachal Pradesh based on further observation and data collected from various sources. Of these, 235 are resident, 42 winter visitors, and 1 species each of winter vagrant and summer visitor birds.

It also includes 43 species and subspecies of birds which are likely to occur in the state of Arunachal Pradesh (distribution doubtful, needs confirmation). Of these 5 birds are winter visitors, 32 are residents, lone species of strangler and passage migrant, 4 are uncertain species of birds. The last list includes 157 species and subspecies of birds of these 97 are residents, 51 are winter visitors, 2 partly resident and partly winter visitor and 7 birds have uncertain status. Most of these birds are from the adjacent countries of Bhutan, Myanmar and China.

### 5. *Mammalian fauna*

Choudhury (2003) published a book on the mammals of Arunachal Pradesh, which enclosed a checklist of 206 species based upon both primary and secondary sources, along with another 38 species likely to occur or are recorded in adjacent areas. Borang (2001) reported 214 mammalian species from Arunachal Pradesh, belonging to 12 orders, 34 families and 116 genera. However, as per the records of Zoological Survey of India, the mammalian fauna of the state is represented by 105 species and subspecies under 85 genera, 25 families and 9 orders. Of these 4 species are new records to the state and also includes the lonely endemic species described earlier by the scientists of the Namdapha Biosphere Reserve Expedition party during 1985. Records of several species are also available but as those species were not sighted nor any collection made by the scientists of the survey they were not included in their report. These mammals include *Platenista gangetica*, *Golunda ellioti*, *Hemitragus jemlachicus*, *Taphozous nudivenris*, *Episticus tatei*, *Tylonycteris pachypus*, *Ursus arctos*, *Pseudois nayaur*, *Caprolagus hispidus*, *Mustela kathiah*, *Manis crassicaudata*, *Sus salvinus* and a few others.

The order carnivore in India is represented by 7 families, 26 genera

and 55 species; of this the state has a share of nearly 13 species under 10 genera. The family Felidae represents 15 species, of which the state of Arunachal Pradesh has 9 species about 60% of the total Indian species. Among them *Panthera tigris*, *Panthera pardus* are found in the lower elevations and foot hills and are common in Namdapha National Park, Dihang-Dibang Biosphere Reserve, Itanagar Wild Life Sanctuary, Pakke and Tale Wild Life Sanctuary. Stray cases in other parts of the state are also on record. The alluvial grasslands, delineated as the Terai-Duar Savanna and Grassland eco-regions of northeast India, support some of the highest densities of tigers in the world. Same is true in case of *Panthera pardus* also. Although the *Uncia uncia* has a wide distribution across the Himalayan range, and into the Trans-Himalaya, the population in the Eastern Himalayas especially from Arunachal Pradesh is significant because this high-altitude predator occurs at low densities. Cats such as *Prionailurus bengalensis* (subspecies *charltoni* occurs in India), *Felis chaus* (subspecies *affinis* found in Arunachal Pradesh), *Pardofelis marmorata*, *Catopoma temminckii* are found distributed in the state while the fishing cat *Prionailurus viverrinus* is comparatively rare and found in marshy areas. Family Canidae represented by 3 genera and 5 species in India, while the state of Arunachal Pradesh accounts for the five species thus the representation is 100% in the state. The Indian wolf is represented by *Canis lupus pallipes* the common jackal *Canis aureus* a scavenger survive on smaller prey and the Indian wild dog or Dhole (*Cuon alpinus*) distributed in the scrub jungles of the state. The wild dog of Arunachal Pradesh is believed to be *Cuon alpinus adjustus*, as this subspecies is found in northern Myanmar. Of the two species of genera *Vulpus*, *Vulpus bengalensis* is found in the foot hills and at elevations above 2500 m, and species *Vulpes vulpes* is reported as authentic records are not available, excluded in the present report.

The family Ursidae represented by 4 genera and 4 species in India, the state is represented by all the two species viz., *Melursus ursinus* (Sloth bear), *Selenarctos thibetanus* (Sloth bear), *Selenarctos thibetanus* (*Ursus thibetanus* according to Corbet and Hall, Himalayan Black bear), and *Helarctos malayanus* (Malayan Sun bear) distributed in Tirap & Changlang adjoining Burma. *Ursus arctos* (Brown bear) is not recorded in the recent surveys of Zoological Survey of India, though recently reported by several workers.

The monotypic family Ailuridae represented by the Red Panda, which is a Himalayan species (*Aliurus fulgens*) found in altitude varying from 2800-

3500m, records of this are available in old growth subalpine conifer and mixed forests with a bamboo under story and Rhododendron and Oak forests. The family Mustellidae represented by 7 genera and 15 species are included under 4 subfamilies. The amphibious Otters under subfamily Lutrinae includes *Lutra perspicillata*, *Lutra lutra* and *Amblyonyx cinerus* (*Aonyx cinera*) but represented by the latter two species in the state. The subspecies of *Amblyonyx cinerus* reported from Arunachal is *concolor*. The subfamily Mustellinae includes martens, weasels and pole cats and represented by 8 species under 3 genera. *Mustela altaica* and *Martes foina* are reported in Tawang and Kameng region.

Sub-family Melinae includes badgers represented by 3 species. In Arunachal Pradesh it is fully represented by two species viz., *Arctonyx collaris* (subspecies present in Arunachal is *collaris*) and *Melogale moschata* (the Indian subspecies is *millsi*). The subfamily Mellivorinae represented by a lone species *Mellivora capensis* in India but doubtful in Arunachal. The family Viverridae includes 14 species under 7 genera and 3 subfamily and the state is represented (50%) by 5 species viz., *Viverra zibetha* (Arunachal Pradesh subspecies is *zibetha*), *Viverricula indica*, *Pardoxurus hermaphroditus*, *Paguma larvata*, *Arctictis binturong*. Subfamily Herpestinae includes only one genus *Herpestes* with 6 species. The state represented by *Herpestes urva* and *Herpestes javanicus*.

The order Proboscidea represented by the lone species *Elephas maximus indicus*. The elephant population present in small vegetation patches along the north bank of the Brahmaputra River in Arunachal Pradesh (Sukumar, 1985). The even-toed Artiodactyles are represented by four families in Arunachal Pradesh; the family Suidae represented by *Sus scrofa cristatus*; the family Cervidae represented by *Muntiacus muntjak* (subspecies *vaginalis*), *Axis porcinus* (subspecies *porcinus* in Arunachal Pradesh and the genus *Axis* is kept under the genus *Cervus* by Hanacki, 1982); *Cervus unicolor* (subspecies *equines* present in Arunachal) are important prey species distributed in the lower elevations of the state. Family Bovidae represented by *Bos frontalis* (a domesticated stock especially in northeastern Chittagon and Bangladesh. Hanacki (1982), considers *Bos gaurus* as a synonym of *Bos frontalis*. *Bubalis bubalis* and the *Budorcas taxicolor* especially distributed in the Mishmi hills of Arunachal Pradesh and *Naemohedus goral*, *Naemohedus sumatrensis* are extensively distributed in the state.



There are large herbivores of Eastern Himalayas especially Arunachal Pradesh play critical ecological roles in maintaining the integrity of the ecosystem. Further more, according to Centre for Education in Northeastern India and BNHS, the landscape includes a verity of ecosystems, from the wetlands and riverine habitat along the Brahmaputra River, and alluvial grasslands and subtropical broadleaf forests, to temperate broadleaf forests, mixed conifer forests, and even alpine habitats in Arunachal Pradesh, the species diversity is high. Some of the Juvenile and sub-adult mammals show seasonal migration especially the tigers disperse from natal areas to establish territories elsewhere, and elephants exhibit seasonal movements along the length of the mountains. In the higher up the mountain landscape, Blue sheep and Takin undertake seasonal migrations from the alpine meadows in the summer to the mixed conifer forests below in the winter.

The order Pholidota represented by two species in India viz., *Manis pentadactyla*, *Manis crassicaudata*, the former is well distributed in the state. The order Rodentia is the largest order next to Chiroptera, characterized by chisel like incisors in each jaw and in Arunachal Pradesh they are represented by three families, 19 genera and 31 species. The Order includes the lone endemic species Namdapha flying squirrel, *Biswamoyopterus biswasi* restricted to the temperate broadleaf forests of the Eastern Himalayas. The family Sciuridae includes 10 species including *Biswamoyopterus biswasi*; the family Muridae represented by 19 species and the family Hystricidae represented by 2 species. Among the members of the order Sciuridae, *Ratufa bicolor gigantia* lives on tall trees in dense forests and never comes to ground. The monotypic genus *Belomys* includes only one species *Belomys pearsoni*. Subfamily Arvicolinae under the family Muridae includes *Eothenomys melanogaster*. *Berlymys bowersi* is a nocturnal fossorial species commonly found in the primary forests and in the highlands above 600 m. On the basis of the examination of the material collected by Agrawal (2000), *Vandeleuria oleracea* recognized as a species to be distributed in Arunachal Pradesh. On the basis of the collections made Agrawal (2000), the taxonomic status of *Rattus nitidus*, re-examined and it was inferred that there is no difference between the *R. nitidus nitidus* and *R. nitidus obsoletus* and hence the sub-species *R. nitidus obsoletus* is considered as the synonym of *R. nitidus nitidus*. The Bamboo rats in Arunachal Pradesh in particular and northeastern Himalayan states are important as they are associated with the flowering seasons of the bamboo shoots belongs to the subfamily Rhizomyinae of Muridae. These rats are heavily built

provided with strong claws for digging and have adapted for fossorial habits in the hilly terrains of the state. The subfamily represented by *Cannomys badius*. The family Hystricidae commonly includes porcupines includes two genera and two species viz., *Atherurus macrourus* and *Hystrix brachyuran subcristata*.

Insectivores are small, with pointed snout and body covered with thick fur and short limbs. The family represented by two species such as *Suncus murinus soccatus* and *Suncus mirinus griffithi*. The other one is a monotypic genus represented by *Anourosorex squamipes*. The family Talpidae includes animals with short velvety fur represented by a lone species *Euroscaptor micrura* which was earlier treated under the genus *Talpa* (Abe *et al.* 1991). The family Scandentia represented by a lone species *Tupaia belangeri assamensis*. The state of Arunachal Pradesh is known for the distribution of flying mammals under the order Chiroptera which includes 14 genera and 22 species out of 112 species known from India.

The scientists of Zoological Survey of India have reported 7 species and subspecies of primates from Arunachal Pradesh. The family Loricidae represented by the *Nycticebus coucang bengalensis*; the family Cercopithecidae represented by *Macaca assamensis assamensis*, *Macaca arctoides*, *Macaca mulatto*, *Macaca nemestrina*, the genus *Trachypithecus* represented by *T. pileatus pileatus*. Family Hylobatidae represented by the lone species of *Bunopithecus hoolock* (*Hylobates hoolock*). Survey conducted by Zoological Survey of India, on the Tawang districts of Arunachal Pradesh provides an interesting distribution of primates. According to authors, Assamese macaques are common in south and northwestern part and bigger in size, dark coat colour in comparison with the distribution of species at lower elevations.

## **Invertebrate Fauna**

### **1. Protozoan fauna**

These are unicellular eukaryotic organism inhabit almost all terrestrial and aquatic habitats. There are several published reports on parasitic protozoa from Arunachal Pradesh. Misra (1956), Sen *et al.* (1973) and Dutta *et al.* (1992) published several papers on the prevalence and transmission of human malaria in Arunachal Pradesh caused by protozoan parasites such as *Plasmodium falciparum* and *Plasmodium vivax*. Incidence of *Giardiasis* in some

human population of Arunachal Pradesh due to infection of another protozoan parasite *i.e. Giardia lamblia* has also been reported by Paul *et al.* (1982). Information collected from the Disease Investigation Laboratory located at Nirjuli in Itanagar, Arunachal Pradesh reveals that there are numerous positive cases of coccidiosis in livestock and poultry of the state due to infection of several species of coccidian parasites belonging to the genera *Eimeria* and *Isospora*.

Four species of symbiotic protozoa, namely, *Pyrrsonympha tirapi*, *P. rostrata*, *Dinenympha mukundae* and *D. rayi* have also been reported from the gut contents of a termite species, collected from Namdhapha area, Arunachal Pradesh (Mukherjee and Maiti, 1988, 1989). During 1990–92 and in 1999 the scientists of ZSI conducted three faunistic surveys in the districts of Lower Subansiri, West Siang, East Siang, Debang Valley, Lohit and Changlang and, collected diversified groups of free-living and parasitic protozoa. These collections as well as those already known and reported from Arunachal Pradesh, comprise 72 species, out of which 43 species were free-living, 20 species parasitic and 9 species symbiotic. Three species of free-living rhizopods namely *Centropyxis sylvatica*, *Plagiopyxis minuta* and *Nebela tinctoria* are reported for the first time from India. Sixty two species (40 free-living, 17 parasitic and 5 symbiotic) constitute first records for Arunachal Pradesh.

## 2. Crustacean fauna (prawns and crabs)

Information on Crustacean fauna specially Prawns and Crabs of Arunachal Pradesh, is still scanty (Alcock 1910, Kurian and Sebastian, 1993). List of Palaemonid prawns and Potamonid crabs as presented here, based on the work carried out by scientists of Zoological Survey of India using the collections of Faunistic surveys of the Arunachal Pradesh conducted by T. Roy and Party and also other unnamed collections, available in the National Zoological Collections of the Zoological Survey of India, Calcutta. These examples comprising seven species of Palaemonid prawns namely, *Macrobrachium altifrons*, *M. assamensis assamensis*, *M. choprai*, *M. dayanum*, *M. hendersoni*, *M. hendersoni platyrostris*, and *M. lamarrei*, and six species of Potamonid crabs namely, *Sartoriana spinigera*, *Barytelphusa (Maydelliathelphusa) lugubris lugubris*, *Acanthopotamon martensi*, *Liopelphusa laevis laevis*, *Potamiscus decourcyi* and *Potamon edwardsi*.

### 3. *Hirudinean fauna (leeches)*

Annelids of Arunachal Pradesh comprise the class Hirudinea. The worms belonging to the class Hirudinea are the leeches. They have annuli in each segments, eye spot, male and female pores, single and median. They bear suckers, possess 'hirudin' – an anticoagulant of blood and are mostly sanguivorous. Our knowledge on the taxonomy of annelid fauna of Arunachal Pradesh is confined to the contributions of Moore (1924), Moquin-Tandon (1826) and Chandra (1983, 1991) on leeches. Some species of leeches have been reported from Arunachal Pradesh.

The present report is based on the collections of leeches made from Arunachal Pradesh by the Arunachal Pradesh Field Station, Zoological Survey of India, Itanagar. The material comprises seven species of leeches namely, *Haemadipsa montana*, *H. ornate*, *H. sylvestris*, *H. zeylanica zeylanica*, *H. zeylanica agilis*, *H. zeylanica montivindicis* and *Haemadipsa* sp.

### 4. *Trematodes of Amphibians*

Digenea of class Trematoda and Phylum Platyhelminthes forms a vast group of endo-parasitic organisms. The adults of these parasites are found in various body organs of their hosts and totally dependant on them for food and shelter. Animals like fishes, frogs, reptiles, birds and mammals, many of which form a great part of the food sources for human population or are otherwise useful to the latter are not free from parasitic worms which by their presence make them (*i.e.* the hosts) unhealthy and unfit for human consumption, thus causing heavy loss to the economy of the country. These vertebrate hosts serve as reservoir of infection for human also. The importance of these living beings from medical and veterinary standpoint therefore cannot be minimized.

For long times, amphibians are known as a major hosts for Trematode parasites (Agrawal 1966, Diengdoh 1989, Gupta and Jehan 1978). Some of these animals are available throughout the year and are usually harboring Trematode parasites in them. The most common species like *Euphyætis cyanophlyctis*, *Fejervarya limnocharia*, *Raba tirgina*, *Bufo melanostictus*, are usually examined by various workers in different parts of India. Amphibians feed on insects, and snails which are the carrier of the trematode larvae. They also get infected with trematodes while consuming plants on which trematodes larvae are encysted.

About 154 examples of amphibian digenetic trematodes were studied from Upper Subansiri, Lower Subansiri, Papumpare, East Siang, West Siang, Lohit Tirap, Changlang and Dibang Valley districts. Eight species (namely, *Pleurogenoides gastroporus*, *Mehraorchis ranarum*, *Ganeo tigrinum*, *G. gazipurensis*, *G. lucknowensis*, *Displodiscus amphichrus*, *Tremiorchis ranarum* and *Halipegus mehransis*) of trematodes were identified, belonging to 4 families, 6 sub-families, and over 6 genera. All the species recorded herein constitute the first record of their occurrence in Arunachal Pradesh.

## 5. Insect Fauna

i. **Collembola (Springtails):** These are small insects with maximum length of 6 mm, abundant and ubiquitous, probably exceeding all other insects in numbers of individuals, but their small size and sensitivity to desiccation restrict most species to humid situations. The mouth parts are withdrawn into the head capsule and first abdominal segment bears a ventral pair of basally fused vesicles, known as collophore. Most species have ventral bifurcate appendage, the tenaculum and furcula, on the third and fourth abdominal segments. With very few exceptions (e.g., *Tomocerus*), juveniles closely resemble adults. Mitra (1975) described a new species of *Siera* viz., *S. arunachala*, from Namdapha area of Arunachal Pradesh. The studies of Collembolan fauna of Arunachal, are based on collection made during 1999 from different localities by Zoological Survey of India, as a part of the Action Plan on State Fauna. So far, 27 species under 15 genera of 3 families have been reported from the State of Arunachal Pradesh.

ii. **Odonata:** The order Odonata is an economically important primitive group of insects. They are mentioned as dragonflies and damselflies in popular entomological texts. The odonates inhabit the world for the last 220 million years as evidenced from their first fossil record on the Carboniferous rocks. It may be noted that since the Jurassic period no appreciable change has taken place in their morphology. Thus, indicating their morphological stability through long geological times. Adults of these insects are known for their cute appearance, sharp eye sight and flight power. These flying machines can fly backward, move vertically upward like a helicopter or stop in turn in the midst of the rapid progression as if they have been rammed into. This could be made possible due to adjustment of the centre of gravity between the bases of wings.

Lahiri (1977) first recorded dragonfly from the present Arunachal and it is being considered as the starting point. Later on Lahiri (1985), Lahiri and Sinha (1991), Bhargava (1989), Prasad and Varshney (1995) and Ram & Prasad (1999) reported 92 species and subspecies over 50 genera, 11 families and two suborders, from the state.

iii. **Orthoptera:** The short-horned grasshoppers family Acrididae and Pyrgomorphidae belong to super-family Acridoidea of the order Orthoptera. Hancock (1913) and recently Tandon *et al* (1976), Tandoan and Khera (1978) have recorded some species of Acridoidea from Arunachal Pradesh. Besides this work, so far no serious efforts have been made to study of this group of insects from this state. So far, 44 species of grasshoppers over 2 families and 33 genera have been reported from the state. Out of them, 20 species, distributed over 14 genera and 6 families. Six species are recorded here for the first time from Arunachal Pradesh.

iv. **Dictyoptera:** These insects popularly known as cockroaches constitute an interesting house hold important group of insects. About 4000 species are known from the world, of which 152 species are recorded from India. Cockroaches are found in or on the ground, among the low vegetation and debris, but some inhabit in caves, and some species live near water. So far, 20 species, distributed over 6 families and 14 genera, have been reported from the state.

v. **Coleoptera:** Family Scarabaeidae is the largest of the insects order Coleoptera. They are coprophagous in nature and feed upon the dung of herbivorous mammals, human faecal matter and some of them also feeding upon carrion, decaying fungi and vegetable substances. They are popularly known as 'Dung Beetles' and found in every part of the world.

Present report based on the work carried out by scientists of Zoological Survey of India from the twelve districts of Arunachal Pradesh as follows: Tawang West Kameng, Lower Subansiri, Upper Subansiri, Papumpare, East Siang, West Siang, Upper Siang, Dibang Valley, Lohit, Tirap and Changlang by different parties of Arunachal Pradesh Field Station, Zoological Survey of India, Itanagar from 1984 to 1997. The scientists of Zoological Survey of India also carried out the extensive as well as intensive surveys of Arunachal Pradesh from 1993 to 1997 and collected large number of specimens from dung pad, heap, digging of dung burrows and also utilizing the light trap method to collect

them from urban and rural localities. Biswas and Chatterjee (1985) reported fifty five species of dung beetles from "Namdapha Wildlife Sanctuary" and Biswas (1978) also described four new species from Arunachal Pradesh and Assam. So far seventy three species belonging to fourteen genera of subfamily Coprinae under the family Scarabaeidae have been identified. Out of seventy three, twenty two species have been recorded for the first time from Arunachal Pradesh.

Out of seventy three species namely *Heliocopris dominus*, *Catharusus pithecius*, *Copris indicus*, *Copris magicus*, *Copris repertus*, *Copris numa*, *Onthophagus variegates*, *Onthophagus tibetanus*, *Onthophagus catta*, *Onthophagus seniculus*, *Onthophagus nilgirensis*, *Onthophagus occipitalis*, *Onthophagus kuluensis*, *Onthophagus bison*, *Onthophagus Sagittarius*, *Onthophagus politus*, *Onitis siva*, *Onitis philemon*, *Onitis castaneus* have been recorded for the first time from Arunachal Pradesh.

**vi. Diptera:** The Diptera are commonly known as (true) flies and include many familiar insects such as mosquitoes, black flies, midges, horse flies, fruit flies, blowflies and houseflies. Flies are generally common and can be found all over the world, and in a few cases in sub Antarctic also (except Continental Antarctica). Many species are particularly important as vectors of disease in man, other animals, and plants. Flies are holometabolous insects and their life cycle involves a major physical change from a soft-bodied, wingless larval stage to a hardened, winged adult.

The order Diptera is divided into three suborders: Nematocera, Brachycera, and Cyclorrhapha on the basis of the antennal characteristics, the shape of the exit hole from the pupal case, the nature of the pupa, and larval morphology. But this type of classification was posing problems to assign the rank of different groups. Therefore, attempts to formulate a monophyletic classification of Diptera have gained pace recently but no definite consensus has been reached to date (Michelsen 1996, Osterbroek and Courtney 1995, Sinclair *et al.* 1994, Cumming *et al.* 1995, Griffiths 1996). The most comprehensive treatment of dipteran phylogeny and contemporary views on morphological character evidence can be found in Volume 3 of the Manual of Nearctic Diptera (McAlpine and Wood 1989).

**Nematocera:** Nematocera includes the mosquitoes, black flies, midges, gnats and related forms. Many of these are blood suckers and vectors of diseases of man and animals. The families under suborder Nematocera so far

recorded from India, are 22 of which only 5 families have been reported to be presented in Arunachal Pradesh namely Tipulidae, Culicidae, Simuliidae, Bibionidae and Sciaridae comprising of 61 species under 25 genera, out of 1753 species under 95 genera in India. It may be concluded that Arunachal Pradesh has so far known to harbor 61 species under the families-Tipulidae, Culicidae, Simuliidae, Bibionidae, and Sciaridae of the suborder Nematocera of which 7 species are confined to India, and the majority numbering species (44) spread in the boundary of Oriental region but there are 10 species extends their range of distribution beyond the Oriental region.

**Brachycera:** The Brachycera includes horseflies, robberflies, dance flies etc. These are the second main stem in the evolution of flies, many of them are stockier and more solid than the Nematocera and some of them are exceptionally good flies. The families under suborder Brachycera so far recorded from India are 15 of which only 6 families have been reported to be present in Arunachal Pradesh namely Stratiomyidae, Tabanidae, Asilidae, Bombyliidae, Empididae, Dolichopodidae.

Arunachal Pradesh has so far known to harbour 51 species under the families Stratiomyidae, Tabanidae, Asilidae, Empididae and Dolichopodidae of the suborder Brachycera. Among the 51 species so far reported from Arunachal Pradesh, *Chrysops disignatus* Ricardo of the family Tabanidae is very common throughout (5 district) the state, and the following species like, *Tabanus (Tabanus) rubicundus* Macquart (13 states), *Cophinopoda chinensis* (Fabricius) (11 states), *Michotamia aurata* (Fabricius) & *Sargus metallinus* Fabricius (10 states), *Philodicus femoralis* Ricardo (9 states) are distributed in maximum number of states of India. However, among the 51 species of brachycerans, 13 species are confined to Arunachal Pradesh, 4 species to India, 33 species extend their range up to the boundary of Oriental region and a only a lone species, *Cophinopoda chinensis* (Fabricius) extends its range to Japan and Korea beyond the Oriental region.

The bombyliids or “bee-flies” are a group of moderate to large sized colourful and beautiful flies, of the super family Asiloidea under the suborder Brachycera. They constitute one of the largest groups within the orthorrhaphous Brachycera. With around 4,500 species currently described world over, the family Bombyliidae is numerically one of the largest families in one of the largest orders (Diptera) in by far the largest class of living things (Yeates, 1994). Keeping this in view, scientists of Zoological Survey of India attempted



to formulate a comprehensive account of the 'bee-fly' fauna of Arunachal Pradesh. They reported 9 species of bombyliids (50 exs.) belonging to 5 genera under 3 tribes of 1 subfamily of which 4 species of 3 genera from the state.

***Cyclorrhapha:*** A perusal of literature reveals that a good number of publications were made on Diptera fauna of Arunachal Pradesh as a whole, and quite a good number of cyclorrhaphan species were described from this hotspot of India. Joseph and Parui (1977), Joseph and Rao (1972), Joseph and Ray (1976), and Datta and Chakraborty (1985) published recently some valuable works on Diptera of Arunachal Pradesh.

Arunachal Pradesh has so far known to harbour 68 species under the families Pipunculidae, Conopidae, Tephritidae, Sciomyzidae, Calliphoridae and Sarcophagidae of the suborder Cyclorrhapha. Among the 68 species so far reported from Arunachal Pradesh, maximum number of the species (26) has been reported from the district Tirap. However, the distribution pattern of the 68 species of Cyclorrhaphans of this state is like as follows: 15 species have restricted their distribution within the boundary of the state and 49 species restricted themselves within the Oriental region. Rest of the 19 species distributed in the Palaearctic region of which 6 species only found in this zone other than Oriental. 15 species extends their range up to Australian region of which only 2 species are only found in this zone other than Oriental.

Syrphidae or 'hover flies or flower flies' under the super family Syrphoidea of the Infraorder Cyclorrhapha in the section Aschiza, are one of the largest and easily recognized groups of Diptera. They are generally brightly colored, often striped, and many mimic bees or wasps. In contrast to the rather uniform, nectar-feeding habits of adult hover flies, those of larvae are extremely varied, phytophagous, zoophagous, and saprophagous species being known. They are nearly cosmopolitan in distribution and 256 species of 5 sub species under 62 genera in 2 subfamilies are so far known from India.

Several collecting trips were organized by the scientists of Zoological Survey of India in seven districts (namely Kameng, Subansiri, Tawang, Siang, Lohit, Tirap, and Changlang) of Arunachal Pradesh (based on old divisions of districts) for the purpose of addition and revaluation of the faunal components in aid of our compressive knowledge. As per recent reports, 50 species under 28 genera of which 8 species (marked with asterisk) are recorded for the first time from this state.

The music, or common true flies are a group of small to medium sized flies, usually black or green but some of them resemble to calliphorids or blue-bottle flies. The representatives of this family are closely associated with decaying organic matter, especially dung and also responsible for spreading several diseases of man and animals.

The music fauna of Arunachal Pradesh is still far from being well known. Though 89 species belonging to 28 genera are reported from north-east India, only 25 species under 7 genera are reported by Joseph and Parui (1973, 1977), Joseph and Rao, (1972), Joseph and Ray (1976), and Datta and Chakraborti (1985) from the state. According to latest studies, 32 species belonging to 11 genera under 4 subfamilies, of which 6 species are new records, have been reported from the state.

**vii. Hymenoptera: Formicidae:** Ants (family Formicidae), the most successful social insects, are found everywhere. They can survive in almost all kinds of ecological niches, living in colony. The colony consists of different castes-male, female, worker and soldier-which have specific and specialized duty to perform for the survival of the colony. This synchronized group activities and the great degree of adaptability are the key factors for their survival since Mesozoic period.

Ants have both the deleterious and beneficial effects. Some ants are considered as pests (house hold as well as garden); some give protection (even nurture in their colony) to the other plant pests, like plant-lice, mealy bugs, tree hoppers etc.; some are notorious for their stinging and also been utilized as an agent of biological control; formic acid of ants has the value in pharmacology; some tribal people consume ants (*Oecophylla* sp.) as a source of rich protein; and even efforts are there to establish ants as index organism of environmental pollution.

Present report based on the work carried out from different parts of Arunachal Pradesh by various survey parties of Zoological Survey of India. Altogether 63 species of ants under 30 genera and 7 subfamilies have been reported including the earlier record of 12 species of ants from this state by Tiwari and Maiti (1976) and Tiwari *et al.* (1977).

**Sphecidae:** The members of the family Sphecidae are commonly known as blue mud-dauber, black and yellow mud-dauber, digger or sand or hunting wasps. They show complexities in their behaviour and are always be-

ing subject to biological studies. These sphecid wasps are mainly beneficial to man and they are sufficiently advanced group of insects in Aculeate Hymenoptera. The majority of these sphecids are predatory on a great variety of terrestrial insects; but some are cleptoparasitic, *i.e.*, their larvae develop on the provision in the nest of some other wasps. Because of their predatory and cleptoparasitic habits, it may be possible to exploit them for the control of insect pests (Bohart and Menke, 1976).

The family is represented by more than 450 species/subspecies in India. As per recent reports, the Sphecidae fauna of Arunachal Pradesh composed of 33 species/subspecies belonging to 20 genera under 8 subfamilies. Of these, 23 species/subspecies are recorded here for the first time from this state.

***Vespidae and Apidae:*** The family Vespidae belongs to super family Vespoidea which represents true or yellow wasps. The family Apidae belongs to super family Apoidea which represents the bees. Both the super families Vespoidea and Apoidea, belonging to Aculeate Hymenoptera, are mostly fascinating groups of insects. Mentally they are considered most highly developed among all insects. They are characterized by having two pairs of membranous wings, the hind pair smaller than fore pair; their mouth-parts with biting mandibles and labium adapted for licking juice of flowers. They are minute to large in size.

As per recent reports, the fauna of Vespidae and Apidae of Arunachal Pradesh composed of 15 species/subspecies belonging to 5 genera, 3 subgenera and 2 subfamilies under the family Vespidae and 6 species belonging to 3 genera under the family Apidae. Out of these, 3 species/subspecies of Vespidae are newly recorded from the state.

## **6. Arachnid fauna**

Arachnids except the Araneae (spiders) though not very rare in their occurrences need special efforts to locate and collect. This is because most of them are truly nocturnal in their habit, which limit their studies. The studies of the Arachnid fauna of North Eastern parts of India are still fragmentary and no consolidated account has so far been attempted. Valuable information is available through literature such as Abor Expedition by Kemp (1871-1911) but the phylawise reports are meager and also scarce.

Tikader from 1959 to 1989 has put on tremendous work on Spider

fauna of Assam, Meghalaya and Sikkim states. Tikader and Bastawade (1983) have described a new species *Euscorpionps bhutanensis* from Gomchu, Bhutan (Family Scorpionsidae : Scorpionida). Bastawade (1985) has reported three species of Scorpions belonging to two families Chaerilidae and Scorpionsidae from Namdapha Tiger Reserve, Changlang district, Arunachal Pradesh. Bastawade and Pal (1991) and Bastawade (1992) have reported the order Schizomida and sub order Cyphophthalmi for the first time from Arunachal Pradesh. The Scorpio fauna of Arunachal Pradesh is known to constitute only two families namely Chaerilidae and Scorpionsidae (Bastawade 1985). Four species namely *Chaerilus tricostatus*, *C. gemmifer*, *C. pictus* and *C. dibangvalleyicus* belong to family Chaerilidae. Three species namely *Euscorpionps asthenurus*, *E. longimanus* and *E. kamengensis* belong to family Scorpionsidae. The occurrence of these families ranges from foothills of 600 to 2500 m elevation. The species of these two families, generally seen to inhabit through thinner crevices of outcrops along the road sides, underneath of old fallen wooden logs, below stones and rarely under barks. The Indian Uropygid fauna known to constitute two families, four genera and only six nominated species, out of which only two species have so far been reported from North-eastern India. The Indian Schizomids are known by only four species namely, *Schizomus sijuensis*, *S. kharakpurensis*, *S. lunatus* and *S. tikadari*. Among, only *sijuensis* is the species known to occur in northeast India. One new species, named *Schizomus arunachalicus* has been described by Dr. Bastawade, from Miao, Arunachal Pradesh (Editor-Director, 2006). One species namely *Gnomulus roingii* belongs to order Opiliones and family Oncopodidae has also been described by Dr. Bastawade.

Oribatid of crypostigmatid mites form a complex group under the subclass Acarina and are numerically the most abundant soil fauna among the microarthropods inhabiting soil. These mites are commonly known as “beetle” or “moss” mites due to its shape and preference in living in moss. These mites are very common inhabitants of almost all possible habitats in all the continents of the world. Oribatids are of great economic importance playing significant role in promoting soil fertility through humification of organic matter and as biological control agents for pests. There are a few oribatid species which feed on higher plants and transmit fungal spores. They are also responsible for transmitting various helminth diseases to domestic animals. Some of the species of oribatid mites help in regulating soil nematode population. Many oribatid spe-

cies living in house dust cause respiratory allergy in human beings. As per the records of Zoological Survey of India, a total 35 species belonging to 30 genera and 20 families of oribatid mite have been recorded from different districts of Arunachal Pradesh.

The ixodid ticks live as host on the bodies of domestic and wild animals and in vegetation. Many serious diseases of human and animals are transmitted by these ticks. Ixodid tick fauna of Arunachal Pradesh was first studied by Nuttall and Warburton (1915). Later through the works of Sharif (1928), Dhanda *et al.* (1964), Hoogstraal *et al.* (1970), De and Gupta (1978) and De and Sanyal (1985) a total number of 19 species belonging to 8 genera were reported from Kameng, Lohit, Siang, Subansiri and Tirap districts of Arunachal Pradesh (based on old divisions of districts). As per recent records, altogether 21 species under 8 genera hitherto known from the state have been recorded. Of these, two species viz. *Ixodes kashmiricus* and *I. vespertiliones* have been reported for the first time from Arunachal Pradesh.

The spider fauna of Arunachal Pradesh has not yet been studied in a comprehensive manner (Tikader 1980, 1982). Present report is based upon the specimens collected from different parts of Arunachal Pradesh as well as those present in the National Zoological Collection, Zoological Survey of India, Calcutta. About 350 examples of spider have been studied and identified by ZSI scientists, belong to families such as Theraphosidae, Salticidae, Ctenidae, Thomisidae, Heteropodidae, Clubionidae, Gnaphosidae, Oxyopidae, Lycosidae, Zodariidae and Araneidae. A total 58 species belonging to 28 genera under 11 families are reported, of those 9 families 26 genera 54 species form new records for the state. Out of these, 4 species 4 genera under 3 families are new to science.

## CLIMATE

### Broad features of climate

Meteorological data for sufficiently long periods are not available for any station in the State, except for few important locations and district headquarters of the State. Its data are only representatives of climatic conditions in the places from where these data were thus recorded. This description therefore, should be regarded as a general inference about climate drawn from the nature of the terrain, altitude, location, etc, together with the meager data available for the nearby region.

The annual rainfall in the district headquarters for the period 2000-2005 is shown in the table as under:

	2000	2001	2002	2003	2004	2005	Average rainfall
Tawang	1857.70	1291.40	1353.10	1543.30	1874.60	1737.00	
Bomdila	1433.30	1384.60	2363.50	2049.10	2024.10	1474.60	
Seppa	1472.00	1512.40	1703.00	1951.00	2143.00	2152.00	
Koloriang	N.A	N.A	N.A	N.A	N.A	N.A	
Yupia*	3094.00	2289.20	2864.60	3300.80	4250.20	2864.80	
Ziro	1131.60	1341.60	923.70	667.50	962.60	940.60	
Daporijo	N.A	N.A	1839.60	1645.20	1500.50	N.A	
Aalo	2376.40	1676.50	2376.80	2427.00	2135.90	1933.10	
Pasighat	3888.40	N.A	N.A	N.A	4696.80	4612.00	
Yingkiong	2365.50	2878.50	2538.50	2911.80	1811.00	2588.70	
Anini	N.A	N.A	1678.00	N.A	3281.33	N.A	
Roing	4723.70	3418.80	3484.00	3889.80	3883.20	3977.60	
Tezu	3965.30	N.A	3954.20	4002.10	5179.00	4823.10	
Hawai**	3393.40	N.A	N.A	N.A	N.A	N.A	
Changlang	1783.50	1792.00	1628.40	2435.30	3050.00	2469	
Khonsa	N.A	N.A	3807.90	4082.60	3904.10	N.A	

\*Data of Itanagar

\*\*Data of Hayuliang

Source: Chief Engineer, RWD, Arunachal Pradesh, Itanagar.

The year may be divided into four seasons:-

1. The cold weather season is from December to February,
2. March to May is the pre-monsoon season of thunderstorms followed by
3. The southwest monsoon season from June to September,
4. October to November, which is the post-monsoon season or the re-treating monsoon period.

The varied orography has an important influence on the climate, which varies according to elevation and location. The mountainous parts of the State enjoy what is known as mountain types of climate, while the low lying narrow peripheral plains and the valleys experience tropical climate.

The mountain type of climate is characterized by the influence exerted by mountainous terrain on air temperature and its variation which, in turn, cause other weather phenomena, such as, fog, and thunderstorms, as the insolation at high altitudes is intensive due to a rarefied and transparent atmosphere, soil and

rock absorb radiation. They are heated up rapidly with the result that the temperature in the open is considerably higher than those in shade, especially in summer. Mountain slopes turned away from the sun may be considerably cooler compared to those exposed to the sun. Immediately after sunset, ground at high elevations begins to cool rapidly owing to outgoing terrestrial radiation through a rarefied atmosphere. Cold air drains down the mountain slopes into the valleys below where it may remain stagnant and further cool due to outgoing radiation during night. All these factors cause large diurnal variations of temperature, particularly in the valleys. They also cause large gradients of temperature from place to place.

Owing to the generally east-west orientation of the high mountain ranges, particularly in the north, southerly rain bearing monsoon winds exert their full impact on the wind sides and over the valleys. Copious rainfall during the monsoon is, therefore, another important feature of the climate of the State. These monsoon rains occur as a result of penetration of the monsoon current into the region through the trenched conditions or in association with storms/depressions during their passage westwards across the head Bay of Bengal. Rainfall over the northern mountains is heavy as a result of the shift of the axis of the monsoon-trough of low pressure from its normal position in the Himalayan foot hills during weak monsoon conditions. The normal position of this trough is from Rajasthan to the Bay of Bengal. Heavy rain floods occur in association with these situations. Weather may temporarily improve when the depressions are forming or intensifying over the head Bay of Bengal. The State receives its winter rains, particularly in the northern parts due to the passage of western disturbances. These disturbances are low pressure systems which approach particularly the northern portion of the State from the west in winter. The usual sequence of weather associated with their approach and passage may be broadly described as follows. The approach of a disturbance is attended with fall in atmospheric pressure and rise in surface temperatures. Incursion of moisture into the region results in increased clouding. High clouds appear first followed by medium and low clouds and even cumulonimbus (thunderstorm) clouds may develop. Precipitation (rain/ snow over high elevation) follows. With the passage of the disturbance to the east, weather begins to improve, pressure rises and strong west to northwesterly winds cause sharp fall in temperature. On an average, 4-5 such disturbances per month affect the region during winter.

### Sea level pressure and winds

The atmospheric pressure gradient is generally weak over the State throughout the year. Wind circulation is mainly influenced by the nature of terrain. The terrain of the region gives rise to various types of local winds. Katabatic flow in the valleys and down the mountain slopes is strong. Anabatic currents (i.e. wind blowing up the mountain slopes) are generally weak and appear in the afternoons. Often observed reversal in wind direction during days is due to these types of wind. Winds blowing through mountain gaps emerge out as strong currents. Under certain favourable conditions lee-waves are caused by mountain barriers.

In association with (1) winter disturbances in winter, (2) monsoon circulation and (3) storms and depressions during the southwest monsoon, the winds become strong. Winds in the wake of the western disturbances get added strength due to the favourable orientation of mountain ranges and valleys. The mountain winds force themselves up the valleys and the mountain slopes.

Winds become temporarily strong during the summer season in association with thunderstorms developing in the pre-monsoon period.

Altitudes of selected places of Arunachal Pradesh is shown in the table below:

Sl. No.	Name of Place	MSL(in metres)
1.	Tawang	3025
2.	Bomdila	2430-2700
3.	Seppa	363
4.	Naharlagun	290
5.	Itanagar	459
6.	Ziro	1572
7.	Koloriang	1004
8.	Daporijo	500
9.	Aalo	300
10.	Pasighat	155
11.	Yingkiong	500
12.	Anini	1968
13.	Roing	390
14.	Tezu	210
15.	Hayuliang	750
16.	Changlang	580
17.	Khonsa	1278

Source: Statistical Handbook of Arunachal Pradesh, 2006.



**Precipitation (rain and snow)**

Owing to the complexity of relief, the distribution pattern of precipitation is also complex. In the highly mountainous region, forced ascent of moist air along the mountain slopes causes clouding and consequent precipitation. On the windward sides the precipitation usually increases up to 1 to 1.5 km, above which it gradually decreases. Precipitation during winter is mostly in the form of snow above 1.0 km in the form of rain at lower elevations. Precipitation during the monsoon season is copious and mostly in the form of rain. Significant precipitation occurs during the pre-monsoon period of March to May, especially in the northern districts.

Narrow peripheral strip of land below the elevation of 1.0 km surrounding the Brahmaputra valley is the rainiest part of the State which receives more than 250 cm annually. In this region, the rainfall increases to 400 cm towards east. Over the remaining parts, rainfall decreases with elevation. Among the elevation districts of Arunachal Pradesh, the Siang region comprising West Siang, East Siang and Upper Siang districts and the adjoining parts of the Dibang region comprising Dibang Valley and Lower Dibang Valley, and Lohit region comprising Lohit and Anjaw districts are the rainiest with the annual rainfall exceeding about 250 cm except over the northern parts where it is less. The Kameng region comprising East Kameng, West Kameng and Tawang districts is having annual rainfall decreasing from 250 cm in the south to about 100 cm in the northwest. Except Changlang and the adjoining parts of the Lohit district (south of the Lohit river), the southern halves of the remaining districts receive 70 percent of their rainfall during the southwest monsoon months, June to September, and about 20 percent during the pre-monsoon months. The northern portions receive about 50 to 60 percent of rainfall during the monsoon period, while 20 percent each during pre-monsoon and winter periods in association with western disturbances. The Changlang district along with the adjoining Lohit district gets 85 to 90 percent of the rain during March to September, 50 to 60 percent being accounted for during the southwest monsoon period.

Variability of rainfall for the monsoon as well as for the years as a whole is quite small being about 15 percent only. The variations in the amounts of precipitation received from year to year are not significant. Variability of winter rainfall, however, is quite large, being as high as 50 percent. The number of rainy days, i.e. days with more than 2.5 mm of rain, average between 125 to 150 annually.

In spite of heavy occurrence of rainfall in the state, the occurrence of

drought is also not unknown to the people, as monsoon arrives some times late. Floods on the other hand are frequent. It may generally be said that rainfall sufficiently in excess of the normal is a predominant factor for the occurrence of floods in lowland areas and land slides and soil erosions in high ridge areas everywhere. The orography and copious rainfall combine to render the plains liable to frequent floods; precipitation even slightly less than the normal may cause flood. The catchments area for the heavy precipitation consists of deep and narrow valleys. Tremendous quantity of rainwater collected in these valleys forms deep and very strong currents which rapidly spread over the plain areas. In addition, snow melt during summer in the upper regions also contributes to the swelling of water.

### Temperature

January is generally the coldest month when the mean maximum temperature in the plains is of the order 23°C. The mean minimum being 12°C. Much lower temperatures are experienced at higher elevations at 3 km the mean daily temperature is below the freezing point. Temperatures fall appreciably in the wake of western disturbances when snow accumulation in valley becomes considerable. Temperatures begin to rise rapidly in March and continue to rise till August, after which they are more or less steady till September. August is normally the warmest month when the mean daily temperatures of about 27°C prevail over the plains, while the maximum temperatures are of the order of 31°C. At an elevation of 3 km the mean daily temperature is about 15°C. In the valley and the plains, the maximum temperature in summer may occasionally exceed 36°C when the weather may become oppressive in the absence of wind. After October, temperatures begin to fall.

The meteorological data of Itanagar for the period 1996 – 2005 is shown in the table below:

Year	Maximum Temperature recorded (°C)	Minimum Temperature recorded (°C)	Total rainfall Recorded (in mm)	Highest rainfall recorded (within 24 Hrs)	No. of rainy days
1996	39.0	8.5	3338.30	125.80 (27/06/96)	157
1997	36.4	7.0	3459.30	159.00 (17/06/97)	151
1998	37.0	9.8	5171.60	202.00 (12/06/98)	161
1999	35.7	9.2	3737.20	142.00 (09/10/99)	138
2000	36.0	7.0	3094.00	114.40 (03/07/2000)	150

2001	36.0	7.0	2289.20	90.00 (29/07/2001)	142
2002	35.0	7.0	2864.60	147.00 (11/08/2002)	136
2003	38.0	7.2	3300.90	134.00 (10/10/2003)	168
2004	35.0	6.8	4250.20	108 (30/06/2004)	157
2005	36.4	8.5	2864.20	112.00 (25/06/2005)	153

Source: Chief Engineer, RWD, Govt. of A.P., Itanagar.

### Relative Humidity

Relative Humidity is always high except in winter months.

### Cloudiness

Clear or lightly clouded skies are common during the post monsoon season. During the winter season, skies become obscure in the mornings owing to lifted fog which withers along with the advance of the day. In the pre-monsoon months the skies are moderately clouded particularly in the afternoons. Clouding is occasionally heavy during this period. During the southwest monsoon season the skies are heavily clouded to overcast.

### Special Weather Phenomenon

Occasional thunderstorms occur during late winter in association with western disturbances. Thunderstorm activity increases considerably and is at its maximum during the pre-monsoon period as a result of interaction between the northern cold air and the southerly warm moist air. These summer thunderstorms are often violent similar to the norwesters. Accompanied by hail these continue during the early part of the monsoon. Thunderstorms also occur during October when the monsoon is withdrawing. Fog occurs frequently during the winter months, particularly in the mornings in the valleys. Hill fog is common during monsoon months.

~~~~~

## **CHAPTER – II**

# **HISTORY**

### **PREHISTORY AND ARCHAEOLOGY**

It has been aptly said that 'life is a constant balancing on the point of intersection where the past and the future meet.' This gives precisely an answer to the question why knowledge of the past is necessary. Indeed, history becomes lively, meaningful and purposive when a link of the present can be established with the past.

Our present knowledge of the early history of the erstwhile 'hidden land' of what is now known as Arunachal Pradesh, which is a difficult mountainous region populated very sparsely and scattered by a variety of tribes, is rudimentary and incomplete. The extant sources, literary or material, do not provide a comprehensive account of prehistory of the area. The study of the extant sources is yet to be completed. Current archaeological and ethnological investigations and researches in Arunachal Pradesh may assist in further improving our knowledge of the early history of the area.

The prehistoric culture of mankind can be divided broadly into three periods, viz. Palaeolithic, Mesolithic and Neolithic. The Neolithic culture is, however, considered as latest lithic culture of post glacial period (1,00,000 BP). As far as Arunachal Pradesh is concerned, findings of prehistoric tools, especially Neolithic tools have been reported almost from every parts of the State. However, some palaeoliths like hand axe, chopper, scrappers etc have also

been reported, though scarcely.

During the period 1969 – 70, B.P Borpadikar of Archeological Survey of India (ASI) conducted a first systematic exploration in Daphabhum area of Lohit District. In which a large number of palaeoliths like axe, chopper etc. was discovered. Another notable systematic excavation was undertaken by A.A Ashraf, Assistant Director of Research (Archeology) in Parsi- Parlo area of the Lower Subansiri District during the period 1982 – 84. The excavation resulted into finding of good number of palaeoliths like chopper, scraper, blade and neolith tools like ground axe, adze, chisel etc.

In Arunachal Pradesh so far very little well organized pre-historic exploration has been conducted. One of the aims of exploration was to trace the habitations of the early man and to co-relate the western Himalayan Stone Age industries with that of the easternmost. During exploration in Kamlang valley, various artifacts of the Stone Age man were collected.

Palaeo-anthropological studies have also thrown some valuable light on the pre-history of Arunachal Pradesh. The discovery of a molar of Boss Sp, which was found in the upper tertiary horizons, and is said to be the first report of a vertebrate fossil from the whole of Eastern Himalayas. The upper tertiary rocks occurring in the foot hills of Arunachal Pradesh are in continuation with the Siwaliks. The presence of primates in the Arunachal Pradesh Siwaliks is strongly indicated that the Paleolithic hominids as well as men did inhabit this region during the late tertiary and Pleistocene times.

## NEOLITHS

E.H Steel was the pioneer in the discovery of prehistoric tools in Arunachal Pradesh. He discovered some Neolithic celts at Namsang area sometimes in 1870. More Neolithic celts collected by Healy, R.D Banerji, Miles and others until 1937 are reportedly been preserved in the Pitt River Museum, Oxford.

Neolithic Celts are found to have a wide distribution in Arunachal Pradesh. These are found as surface in areas now inhabited by the tribal communities like Monpa, Sherdukpen, Khowas, Miji, Aka, Tagin, Hill Miri, Memba, Khamba, Bokar, Adi, Galo, Idu Mishmi, Digaru Mishmi, Khampti, Singpho, Tangsa, Nocte, and Wancho. The existence of Celts has also been reported from the areas inhabited by the Solung (now Puroits) and the Nyishis. The Celts are of various types. As such, shouldered Celt, faceted Celt, Tanged axe,

chisel, ground Celt of triangular or sub-triangular shape etc., the stones which were used to make these tools jadeite and Shale. The techniques of grinding and sawing or chiseling were adopted to manufacture them.

These Neolithic Celts are associated with various myths and beliefs of the tribal people. It is generally believed that the Celts are thunderbolt or axes of the sky or of some deity fallen from the above during thunder and lightening. The Celts are called *Kyug* (thunderbolt) by the Monpas of Tawang *Chubiangra* by the Monpas of Dirang and Kalaktang, *Michaflu* by the Sherdukpens, *Jeu-forje* (*jeu*-name of deity, *forje*-axe) i.e. axe of *Jeu* by the Akas, *Hakhraw-thapiuh* (hakhraw-thunder, thapiuh axa) by the Khowas and *Chambeo-blu* (*chambeo*-thunder, and lightening, *blu*-axe) by the Mijis. *Khanfa* (*khan*-axe, *fa*,-sky), *Bura-tapah* (*bura*-cloud, *tapah*-thunder), *Tumok-Awai* (*tumok*-thunder, *awai*-axe), *Rangminkoi* (*rang*-sky, *minkoi*-axe) *Zangwaka* (*zang*-sky, *waka*-axe) by the Khamptis, Digaru Mishmis, Miju Mishmis, Tangsas, Wanchos and Noctes respectively. The Membas call it *Namchalung* (*nam* literally means stone but here it means sky, *cha*-iron, and *lung*-stone) i.e. the iron hurled from the sky and transformed into stone on reaching the earth. The Khambas call it *Thiroh-tare* or *thoh* (*thoh*-thunder). A spirit named *Thiroh* made this *Tare* i.e. axes for *Undruk*, the presiding deity of thunder and so these are known as *thiroh-tare*. The Adis call it *Lidor*. The Singphos call it *Muhningwa* (*muh*-name of deity, *ningwa* – axe) i.e. axe of *Muh*.

A large number of neoliths have been collected from all parts of Arunachal Pradesh, and the record of this collection dates from 1870 till recent times. The earlier collections are in the Pitt Rivers Museum, Oxford. As the neoliths were casually found lying over the ground or just below the surface without any stratigraphic relevance, nothing definitely is known about the period of the widespread Neolithic culture that once existed in Arunachal Pradesh and which is represented by the relics of the stone tools and artifacts discovered so far. It is quite evident that the Neolithic men lived in this region. But how did they make their living and what type of material culture did they build. These are some of the pertinent points which still remain as matters of conjecture. Besides these, the important questions as to who were the Neolithic people and whether or not they were the ancestors of the present tribal inhabitants of Arunachal Pradesh are yet to be answered. As regards period, nothing could be definitely said. Yet on typological grounds it could be surmised that the Neolithic stage could have started in Arunachal Pradesh by about 2000 B.C.

In 2001, the prehistoric branch of Nagpur circle of Archeological Survey of India had carried out exploration in Lower Subansiri and Kurung Kumey district with the help of Archeological Section of the Directorate of Research, Arunachal Pradesh. During the course of exploration, some palaeolithic tools viz. hand axe, chopper, scraper etc. were discovered in the river bed of Ranganadi. The team had also collected a few numbers Neolithic tools from Yachuli, Deed, Deam and Palin areas.

In October, 2005 a team of Archeologists from the Directorate of Research, Arunachal Pradesh visited Nafra in West Kameng district to conduct investigation into the reported possession of Neolithic celts by the priests in Miji village of Khelong and Upper Nafra. The Mijis called this celts as Jogin-Blue; meaning the stone which come from the sky.

The north-eastern region of India lay on the routes of prehistoric movements of the early people. Waves of tribal migrations passed through this region from times immemorial. The existence of a Neolithic culture in Arunachal Pradesh assumes greater significance against this wider background of prehistory. It might have affinities with the Neolithic culture of the Monkhmar speaking people of the North-eastern India. But this is a matter to be studied and opined by the —research scholars.<sup>1 \*\*</sup>

### MEGALITHS:

The Oxford dictionary describes Megalith to mean '*a very large stone, especially one put in a place that was used for ceremonies in ancient times*'.

Megaliths and menhirs belonging to prehistoric times occur almost all over the world. These monumental stones were erected probably for tombs and they had a socio – religious significance. In the north-eastern India, there are many megalithic sites in the Khasi, Jaintia, Karbi and Naga Hills. In Meghalaya, in particular, lived by the Khasis and Pnars (Jaintias), memorial stones-menhirs with dolmens are a familiar sight.

Arunachal Pradesh has a solitary megalithic site. At the Aka village of Jamiri in the Nafra-Buragaon Sub-division of the West Kameng District, there

<sup>1 \*\*</sup> For details, see:

(a) Archaeology in Arunachal Pradesh [Shillong, 1980] by Y.A.Raikar and Chatterjee, pp 8-13  
(b) Neolithic Celts from Arunachal Pradesh by Niranjana Sarkar, published in the Resarun [Shillong, 1982], Vol .VIII, No.pp.11-15.

are standing stones resembling menhirs. The Akas have great reverence for these stones. They believe traditionally that these stones are of divine origin. The Akas are staying at Jamiri for several generations, but they do not know who erected these stones and when. It may be surmised that one group of people belonging to a megalithic culture preceded them at Jimiri.

### **THE HISTORICAL ARCHEOLOGY AND EARLY EXPLORATIONS**

The historical archaeology has been brought to light by some British officers who have done exploratory works in the field and published their reports regarding the sites like Bhismaknagar, Tamreswari, Bhalukpong, Itafort, and Mudfort etc. T. Bloch was the only Archaeologist among them who carried the spirit of antiquarian inquiry initiated by the Lord Curzon, up to the north eastern corner of India and left his record in the Annual Report of the Archaeological Survey of India, 1905 – 07.

Basing on the stray data of early explorers – mostly British - of 19th century, an intensive study was conducted by N.N. Bhuyan Supervisor (Exploration) of the NEFA Administration during the year 1953 – 55, the reports of which were published. On the basis of the published report on Bhismaknagar, Tamreswari, Rukmininagar, Bhalukpong and Bhismaknagar, and recommendation submitted by D. Mitra of Archeological Survey of India, the said three historical sites were declared as State Protected Monuments under the Ancient Monuments and Archeological Sites and Remains Act, 1958.

### **CATEGORIES OF REMAINS**

The Archaeological remains and monuments in Arunachal Pradesh could be conveniently grouped in three categories viz. Brahmaputra valley cultures which include the ruins of forts, temples, *Pukhuris* and roads, mostly all along the foothills. Secondly, are the Buddhist cultures of stupas, chortens, monasteries and other structures. They are found in the western most and eastern-most flanks of the state, the former are Mahayana and latter Hinayana. Thirdly, come the stray traces of past events from local history. Among them fall some stockades, canals, carved stones, wells etc.

### **TEMPLES**

Three ruins of temples are so far studied: Malinithan in West Siang and Tameswari and Siva Linga in the Lohit. Among them the most important is Malinithan, near Likabali in West Siang district. It is seated on a hillock 21



meters high, that overlooks the plains and the great Brahmaputra. The site is full of rich sculptures and abundant masonry. The living temples of Malini are of recent origin but from the archaeological point of view, what survives is the platform (pitha) with three components. The style of the temple is obviously of the Orissan School, which had extended up to Assam.

### **I. Malinithan**

Malinithan or Malinisthan or abode of Malini is a temple site in ruins, is situated at the foot of the Siang hills under the Likabali Sub-Division of West Siang district of Arunachal Pradesh. The ruins are located within the periphery of foothill township of Likabali and 1 km from the Silapather-Aalo road.

Mythologically Malinithan is related to Krishna of Dwarka. It is in the local legend that Krishna and Rukmini on their way back to Dwarka had rested at this place, where they greeted by Lord Siva and Parvati in their disguised forms as gardeners. Whereupon being satisfied Krishna addressed Parvati as Malini and said that would be worshipped henceforth at this place by her new name Malini. Since then the place became famous as Malinithan or abode of Malini.<sup>1</sup>

The ruins of Malinithan which was excavated from 1968 – 71 revealed three temple bases, six independent icons and a good number of sculpture pieces of Hindu pantheon. The use of both soft and hard varieties of sand stones has been deciphered. The relative art and architectural study manifested maximum Palas art and architectural features on the temple residuals of Malinithan, which is why it is presumed that the temple complex of Malinithan was built by the Palas of Kamarupa in the 11th and 12th Century A.D.

Malinithan is also been identified as one of the Sakti Pithas to the east of Kamakhya by some scholars. It is thus said that Lord Siva in the course of his wanderings about the whole world with the corpse of Sati, Lord Vishnu wanted to make a stop to it and with his Chakra cut the body of Sati into fifty one pieces, wherever those fifty one pieces of Sati's body had fallen all those places in course of time became a holy place<sup>2</sup>. It is believed that a piece from Sati's head part fell at Malinithan and thus Malinithan became one of the Sakti Pithas.

<sup>1</sup> J.C. Dutta, Malinithan, p. 1

<sup>2</sup> Shastri, B.N., The Kalika Puran (Eng. Edition) Delhi, 199, pp. 194, 195.

According to popular legend, the king Bhismak ruled Vidarbha who had five sons, and only one daughter, named Rukmini. Having heard about the successful exploits and beauty of Lord Krishna of Dwarka, she decided to get Krishna as her husband, through the grace of Lord Siva and Goddess Parvati. Accordingly, she propitiated both of them through arduous penance, and finally gained their favour to get her beloved. At the same time Lord Krishna was also interested to marry Rukmini on hearing her virtues and beauty. But Rukmini's eldest brother Rukma arranged his sister's marriage with Shisupal, who was the king of Chedi. He was also one of the renowned heroes and was friendly with Rukmavira. When Rukmini came to know about her marriage with Shisupal, she expressed her aversion to it and prevailed upon her father to somehow stop it. The king Bhismaka was fond of his daughter and tried to persuade his son Rukma not to proceed with the proposal any further. Adamant as he was, Rukma did not pay any heed to the wishes of his sister Rukmini and went ahead with the proposal. Having realized the futility of any persuasion, aggrieved Rukmini dispatched royal priest Bedanidhi to Dwarka with a letter Rukmini is said to have narrated her desire as well as her plight and of the happenings of Kundilnagar. She fervently urged Lord Krishna to come without losing any time and to rescue her before it was too late.

Accordingly, Krishna arrived along with Bedanidhi at Kundilnagar on the day which happened to be the day of Rukmini's marriage with Shisupal and on reaching the venue of the marriage, Krishna carried away in his chariot to Dwarka. This was naturally a great humiliation for Rukma as he could not keep his word given to Shisupal and it naturally caused great anger in him. Thus being humiliated by this act of Lord Krishna, Rukma with his supporters pursued Krishna and also to teach him a lesson for such act of his.

Being a great warrior, having never daunted in front of his adversaries, Krishna easily defeated Rukma and Shisupal and married Rukmini at Kundilnagar. There are two different versions as to the place where this marriage of Rukmini and Krishna actually took place.

According to one version the marriage was performed at Kundilnagar and after the marriage Rukmini and Lord Krishna on their back to Dwarka rested here at the place of present Likabali, where the temple ruins are presently situated. There Goddess Durga in the guise of a garlander offered Krishna a garland of beautiful flowers whereupon Lord Krishna was immensely satisfied and addressed her as Malini. And further told thenceforth she would be

known as Malini and the temple would be constructed in her name where she would be the presiding deity. According to that version the marriage took place here at Malinithan in the presence of Siva and Parvati and garlands were exchanged between Rukmini and Krishna, consequent upon which the place came to be known as Malinithan.

It is believed that after a night's halt at Malinithan, Lord Krishna and Rukmini took bathed the next day at Akasi Ganga – a place situated at about 7 km up on the hills from Malinithan. Believers of Hindu religion come here to take holy bath on the *Makar Sankranti* day at Akasi Ganga.

## II. Tamreswari and Shivalinga

Very little information is available on the Tameswari and Shivalinga in the plains of the Lohit District. The Tameswari stood on the right bank of the river Paya and the Shivalinga on its left within a distance of one kilometer from each other.

The roof of the Tamreswari temple was originally sheeted with copper from which the name is derived. In 1848, when Dalton visited the site, he found the stone structure but the copper roof was already removed. According to Debala Mitra (1956), the temple was originally *caturayatana* i.e. having four shrines, built of sandstone and granite, and located in south-east section of the rectangular brick enclosure, *prakara*, roughly measuring 208ft. by 130ft. the compound wall 4ft. wide and originally 8ft. high, had a stone gateway on the eastern side. According to the inscription at the site, the compound wall was constructed in 1441 A.D.

This Shivalinga temple had two brick-built edifices one is solid cube of 0.915 meter side on which the huge Shivalinga 1.06 meter high, made of granite was enshrined. The other is a cylindrical base of 1.20 meters diameter. Nothing more about the structure as a whole is known. The Linga was unearthed in 1965 – 66 and later shifted to Tezu and installed in a temple. The Shivalinga temple can be ascribed to the 15th century.

## Budhist Shrines

The Tawang and West Kameng district, inhabited by the Monpas and Sherdukpens is full of Mahayana (rather Vajrayana) monasteries, chortens, and other structures belonging to the 17th and 18th centuries and also later. The influence from Bhutan and Tibet region of China is visible on these structures.

### I. *Tawang Monastery*

The Tawang Monastery (Gompa), the fountain head of the spiritual life of the Buddhist tribes of western Arunachal Pradesh is about 400 years old. The Monpas and Sherdukpens of Tawang and West Kameng Districts are two major tribes in Arunachal Pradesh practicing Buddhism of Gelugpa Sect of Mahayana Buddhism and Tawang Gompa being their spiritual centre for religious propagation.

The Monastery sits at about 3,050 metres above the sea level. Founded in the 17th century A.D., it is said that it lies at a vital point where three routes from Tibet, Bhutan and eastern Kameng converge. The monastery is in fact a large complex resembling a castle. Enclosed by a 610 metres long wall, it extends over an area of 135 sq. metres.

An admirable feature of this religious institution is its repository of valuable old scriptures. The main Gompa and the library building are the most important among them. The institution is a store house of old scriptures, other records and antiquarian wealth. The scriptures (mainly Kanjur and Tanjur) accounted to approximately 850 bundles.

The Monpas are said to have a deep sense of attachment to the legends of Shanta Rakshita and Maharimpoche Pema Jungne or Padmashambhava (C. 8th century A.D.), the two Indian saints who carried Buddhism into Tibet and are believed to have passed through Tawang on their way. In course of the development of Buddhism in Tibet, there emerged four sects, namely Nyingmapa, Sakyapa, Kargyupa and Gelugpa. The history has it that Mera Lama, a contemporary of the fifth Dalai Lama, Nagwang Logjang Gyatso (A.D. 1617-1682), was the founder of Tawang Monastery. Mera Lama belonged to the Gelugpa sect of the Buddhism. There is a statuette of this great lama installed in the dome of a *chorten* (*Buddhist stupa*) inside a building which is supposed to have been used by him as his residence. This building is regarded as a mausoleum.

The Gelugpa sect was introduced in the areas now known as Tawang and West Kameng districts by Tanpei Dronme from the house of Poudun of the Monpa village called Berkhar near Kraling. He was ordained as a monk by the second Dalai Lama, Gedun Gyatso (A.D., 1475 – 1543), himself. Tanpei Dronme was a great religious preacher and builder of monastery and many Gelugpa temples. The fourth of his incarnation Lodre Gyatso renowned as Mera Lama

was also of the same Monpa house of Poudun.

The Tawang Monastery had its origin in the ascendancy of the Gelugpa sect in this area. The Gelugpas were opposed by some other sects – the Karmapas (a sub-sect of the Kargyupa), Nyingmapa and the Dukpas (another sub-sect of the Kargyupa). It should be mentioned here that the Dukpas of Bhutan were particularly hostile to the Monpa followers of the Gelugpa sect, and they made several attempts to seize Tawang. Mera Lama faced stiff opposition from the Dukpas, who were bent on obstructing him so as to foil his every attempt to build up a Gelugpa monastery. The hostilities between these two sects broke out in 1643 and continued for years. Eventually, with the help and blessings of the fifth Dalai Lama of Tibet, Mera Lama succeeded in establishing a monastery at a place called at that time Tsosum. In recognition of the part played by his horse in helping him to find out a suitable site for the monastery, he auspiciously renamed the place as Tawang (ta = horse; wang = chosen) or the place chosen by horse. The full name of this monastery is Tawang Galden Namgye Lhatse '*Tawang-site chosen by horse; Galden-paradise; Namgye-celestial; Lhatse-divine* or the celestial paradise of the divine site chosen by horse'. The people of Tawang gradually gathered around Mera Lama and helped him to fulfill his mission. The establishment of the Tawang Monastery was in itself a sign of victory of the Monpa followers of the Gelugpa sect, who gained prominence over other sects in this area. The influence of the Gelugpa sect spread out to wider areas inhabited by the Monpas and Sherdukpens.

## II. *Urgyeling Gompa*

It is a remarkable event of the history of the Monpas of Tawang that the sixth Dalai Lama, Tshangyang Gyatso (A.D. 1683 – 1707), was born among them at the Urgyeling Gompa. He was taken to the Potala, the palace of Dalai Lama at Lhasa, when he was a grown-up boy.

From Tawang, Urgyeling is five kilometers away by the main road and at a distance of only two kilometers by a track. Set against the background of snow-capped Mountains and amidst exquisitely beautiful and serene surroundings, the Urgyeling Gompa, a two-storied building, is one of the oldest monasteries of this area.

The Urgyeling Gompa originally belonged to the Nyingmapas. The Gelugpas took it over after the birth of the sixth Dalai Lama.

### III. *Gorcham Chorten*

A *chorten* is Buddhist stupa, meaning originally a tumulus or a mound commemorating the Buddha's death. The *chorten* at Gorcham near Zemithang in the Lumla Sub-division of the Tawang District is a cenotaph.

Built in stone and raised to a height 98 feet, the Gorcham Chorten is the largest Buddhist stupa in Arunachal Pradesh. The hemispherical dome rests upon three plinths. Four miniature stupas are set on the four corners of the lowermost plinth. The base is square with each side about 175 feet in length, with a niche running all along its whole length and 120 prayer wheels (manes) are set in frames of wood in the niche of each side of the base. A paved path goes all around for the pilgrims to follow in respectful circumambulation 'keeping the chorten on their right, turning the manes and muttering '*Om mani peme hum*'. There are also tiny clay *chortens* and miniature clay bas-reliefs of Tsepame (Amitayus), the Buddha of Infinite Life along with the manes. These are the offerings of the pilgrims. The dome is surmounted by a square capital with a spire of thirteen step-like segments topped by an umbrella. This chorten is on the bank of a stream and lies beside the path between Lumla and Zemithang".<sup>1</sup>

Lama Prathar, a Monpa lama born in the nearby Kharmiu village, is reported to have built the celebrated chorten at Gorcham probably in C.17 century A.D. after the Tawang Monastery was constructed. Lama Prathar was blessed by Dalai Lama for the construction of the stupa with miniature images and some religious scriptures which are believed to have been put under the Gorcham stupa while construction.

### IV. *Dirang Dzong*

The Dirang Dzong was built in 1831 at Dirang - Monpa stronghold - in West Kameng district. It is a strategically located four storied fortified building in which the entire village folks could take refuge in time of war. It is the only one of its kind in the area. The Monpa-Sherdukpen belt is the only region in Arunachal Pradesh where traditional archaeological structures have survived for over three centuries and the art is still living.

---

<sup>1</sup> An account of Gorcham Chorten: The largest Stupa in Arunachal Pradesh by N.Sarkar, Published in the Resarun (Shillong, 1977), vol.3.No.4,p.11

## V. *Taklung Dzong*

It is situated on small hillock south of Sanglem village along Taklung Valley under Kalaktang circle of West Kameng district of Arunachal Pradesh.

The word Taklung is a combination of two words viz. *tak* = leopard and *lung* = forecast. The Monpas believe that as the area was forecasted by the leopard, they named the place Taklung. This important shrine is believed to have been built in sixteen century A.D. by the Buddhist missionary Lama Tanpei Dronme<sup>1</sup>.

## VI. *Taktsang Monastery*

Taktsang monastery, 45 km from Tawang, is also known as the Tiger's Den. Guru Padmasambhava is supposed to have visited this ancient monastery in the 8th century. Some of the other important monasteries available in West Kameng district which are of worth visiting are *Lhagyala Gompa*, *Zangdo Peri Gompa of Kalaktang*, *Gyuto Tantric Monastery of Tenzinggaon* and *Gompitse Monastery of Bomdila*<sup>2</sup>.

## VII. *Vijaynagar Stupa*

The Himalayan zone of Arunachal Pradesh lies in the Khampti and Singpho areas of the Lohit and Changlang districts, where the influence of Myanmar and Thailand is visible. The most important and probably the only one surviving site under the category is Vijayanagar in the eastern most corner of India, surrounded by the territory of Myanmar on three of its sides. A Stupa was excavated there in 1971. This stupa gives us light on the traces of migration of Hinayana Buddhist in the region. Archaeology has confirmed that the valley was inhabited by an advanced Buddhist people like Khamptis and Singphos at least since the middle of the 18th century and that it was called Khomong.

## Traces of Local History

There are a number of material traces that throw light on events on local history. This includes canal at Desali, stockades at Dambuk in Lower Dibang Valley district, wells near Daporijo in Upper Subansiri district and Kekar

<sup>1</sup> For more details see :

i. Taklung Dzong, published by Directorate of Research (Archeological Section) Govt. of Arunachal Pradesh, Itanagar.

ii. Resarun, Vol. XIV, No. 1 and 2 Spring-winter issue: 1988, pp 71-74.

<sup>2</sup> For more detail see: Resarun Vol. XXIII (1997); Vol. XVII (1991) and Vol. XVI (1990).

Monying in East Siang district.

Thus the archaeological sites in Arunachal Pradesh could be viewed under the three categories, Brahmaputra Valley Cultures, Buddhist Cultures, and traces of local history.

## HISTORICAL FORTS

### i) *Bhalukpung*

Bhalukpung, a circle headquarters in the Bomdila Sub-division of West Kameng District, is situated on the Western bank of the Kameng (Bharali) river at a point close to the Asom-Arunachal border. It lies along the main road leading to Bomdila.

Bhalukpung is a place of historical fame. The tradition has it that Bhaluka, the grandson of Bana, had established his capital at this place. According to the Vishnu Puran the Kalika Purana, King Bana of Sonitpur, a place identified with modern Tezpur in Asom<sup>1</sup>, was a contemporary of Naraka, the king of Pragjyotishpur or ancient Kamrupa. The Akas, it is said, claim descent from the legendary king Bhaluka.

What is important in this context is that there existed widespread remains of a fortress at Bhalukpung. B.C.Allen writing in the beginning of the present century accounted for it as follows:

“The fortress at Bhalukpung is situated on the top of a hill, 300 feet high, near the point where the Bharali issues from the Aka Hills. Three sides of the hill are surrounded by a brick wall and, on the forth, the fortifications are carried across to an adjoining hillock which slopes gradually to the plain. Hewn stones and the remains of plinths are to be seen within the ramparts and a steep pathway paved with stone runs up the eastern face of the hills.”<sup>2</sup>

The remains of the old fortress were visible even in early seventies of the present century. But, it is very unfortunate to note that the remains are no longer where they were. They have disappeared due to destructions by nature and also depredations of men, particularly by the road building agencies.

The Bhalukpung remains were not accurately dated. It was, however

<sup>1</sup> Asom is the changed name of Assam. However, the old name ‘Assam’ has been retained in some passages in this present volume to maintain originality

<sup>2</sup> B.C.Allen, Assam District Gazetteers Vol.V. Darrang (Allahabad, 1905) pp 67-6



observed that the fortress was probably built during the last Salastambha period or the early Pala period, i.e. C.10th-11th centuries, of the history of Asom.

ii) *Naksaparbat*

There is yet another site called Naksaparbat on a hillock at the foothills of the Seijosa circle of East Kameng District, where ruins of an old settlement have been discovered and excavated.

Naksaparbat is about 36 km by a motor able road from Biswanath Charali in the Sonitpur District of Asom. The site is bounded by a stream known as the Kalpong Nala in the east, the Bargang river in the north west and south and some high mounds and forest plantations in the north.

According to a local tradition, the Himalayan range north of Tezpur the headquarters of the present Sonitpur District of Asom, was called Natak Parbat and the river Swarnabaha which flowed from that range come to be known as the Bargang. The present Naksaparbat clearly lies within this region as described. But, it is not known how the place has come to be called Naksaparbat. There is an obvious similarity between the two names Natak Parbat and Naksaparbat. It is plausible that Naksaparbat (naksa in Assamese meaning sketch and parbat = mountain) has been so named because of the existence of carved pillars in this hilly region.

Late R.M Nath, who seems to have visited Naksaparbat as early as 1930, made mention of some of the ruins in his book 'The Background of Assamese Culture'. Next to him was Shri G.C.Talukdar, who visited the site and published a report on the ruins in August 1973. In the late seventies, a preliminary survey of the site carried out by a team of Archeologist of the Directorate of Research, Government of Arunachal Pradesh was followed by the first archaeological exploration of Naksaparbat in December 1979. The site was excavated during 1980-81 and 1982 under the guidance of Dr.D.K.Bora, an archaeologist and the then Deputy Director of Research (History), Arunachal Pradesh.

The following is a brief account of the findings:

The Naksaparbat hillock extends over an area of 240sq.metres and is about eight meters high. There is now no human habitation at the site and the neighboring Bangni (Nishi) villages are quite away. The hillock is enclosed by an earthen rampart, a portion of which is of stone. The rampart runs for about

766 metres and has an opening of 125 meters on the north-east corner. The enclosed area is almost a flat land.

Excavations on the hillock, which was covered by a jungle mainly of cane, has brought light traces of nine houses in absolute ruins and pillars of chiseled stone – mostly broken. The pillars are hexagonal and without any carving except the resemblance of an arch on one suggesting a chaitya (Buddhist shrine). The floor of one of the houses made of stone blocks appeared to be smooth-faced. The fallen pillars lay scattered.

Incidentally, it may be noted that there are some sculptures on stone pillars preserved in the Assam State Museum at Guwahati, which are reported to have been collected from Naksaparbat long ago by a European manager of the nearby Bargang Tea Estate. The sculptures depict human figures wearing *dhotis* and shirts, two men fighting closely, woman with child, man standing on one leg, and also carving resembling chaitya, tree, snakes etc. besides these, some crude sculptures of elephant heads carved on sandstone are said to have been taken away from Naksaparbat to the Forest Rest House of Arunachal Pradesh. There are more reports about the Naksaparbat relics having been shifted previously. It seems that the archaeological wealth of this site was far richer than what it is now.

There is a pond to the south-east about 60 meters below the hillock and outside the rampart, the size being 276 meters long and 54 meters broad. The pond is fed by a small stream, serving as an inlet as well as an outlet, which falls into the Kalpong Nala. The area around the pond is skirted by a bund. Some scattered lying broken pillars were found within the bund.

In the course of exploration, two wells also came to view, one was of dressed stone and the other of burnt clay rings. Situated on the hillock near the house-sites the stone well was topped by line of burnt bricks, which appeared to be of type different from the bricks found at Ita Fort. The other well of clay rings is smaller in size. It was observed that the rings were so made as to fit perfectly one above the other. This ring well is located at a distance of about one kilometer down below the hillock.

A striking feature of the relics found at the Naksaparbat site is that there is no image of a deity and hardly any sculpture carved in stone. Now, if the sculptures preserved at the Assam State Museum at Guwahati, as already mentioned, belong to Naksaparbat then it is obvious that they are mainly secu-

lar in character.

Naksaparat possesses two important questions – who were the people living at this place and how old are the remnants they left behind? The relics bear ample testimony to the fact that the people who built a walled settlement at Naksaparat were skilled at masonry and architecture, and in all probability they came to settle at this site from the plains of Assam. The achievements were doubtlessly of a culturally advanced people. Dr. Borah holds the view that Naksaparat was a Buddhist settlement, as proved by epigraphic evidence and the rules of Chaitya carvings in some broken pillars. According to him, the ruins of Naksaparat belong to a period not earlier than the 16th century A.D. The ruins are peculiar and their stylistic pattern does not resemble the pre-Ahom relics.<sup>1</sup>

### iii) *The Ita Fort*

Ita Fort falls within Itanagar, the State capital of Arunachal Pradesh. It is said to have been built between 1350 and 1450 A.D. during the periods of Muslim invasions on Assam from the West and Ahom inroads from the east. The Fort could be identified with Mayapur of a local king Ramchandra alias Mayamatta and his son Arimatta.

### **Structural complex**

The fort is actually a fortified area of an irregular shape enclosed by natural ridges and brick ramparts. There are two brick walls and three Gates. The Western rampart runs for 1.40 km. in length and has two gates in it. The Eastern Rampart is more than half a kilometre long, with only one gate in it. Then walls cross over uneven terrain and deep nullahs, where remains of culverts, steps etc. exist. The average width of the walls is 1.5 meters and the original height could be about 5 meters, depending on the terrain. The destruction is immense due to a number of factors, such as earthquake, heavy rains, abundance of forest and bamboo groves in particular. Therefore, it is almost impossible to get an idea of the original structure.

---

<sup>1</sup> For more details, see:

(a) Archaeological Ruins of Naksaparat by Dr. D.K.Bora, published in the Resarun (Shillong, 1982), Vol. VIII No.2, pp30-34

(b) Notes on the ruins of Naksaparat in Arunachal Pradesh by J.C.Dutta, published in the Resarun (Shillong, 1982), Vol. VIII No.2, pp30-34

### The Gates

In the north and south, irregular steep ridges of more than a km length each, provide natural defence. No man made earthworks were necessary. The area thus fortified more than a sq. km is sloping from south to north has a number of nallahs and gorges providing ample water as well as escape routes. The fort is drained in two different directions. The currents flowing in the north western direction join in Moob nalla and those in the north-eastern direction, meet the Papu. Three gates of the varying designs have been built at strategic points. The eastern Gate, largely built on stone masonry, overlooks Doimukh in the Dikrang valley. It is the highest point in the fort (512 meters above MSL) best suited to watch and guard the eastern approach from Harmati, (now, the Eastern Gate has been considerably destroyed).

The Southern Gate (480 meters above MSL), is comparatively in better condition. It is largely brick built though stone is also utilized. Stone slabs animal and floral designs were used for the doorways. The doors are completely lost but the existing remains give an idea of their shape and size. The purpose of this Gate was obviously to check the enemy from Gohpur and Ramnghat in the south.

The Western Gate in the plains faces the Senkhi River and appears to be the main entrance. Comparatively less defence arrangements exist at this Gate, probably because no attack was expected from that side. Brickbats and stone slabs are discovered at places within the fort but they are so completely destroyed that it is impossible to get any idea of the residential buildings.

The bricks are of a variety of sizes. Even decorative bricks exist. Their mass production was obviously made at the site itself. Good soil for the same is easily available. The sand stone seems to have been brought from elsewhere; it is found in this region but not at the fort site. The local stone is geologically, gneiss of granite, useless for construction. The entire complex is indeed, a meticulously planned work. It is a monumental task based on intimate knowledge of the terrain and involving immense resources, human as well as material.

The earliest reference to remains of Itafort is noticed in the writings of B.C. Allen. Allen in the Lakhimpur Gazetteer of Assam of 1901 mentions that in the valley of Barapani, about two days journey from Harmoti Tea garden in the Nyishi country, there are the ruins of an old city. He further narrates that

two brick walls about one metre in breadth run parallel to one another at a distance of about a mile.

The name of the place Itanagar - the state capital of Arunachal Pradesh - has been derived from this famous historical fort. However, as per the legend of the Nyishis, this place was known by the name Eitayopa, which was also the capital of King Polo Dulia<sup>1</sup>.

**iv) *Bhismaknagar***

The fort at Bhismaknagar is situated at the foothill in Lower Dibang Valley district, about 40 km north-east of Sadiya as the crow flies and 24 km south-east of Roing by road. Of the many rivers intersecting this foothill region, the nearest to Bhismaknagar are Diphu on the west and Hetya on the east. In 1846, Hamilton Vetch, accompanied by Major S.F.Hannay and Captain E.F. Smith, visited the place. They were the first to report on the existence of a fort at Bhismaknagar. It appears from the accounts of Vetch and Hannay that they saw the traces of a large hill fort with ramparts and walls consisting of six to nine courses of well-knit sandstone blocks, and granite 10 to 8 inches thick, 1 foot breadth and 20 inches long, rudely but evenly chiseled and overlaid by fine bricks varying in size from 8 to 5 and 6 to 4 inches. The broken wall rose at some places to five feet with loopholes apparently for arrows and spears, and they were in a wonderful state of preservation. The whole masonry was, however without any binding of cement or fastening of any kind. The type of the stones and the architectural pattern suggested that the relics belonged to the same period as the Copper Temple. Numerous debris of earthen vessels which were found in the bed of the Dikrang River appeared to be more similar to that of the Gangetic India than that of Assam.

In 1905, T. Bloch trekked along the earthen walls of the fortress and collected some tiles bearing carvings of animals, birds, human figures floral and geometric designs.

Many more ruins have come to light in course of the excavations at Bhismaknagar conducted in the year 1968-70 by Shri L.N. Chakravarty and Dr. Y. A. Raikar, officers of the Research Department, Government of Arunachal Pradesh. The fort extending over an area of about four square miles. On almost a flat land gently slopping down into the plains was protected by an inner

---

<sup>1</sup> Dr. D.K. Bora: History and Archeology of Itanagar, p.p 28.

wall of unhewn stone and mud, an outer wall with two huge gateways made of brick – one to the east and the other to the west, and finally by the ditch running along the outer wall. There is neither any ditch nor wall to the north, the side which is ramparted by an undulated hill. In the midst of the defensive walls, there exist the ruins of a building covering a plinth area of about 20,000 sq ft. side lined with several courses of brick. From the place, the eastern and the western gates are about 1.50 and 5 km respectively.

The other interesting findings are potsherds, implements of polished stones, lumps of pig iron, and terracotta deer plate and other relics. The pottery of the Bhismaknagar type has been found in some other neighboring places namely, Roing, Tezu, Chimri, Koronu and Enzon (injono). There also exist the ruins of another hill fort extending from Chidu to Chimri in the Roing area in Lower Dibang Valley district, and of a mud fort in the Tindolong area in Lohit district. All these facts considered in the broad historical perspective suggest that an ancient settlement of an advanced people existed in this district in a more wider area than the Bhismaknagar fort itself, the antiquity of which may even go back to a date far earlier than the recorded history of the Chutiyas to whom the extant remains are generally attributed.

It is certain that the Chutiyas were considerably influenced by the culture and religion of medieval India. Their kings bore typical Hindu names. The architectural pattern of the building and the gates, the type of wheel-turned pottery and specimens of terracotta resembling those of Ambari in Guwahati and the gangetic India respectively, all lend support to the view that a comparatively advanced culture born under the impact of Indian classical tradition flourished in the lower regions of Lohit District in the close proximity of Sadiya. The existence of the famous Tamreswari Temple with the phallic symbol of Siva installed nearby, the Parasuram Kund, Bhismaknagar and other archaeological sites in this region assumes a greater historical significance in the perspective of this culture.

The Ahom Buranjis (the chronicles of the Ahom) do not testify to the existence of a Kalita land, but they do convey precise information about the Chutiyas. It seems that the Ahom intrusions and endemic tribal feuds compelled the Chutiyas to leave their homeland extending from the southern slopes of the Lohit District to Sadiya for a new abode in Upper Asom. The Chutiyas are now found mostly in the Lakhimpur District and its adjacent part of the Sibsagar District and scattered in other parts of Asom. In the Census of 1891,

a good number of the Chutiyas recorded themselves as Ahom-Chutiya, which suggests that they have in recent times intermixed with the Ahoms.

v) ***Mud Fort***

An old Mud Fort in the Tindolong area, six km from Tezu in Lohit district, was explored in 1972. The site falls under Tibetan refugees settlement area.

The area of the fort, enclosed by earthen ramparts – 365.76m X 350.52 m, is square in shape. The rampart is eight ft. high and equally broad at the top with sloping sides. On both the inner and outer sides of the rampart run two ditches about 6 m wide. There is a prominent mound, circular in shape (diameter 30.48 m approximately) and about 3m in height, almost at the centre of the enclosure. The mound appears to be a cavalier for lookout purposes.

Some potsherds found at this site are too fragmentary to bear any conclusive evidence. It may, however, be assumed that the Mud Fort linked by the route from Bhismaknagar to Parasuram Kund was probably associated with the early culture that flourished in and around Sadiya and Bhismaknagar. According to tradition, the Mud Fort may be ascribed to Sisupala of the story of King Bhismak<sup>1</sup>.

vi) ***Rukmini Nagar***

In the hills of north of Roing lie scattered some old brick structures, mainly between the Chidu and Chimri villages situated at an altitude of about 350 m which are traditionally said to be the ruins of the palace of Rukmini, the daughter of King Bhismak. The area, therefore, was named Rukmini Nagar. The local people, the Idus, were desirous of giving an Idu word to the name, and hence it came to be called Rukmini Nati (nati – the Idu word for bricks). An exploration-cum-excavation work, undertaken by the Research Department of the Government of Arunachal Pradesh, to study the ruins, has thrown some light on the antiquities.

In course of the process of work, which continued from January 1973 to April 1974, excavation of two mounds at Chimri, 11 km from Roing, unearthed two rooms, 10X10m and 10X12m respectively built on a slope, at a distance of 14m from each other. The contents dug out from inside the walls of

<sup>1</sup> Based on the article 'A Mud Fort Near Tezu' and 'The Mud Fort Near Tezu could be Sisupalgarh' by Y.A.Raikar, Published in the Arunachal News, (Shillong, October, 1972 and March, 1973), Vol.1 No.8 pp.10-14 and Vol.2, No.1, pp 7-9 respectively.

the rooms were of river-borne materials, a fact which suggests that they were destroyed by floods. The potsherds resembling those of Bhismaknagar in shape, fabric and technique that were unearthed bear ample evidence to the extension to this area of the same culture as the Bhismaknagar.

The other archaeological sites in the area are located (1) near Chidu Inspection Bungalow, (2) at Cheko Nati between Chidu and Chimri and (3) in the hills north of Chimri. No relics, however, could be found at the first two sites, although potsherds at Chidu and brick walls, steps etc. at Cheko Nati were reported to have been seen earlier. The third site north of Chimri is situated at high altitude of about 610m. Not a single brick found there was in alignment, and everything seemed destroyed.

The situation of all the four sites on a hilly terrain suitable for defence indicate that they are parts of a single complex representing a fort which extended from Chidu to Chimri. It is probably that the main centre of this complex was at Cheko Nati.

Another archaeological site called Duku Limbo is on the left bank of the Dibang at the foot of Elopa hill. The Brickbats found at this site suggest that the Bhismaknagar culture had extended up to this point<sup>1</sup>.

### **Antiquities in Arunachal Pradesh**

The antiquarian wealth of Arunachal Pradesh may be divided into three categories: Inscriptions, Sculptures and Miscellaneous.

#### **Inscriptions**

##### **i) *Tameswari Temple inscription***

The earlier inscription discovered in Arunachal Pradesh is the Paya Tameswari (Dikkara Vasini) Temple inscription of Mukta-dharmanarayana dated Saka 1364 (i.e. 1442 AD) published by D.C.Sircar. (Journal of ancient Indian History, Vol.I, 1968 pp-17-21. It was found inside the said temple situated in the Lohit District.

The inscription is written in Sanskrit language and Bengali Assamese script of the 15th century AD. It records the construction of a boundary wall of bricks around the temple of Dikkara – Vasini by Mukta-dharmanarayana.

<sup>1</sup> Based on the article 'Rukmini Nati. The widening Horizons of Bhismaknagar' by Y.A.Raikar, Published in the Arunachal News, (Shillong, December, 1974) Vol.3, No.7 pp 2-6.



This record helps in identification of Dikkara Vasini with Tameswari. It also enables us to determine the eastern boundary of Kama-Rupa, which extended up to the temple of Dikkara Vasini, according to the Tantrik and Puranic accounts.

**ii) *Inscribed Brick-tiles of Bhishmak Nagar***

A number of inscribed brick-tiles from Bhishmak-Nagar of Lohit District (now Lower Dibang Valley) are to be placed next chronologically. Although the legends on the tiles bear no date, these may be roughly assigned to the 15th-16th Centuries A.D. on the basis of paleography. Each of these depicts two combatant tigers on one side and on the other side, two elephants facing each other. A few words are written around the animal motifs of Bengali, Assamese script of medieval period and apparently in Sanskrit language, expression like *Tapata Sri Sri Laksmi-narayana:-* i.e. chant the names of Laksmi and Narayana.

Next mentioned may be made about the two inscribed cannons of the Ahom king Gadadhara Singha found from Chowkham in the Lohit District. All the pieces contains almost identical inscriptions in Assamese script and Sanskrit language and are dated in year 1604 of Saka era, i.e. 1682 A.D. The inscription records that Gadadhara Singha obtained these weapons after having vanquished the Yavans (i.e. the Mughal army) at Guwahati.

**iii) *Sadiya Pillar Inscription***

The Sadiya Pillar inscription found near the Deopani River, seven miles north of Sadiya, it is now preserved in the State Museum of Assam at Guwahati. The inscription written in Ahom language and script refers to the confirmation of the Mishmis in their possession of the hills near Dibong River on payment of tribute.

**iv) *Inscriptions in Tibetan Script***

Apart from these records another inscription on a stone table has been noticed in the Buddhist Gompa at Mechukha in the West Siang District. The inscription could not be fully deciphered. However, according to the Lama of the Gompa, who could partly read the epigraph, it referred to the time of construction of Gompa.

Similar other inscriptions on stone plaques at monasteries, chortens, manes and dzongs or forts have also been noticed in various parts of Kameng and upper parts of Siang and Lohit valley. However there is a Vajrayana Bud-

dhist population, inscribed chorten and images are also found.

### **Sculptures**

As regards sculptures the earliest phase is represented by the temple at Malinithan situated in West Siang District. The temple was richly adorned with phallic figures and decorative designs all over its lintels, friezes, brackets, entablatures and pilasters, all of which are now reduced to ruins. The figures include Nandi Bull, Parvati with Siva linga, Surya, Ganesa, Kartikeya, Indra and Durga. Iconography of the figures and the style of execution evince their affinity with the East Indian school of art of the 11th – 12th centuries A.D.

#### **i) *Relics from Itafort***

Besides a few stone relics and animal figures and floral motifs which were unearthed from the ruins of Itafort, recently a metal representation of a lion, probably a part of a lamp stand, of circa 15th-16th centuries A.D. has been found from the same site. These are comparable with the contemporary sculptures of Assam valley.

#### **ii) *Vajrayana Images***

Since the 17th century the Buddhist images constitute the principal objects of study. Numerous images associated with Vajrayana form of Buddhism are found in different parts of the Kameng and upper parts of the Siang and Lohit region. The monasteries and private chapels such as these at Tawang, Zimithang, Kalaktang, Rupa, Shergaon, Mechukha, Tuting Mankhota, Gelling etc. are rich repositories of these images.

#### **iii) *Hinayana images***

Belonging to a somewhat contemporary period but to a separate school of art are the images of the Theravada Buddhist Monasteries and Shrines of the Khamptis situated in the localities around Chowkham and Namsai in the Lohit district. Khamptis, who migrated from Burma (Myanmar) about the middle of 18<sup>th</sup> century naturally, brought with them the art heritage of their homeland. Majority of the images depict Buddha seated in Bhumispasra Mudra. Materials used are mainly marble stone, metals and wood.

### **Manuscript Miscellaneous**

Under this item we may first deal with manuscripts, large number of which is available in Arunachal Pradesh. Majority of the manuscripts here

are the *Kahjur* and *Tanjur* i.e. Tibetan translation of Buddhist canonical literature and their commentaries, found in the monasteries all over Kameng and some parts of Siang, and Lohit region. Hand-written versions with golden letters and miniature painting are also found in places like Tawang, Dirang and Mechukha.

Manuscripts of other religious texts like patimokkha written in Pali language and Burmese script, Ramayana and Mahabharata written in Khampti language and script. The treaties between the Ahom rulers and tribal chiefs noticed in different parts of Lohit and Tirap districts also deserve mention in this context.

### **Pottery and Terra-Cotta Art**

Potsherds have been unearthed from various sites such as Bhishmaknagar, Mud fort near Tezu, Bhalukpung, Rukmini Nagar, Vijayanagar and Ita fort. It gives definite evidence, the wheel-turned Pottery; a technique introduced from the Gangetic basin. Similar pottery has been found at Ambari in Guwahati in the later dated to the 10th century A.D. This has helped in dating the earliest phase of Bhishmaknagar.

A number of large decorative finials of varying shapes are a speciality of Bhishmaknagar. Otherwise, spouted vessels, bowls, dishes, dish on-stand, Jars terracotta horse and elephant figurines plaques with animal and floral designs, roof tiles etc. have been found. The pottery is both of finer and coarse varieties.

The pottery from Ita Fort is of a coarser variety. It is heavily damaged. However, bowls, pots, spouted vessels etc. are evident.

### **Musical Instruments, Vessels etc**

Musical instruments like drums, bells, cymbals, trumpets etc. Belonging to the 19th century or-even earlier period is found in the old monasteries. Miniature metals, chortens belonging to the last three century have also been noticed in the monasteries of Kameng.

### **Ancient Period**

Very little is known about the ancient history of Arunachal Pradesh. The meager sources, that we have, do not give clear and connected account of the sequences of history, but they do convey a good deal of important informa-

tion about the early people of North-East India and their course of migration that passed through this region in waves from time immemorial. With an exception to the Monpas and the Khamtis who use Bhoti and Pali script, most of the indigenous tribes have no written tradition. Our sources for this period are tribal tradition transmitted orally, myths and legends, classical Sanskrit literature and other contemporary sources as well as the historical and ethnological research works.

### **Early Migrations**

From the evidences of the Vedic literature and old Sanskrit scriptures as well as the epics – Ramayana and Mahabharata - it seems quite probable that hordes of some migratory tribes of the early Mongoloids were drifted to India through the eastern extremity of Arunachal Pradesh and Asom before 1000 B.C. Their advent in the east was an event probably as old as the arrival of the Aryans in the West. Judging from the widely scattered tribal settlements all over Asom and its adjacent hills, it may reasonably be surmised that these early migrants belonged to the great tribal community of the Bodos, who were the most dominant people of north-east India till the advent of the Ahoms in the 13th century A.D. According to Dr. Suniti Kumar Chatterji, the North - Asom tribes of the Adis, Akas, Nyishis<sup>1</sup> themselves in the mountains to the north of the Brahmaputra plains already in occupation of the Bodos, and by some Austric and possibly also Dravidian tribes which preceded the Mongoloid Bodos in this tract.

In all probability, some of the 'North-Assam tribes' made their way into India from the east and proceeded along the western course of the Brahmaputra down to Assam and then turned north towards the mountainous tracts of what is now known as Arunachal Pradesh.<sup>2</sup> There in the hills they settled and there they remained to this day. These tribes have varying traditions about their origin and migration. Some among them trace their course of migration to the areas of their present settlement from the north. Their legends indicate a general north-south or north-east to south-west trend of movements in the olden days. These tribes have varying traditions about their origin and migration. Some among them trace their course of migration to the areas of their present settlement from the north. Their legends indicate a general north-south or north-east to south-west trend of movements in the olden days.

<sup>1</sup> Suniti Kumar Chatterji, *The Place of Assam in the History and Civilization of India* (Guwahati, 1970), p.9.

<sup>2</sup> See Suniti Kumar Chatterji, *Kirata-Jana-Krti*, (Calcutta, 1974), pp 44-45.

## **Kameng Tribes**

### ***Monpas***

The Monpas of the West Kameng and Tawang districts have close ethnic affinities with the neighbouring people of the eastern Bhutan. It seems that in course of the trans-Himalayan trade which was traditionally current in the region in the old days, they developed cultural and ethnic relations with their northern neighbours as well and were strongly influenced by Tibetan Buddhism. The Monpas are mainly settled in three areas – Tawang, Dirang and Kalaktang. Accordingly, they are called the Tawang Monpas or Northern Monpas, Dirang Monpas or Central Monpas and Kalaktang Monpas or Southern Monpas. Among these three broad sections of the Monpas there is several Sub-section or small groups, such as Lish Monpas, Panchen Monpas and so on.

There are legends, vague and often dubious, of Monpa migration from the west, the north and also from the south. It is, however, certain that various sections of the Monpas did not migrate to West Kameng and Tawang all at a time in a single wave. The migration must have taken place over centuries, involving many groups who were on the move under unknown historical predicaments. A legend state that the Monpas migrated from the plains of Asom along the Udalguri-Kalaktang route. Another legend indicates that the Monpas of Tawang came from Sikkim and Phari. In all probability, a large body of the Monpas migrated from the west through Bhutan. It is also suggested that the Monpas of the Dirang area came down from north following the Mago route. According to some recent accounts, there was a population of the Monpas living in the Kameng region probably from the early days of the Christian era. With the passage of time, later groups of the Monpas entered this region in successive waves through different routes of migration. With the inception and spread of Buddhism in this region, or more particularly from the days of the second Dalai Lama (A.D. 1475 – 1543), the people from across the Himalayas trickled into the Tawang area.

R.P. Kennedy writing in 1914 observed that the Monpas settled around Kalaktang and Moshing areas had 'distinct traces of admixture with, if not actual descent from, a primitive Eastern Himalayan hill tribe'. It appears from his account that the Dirang valley was once upon a time occupied by a tribe named Lopa. They lived together with the Monpas, who were later immigrants' in this area. They were friendly with each other until a serious dispute arose and the Lopas were forced out. The Monpas then built a *Zong* or fort at Dirang

for defence. It is not clear who were the Lopas although it has been surmised that they might be Miji or Aka.

### *Mijis*

The Mijis of the West Kameng District call themselves Dammai (or Dhammai). According to their tradition, they were originally inhabitants of the plains and had connections with the Ahom kings of Assam. It is, however, not known to them at present as to how they came to settle in the Bichom Valley crossing the hills.

The Miji country lies to the adjacent north of the Akas, the two tribes have a long traditions of close neighborly relations. The Mijis have many traits in common with the Akas, and are known to intermarry with them. A century ago in 1848 Mackenzie wrote of the Mijis as 'a fierce and cognate race in the interior', allied with the Akas. Dalton also noted earlier in 1872 that the Akas and Mijis 'may be regarded as kindred clans.

### *Akas*

The term 'Aka' literally means painted. It is obviously an Assamese word which might have been originally applied to the tribal group, calling themselves Hrusso, because 'of their custom of smearing their faces with black resin'. Their concentration in the West Kameng District is in the hilly area of the Nafra-Buragaon Sub-division watered mainly by the Bichom (*Humschu*), Tengapani (*Hudju*) and Kheyang (*Khuwa*) rivers.<sup>1</sup> The Kameng (Bhareli) river forms its eastern boundary.

According to Hesselmeier, 'the Hrusso do not pretend to be aborigines of the country they now inhabit.' But, the history of their migration to this area is veiled in mystery. 'They are unable to tell where the real home of their tribe is.' They have a legend that they come to their present homeland from the plains where their ancestors 'lived in Purtabgor on the banks of the Giladhri river, north of Bishnath, and were ousted from there by Krishna and Boloram<sup>2</sup>. Pratapgarh (a historical rampart), the Ghiladhri river and Vishwanath are all in the Darrang District of Assam south of the Kameng region. The legend seems

<sup>1</sup> The italicized names of the rivers given in brackets are as they are called by The Akas.

<sup>2</sup> C.H. Hesselmeier, *The Hills Tribes of the Northern Frontier of Assam*, J.A.S.B., 1868, Vol. XXXVII, p.192 ff, quoted by Verrier Elwin, *India's North- East Frontier in the Nineteenth Century*, (London, 1962), p.438.

to convey unambiguously and historical truth that the Akas were once settled in the plains of Assam and they migrated from there to the northern hills as a result of a feud. This conjecture is supported by another Aka legend, quoted by R.S. Kennedy, which is in brief as follows:

'In search of land...the Akas first settled near Bhalukpong, where, on the right bank of the Bhareli river, their two Chiefs, Natapura and Bayu, built their respective capitals. Bayu demanded Natapura's beautiful wife as a sort of tribute and, after number of adventures the girl with a newly-born child arrived at Bayu's court. The child Arima grew up to be a great warrior and finally killed his own father by mistake. Overcome with remorse he migrated to the present country of the Akas; it is from his children that the present day Akas are descended<sup>1</sup>.

It is interesting to note in this context that, as stated earlier, the Akas have also a brief that the legendary king Bhaluka, who had his capital at Bhalukpong named after him, was their progenitor.

### ***Sherdukpens***

The Sherdukpens are mainly concentrated in a few villages of the Bomdila Sub-division, of which Rupa (formerly Roopai Gaon), Shergaon and Jigaon are their important settlements. Sherdukpen traditions about their origin and migration consist of myths and legends. According to these traditions, the direction of their original migration is indicated from the north. It is also said that they came from the north-west in view of the cultural affinities they probably had with the people of Bhutan.

The Sherdukpens relate a story that a Tibetan prince married Assamese princess and had two sons by her. The first son ruled in Bhutan and the second son named Japtang became the king of the area now occupied by the Sherdukpens. The present day Sherdukpens are said to be the descendents of Japtang Bura and his followers.

The descendents of Japtang Bura are even to this day known as raja or king to the neighbouring tribes. The people of Dirang call them Bapu, and the Akas and Mijis called them *Thongli-thongcheng* meaning raja.

Dr. Furor-Haimendorf has however, given a slightly different account

<sup>1</sup> See Verrier Elwin, *India's North-East Frontier in the Nineteenth Century*, (London, 1962), p.438.

of the early history of the Sherdukpens. He writes:

“Tribal history traces their origin to a Tibetan prince Gyaptang by name, who is believed to have emigrated from Beyalung, the place of his birth, and to have established himself first at But, today’s Monpa village, where the ruins of the fort are still to be seen. Local history has that Gyaptang imposed his rule over a large area, including some territory in Assam, and received from the inhabitants a tax paid in grain.”

“There can be no doubt that the Sherdukpens have old connections with Assam, at Sapai Jergaon, near the border between Assam and Arunachal Pradesh, there is still an area of 130 acre which remains under the control of Rupa, the Government of Assam levying no land-revenue on the area in question. Sherdukpens go there once a year and stay with a local people. Two new Sherdukpen settlements have sprung up in the same area.”

“The Assamese used to refer to the Sherdukpens as the Sat Raja, i.e. the seven rajas. Five of them were from Rupa and two from Shergaon, each representing one of the major clan”<sup>1</sup>.

### ***Buguns***

The Buguns – popularly known as Khowas earlier – are mainly scattered over Thrizino, Tenga Valley and Jamiri Circle and some villages in the Nafra Circle of West Kameng District. They are bound on the north by the Sherdukpens and the Monpas, on the south by the Hrussos (Akas), on the west by the Mijis. The Buguns practiced animism; they are the great worshippers of natural objects like rivers, mountains, trees etc. The *Kshyat-Sowai* and *Diyinkho* being their principal festivals.

No concrete trace of origin and migration of the Buguns are available. However, the Buguns consider themselves to have migrated from a place called ‘Zamkham’. As per the mythology of the Buguns, all the living creatures on the earth are the offsprings of *Amua Nini* (the mother) and *Aphua Phumphulwa* (the father).

In a note C.R. Stonor suggest that the Sulungs (now Purioks) of East Kameng district and the Buguns of West Kameng district were once the same tribe and the Buguns came to their present country from the north-eastern part

<sup>1</sup> C. Von Fuere Haimendorf: *Highlanders of Arunachal Pradesh* (1982), pp 172-173.



of East Kameng district. According to the Buguns, they once lived themselves together in a place named Moffi, which they say was in heaven and from Moffi they came down to earth and began to settle in a place called *Zamkham* which might be somewhere to the north of the present Chayangtajo administrative circle of East Kameng district. In course of time, they dispersed to and eventually arrived in their present habitat. A Sulung (Puriok) legend tell that the tribe originated from *Khornghiys*, their ancestor in heaven, and from heaven they directly came down to earth and began to settle in a place where the wild sago-plams (*Bey-muwang*) grew in plenty and from there gradually dispersed in course of time to other parts of the country. The Bangnis (now Nyishis) on the other hand claim that the Sulungs (Purioks) as their offsprings. According to them, one day a Bangni (Nyishi) man who was out for hunting met an unknown girl in the jungle named *Konekongin* and from their union, the Sulung (Purioks) came into being.

In a legend of the Akas, the Buguns have been described to have descended on the earth through bamboo ladder, while the Akas are believed to have descended through the golden ladder<sup>1</sup>. They were under the supremacy of their neighbouring Akas and Sherdukpens for whom they had to work, of course on the basis of exchange of material for labour, but now the supremacy of the Akas and Sherdukpens no longer prevail.

### **Subansiri Tribes**

#### ***Nyishis***

The largest tribe of the state; the Nyishis were earlier referred to as Daflas<sup>2</sup>. They are spread in Upper Subansiri, Lower Subansiri, East Kameng, Kurung Kumey and Papum Pare district.

The Nyishis trace their descent from a mythical ancestor called Abo Teni (Abo Tani).

As for the migration of the Nyishis, we have the following account:

“No one knows the original home of the Nyishis or when they left it. All that is lost in the mists enshrouding the unwritten past as the people have no written traditions..... All Nyishis believe that they descended from Abo Teni,

<sup>1</sup> The Buguns; A Tribe in Transition, Dr. B.B. Pandey.

<sup>2</sup> The term Dafla substituted by Nyishi through Constitution (Scheduled Tribes) Order (Amendment), Act 2008 which modified the list of Scheduled Tribes in the State of Arunachal Pradesh on 1st April, 2008.

a mythical ancestor<sup>1</sup>, and lived at a place called Supung which, they say, exists somewhere in the far eastern Himalayas. Later they come to Narba and drifting from village to village through Begi, Bolo, and Yalang successively crossed the Shinit or Subansiri river, and then the Kumme or Kamla river. Here they appear all over the hills lying between the Kamla and Khru, and later made their way to the Palin and the Panior hills. While coming to these hills they brought with them animals like mithuns (*bos frontalis*) and pigs, and such articles of value as *majis* (Tibetan tongue less bells) and *talus* (metal plates) and beads. They wore their hair in a bun called *podum* and knew even at this early stage weaving and agriculture."

"That this myth has some significance in throwing light on the tribes' origin and migration is beyond doubt. All the priests, and many others, remember their genealogies from their own time back to Abo Teni, and a large number of myths gather about his person. The various places mentioned in the above myth are narrated in the *id* songs, which are sung during marriage and the Yulo ceremonies. What remains obscure, however, is the geographical location of each place. Nevertheless, one thing is certain, if the peoples' traditions are to be taken as guiding factor, then in all probability they originally dwelt in some remote corner of the eastern Himalayas. At some early date in human history, they migrated in groups to their present habitat in waves. The migration extended perhaps, over several centuries-one group ousting the earlier settlers, till it was itself ousted by yet another and stronger group. This process must have continued till the people finally settled in the hills north of Khru, and made further excursions to the west in the hills of the Palin, Panyu and Panior river valleys"<sup>2</sup>.

It seems that in their westwards drive, the Nyishis had pushed their way into eastern Kameng and settled in the Kameng river valley and along its many tributaries. According to Dr. Furer Haimendorf, the Nyishis of the Lower Subansiri District extended westward under the name Bangni into the adjacent East Kameng District. The area of Kameng adjoining the Subansiri region 'represents ethnographically', as noted by him 'an extension of the Nyishi country though its inhabitants are referred to not as Nyishis but as Bangnis, a term

<sup>1</sup> "Indeed as the Nyishi tradition lays it down, Abo Teni is not only the eponymous ancestor of the Nyishis, but also of Apa Tanis, Sulungs, Miris and Bangrus, as well as the people of the plains of Halyangs. In fact a large number of tribes in the neighborhood are one in the person of ancestor".

<sup>2</sup> B.K. Shukla, *The Daflas of the Subansiri Region*, (Shillong, 1965), pp.3-4 (N). The name Dafla occurring in the book is changed into their actual name Nyishi throughout the text.

whose derivation remains unexplained. As early as 1945 he had 'learnt of cases of intermarriage linking the populations to both sides of the boundary between the two districts'<sup>1</sup>, the history of origin and migration of the Bangnis appear to be essentially the same as of the Nyishis. The *inter se* dissimilarities, whatever they have, might have been acquired by them from their different environments.

### ***Apatanis***

"In the absence of any archaeological data we have no means of determining how long the Apatanis may have been dwelling in their present habitat of Apatani plateau in Lower Subansiri district. But judging from the way in which they have transformed their environment, one can safely assume that many centuries must have passed since the forefathers of the present population first set foot in the valley. A tradition current among the Apatanis tells that their ancestors came from a country to the north of north-east situated near the two rivers known as Supupad-Pudpumi. These names may refer to two tributaries of the Subansiri, but neither the Apatanis nor anyone else is likely to identify this legendary country of origin. All Apatanis agree, however, that at one stage in their migrations they crossed the Subansiri River from north to south and came to a place in the Sipi valley called Karr, which lies beyond the Pij Cholo, a peak of 8,417 feet rising from the north bank of the Kamla River and visible from the hills surrounding the Apatani country. In this area the original Apatanis are believed to have split into three groups, each of which took a different route to the Apatani land. The stages on these routes refer to identifiable localities in the Nyishi and Miri Hills north of the Apatani land and it is likely that this part of the tradition reflects historical events imprinted on the tribal memory. Each of the three groups of immigrants is believed to be responsible for the foundation of different villages, and the present division of the Apatani tribe into three clusters of closely allied settlements is traced to the days when three waves of migrants occupied the valley after abandoning Talley Valley and Ane Biri.

"Though local traditions speak of an immigration of the tribes' ancestors from a northern direction, these memories can only relate to the last stage of a population movement which may well have changed its course more than once."<sup>2</sup>

<sup>1</sup> See C. Von Furer Haimendorf: *Highlanders of Arunachal Pradesh* (1982), pp 5, 146-147.

<sup>2</sup> C. Von Furer Haimendorf, *The Apatanis and their neighbours* (London, 1952), pp5

### *Purioks*

The Purioks also referred to as Sulungs live in very widely scattered and thinly populated villages, which are mostly situated in the northern part of the East Kameng and Kurung Kumey District. The Puriok settlement extends also to the extreme north-western corner of the adjacent Lower Subansiri District.

As noted by Dr. Furor – Haimendorf, the Purioks are believed to have been in the country when 'the other races' migrated in, and 'are of comparatively primitive racial type and are distinguished from all the other tribesmen by a pronounced pragmatism'<sup>1</sup>. Indeed, there are reasons, as we shall see later, to believe that the Purioks were the earliest migrants to this region. The Purioks have a tradition that originally they were in heaven but long ago they descended to earth and began to settle in a place where wild sago-palms were abundantly available and that place may be Sakmakhang, but according to the Buguns with whom they may have affinity, the place might be some where towards the north of present Chayangtajo in East Kameng District where the Purioks and Buguns traditionally lived together. According to them they were the original inhabitants of north-eastern part of East Kameng District. When there was shortage of land for habitation due to the increase in the population then the Buguns and Purioks migrated together from there towards the south-east in search of fertile land for cultivation and habitation. While coming down they settled together in a place named Sikhranrai. Though there is no written records about the route and time of their migration from their original place to Sikhranrai, it is believed that the Buguns might have migrated to Sikhranrai about a thousand years ago along with the Purioks. Sikhranrai, their first place of settlement was nearby the present Tenga Valley area of West Kameng District. At Sikhranrai, the Buguns found the Purioks a happy-go-lucky community and planned to get rid of the latter. With a view to avoiding the Purioks, the Buguns offered some popcorns to the Purioks for sowing. Later the humble Purioks sowed these pop-corns in their fields, but after some months when no off-shoots came out from those pop-corns, the Purioks became very angry at the failure of their crops and went back to Sakmakhang thinking that Sikhranrai was not a suitable place for their settlement. Since then they have been inhabiting the northeastern part of this district, a few of them in time migrated to Lower Subansiri District.

---

<sup>1</sup> C.R. Stoner, the Sulung Tribes of the Assam Himalayas, published in Arunachal Pradesh Bulletin, (Shillong, August 1972), p.1.

*Tagins*

“Indeed, it is very difficult to arrive at any conclusion regarding the Tagins’ original homeland, route of migration and date of their settlement in present place. However, there are some views on it. Sachin Roy viewed that the Tagins are believed to have migrated from the Penzi a village in Tibet to Tadedage region. M.L. Bose put another view that the Tagins migrated from the Khams. Some Tagins are to be seen across that line in Tibet. Bose seem to be very assertive about the place of Tagins migration and claimed that some of the Tagin are found in Tibet, but has not mentioned about the route of migration. While J.N. Choudhury wrote that the ancestors of the Tagin came from Pui-Pudu believed to be located in Tibet. From there, they came to Pumte and from there to Dibeh. Abotani was the first to come and died at Nide- Lankin. The Tagin from Dibeh to Nari and Nari to Nalo. In course of movement, their ancestors had crossed Subansiri and Khru rivers. As per the oral tradition, Abo-Tani was common ancestors of Nyishis, Adis, Apatanis, Hill Miris, Tagins and Mishings. Therefore, as per this version all the Tani groups of tribes must have migrated together to Nide- Lankin.”<sup>1</sup>

The origin and meaning of the nomenclature Tagin is shrouded in controversy. Some of the nineteenth centuries colonial ethnographers and officials used the term to denote a section of the Nyishis. Some viewed that the Tagin means the eastern Nyishis including Pakekessang of East Kameng district. Some lower region Tagins believe that the nomenclature Tagin was given by the outsiders which seems to be heard only after 1953. Some believe that the term Tagin was given to them by the Tibetan traders.

The colonial rulers have made their appearance in Tagin territory in unsuccessful Miri Mission exploration of 1911 – 12 and never made further attempt to penetrate into the Tagin territory. However, the Tagins were for the first time brought in the national limelight due to the fall out of Achingmori incident in 1953. Administrative centres at Taliha and Dinekoli were established soon after Tagins were subdued following the incident.

There is another tradition. “The country of the Tagins stretches from a little beyond the junction of the Sipi with the Subansiri and along the banks of the former. They believe that their ancestors came from a place called Pui Pudu farther beyond the sources of the Sipi. They have no clear remembrance

<sup>1</sup> Ashan Riddi: The Tagins of Arunachal Pradesh.

as to where the place was exactly located. From Pui Pudu they came to Pumta and from there to Dibeh. The first to come was their mythical ancestor Aboteni who reached a place called Nide Lanking and died there.

"The followers of Abo Teni pursued the course of migration from Dibeh to Nari and from Nari to Nalo which is another name of the present village of Sigen. It appears that a Tagin village has two names, one of these after the original dominant clan of the village, as in the case of Nalo. They retain the memory that, in course of movement, their ancestors had crossed Chhinik (Subansiri) and Kuru (Khru)."<sup>1</sup>

### **Hill Miris**

Dr. Haimendorf writes of the Nyishis that they have excellent memories and many of them can not only tell the names of their forefathers but also know of the fate and whereabouts of most branches of collateral kin. But this cannot probably be said of the Hill Miris "of migrations or their own origin". Wrote Delton, "the Hill Miri can only say that they were made for the hills and appointed to dwell there, and that they were originally much further north, but discovered Assam by following the flights of birds and found it to their advantage to settle on its borders."<sup>2</sup>

### **Nahs**

Small tribal community – the Nah - live in Taksing Circle of Upper Subansiri district buffering Tagin habitation. The Nahs are Buddhist by religion.

"A popular myth about their origin and migration is that some eleven generation ago (200 year approx.), four persons came to this part of the region probably from Tibet. They were *Suje*, *Suye*, *Nije* and *Niye*. At first they reached in a place called Nava near Taksing. Unfortunately, *Suje* and *Suye* turned into stones near Dadu, a village of Taksing, who are known as *Yolo-Karbo* and *Nalo-Karbo*. These still exist on either sides of river Subansiri. The Nahs believe that *Suje* and *Suye* still watch their predecessors. This incident made *Nije* and *Niye* frightened and they immediately left *Nava* and moved along the side of the river Subansiri. In this way *Nije* selected a place in East Kameng district called *Chiang Tajo* and settled there. *Niye* moved farther and finally reached a beautifully hilly terrain near Subansiri

<sup>1</sup> J.N. Choudhury, Arunachal Panorama (Shillong, 1973).

<sup>2</sup> E.T. Dalton, Tribal History of Eastern India (Descriptive Ethnology of Bengal) (Delhi, 1973) p.34.

valley known as *Taksing* (*Ta*= Tiger, *Sing*= catch). *Taksing* is a Tibetan term given by them during their visit to *Potrung* through *Taksing* in olden days. In this way *Niye* settled in *Taksing* for generations together. The present Nah community of *Taksing* claims that they are the descendants of *Suye*. According to them, *Niye* had only one son known as *Jena* whose successor, *Nabu*, gave birth to *Buche*. *Buche* was a strong person and occupied an area near Tibetan border to *Limeking* Circle of the district. He had three sons, namely *Chenia*, *Cherin* and *Cheru*. *Chenia* died in early age before marriage. *Cherin* occupied a present day *Redi* and *Kacha* village areas of *Taksing*. His generations are known as *Tisis*. At present *Tisis* are distributed in *Redi* and *Esnaya* villages. The youngest son of *Buche* and *Cheru* who had three sons namely, *Rufi*, *Ruri* and *Ruder*. The present day Nahs believe that they are have descended from these three brothers. They also claim that the present days *Hafi*, *Hari* and *Cahder* clans are the descendants of *Rufi*, *Puri* and *Ruder*.<sup>1</sup>

### ***Siang Tribes***

The legends and traditions of the people of Siang, however, tell a different story of migrations. Almost all the tribal groups of the Galos, Adis as well as the Buddhist tribes of the Membas and Khambas trace the course of their migrations to their present settlements originally from the north. The traditional stories are indicative of a general north-south trend of movements.

It would be worthwhile to quote here extensively the passages concerning the tribal legends of migration from the research works on the Adis.

“Long ago, say the Gallongs (now addressed as Galos), they lived on the fringes of the Indo-Tibetan frontier. Streams of migrating families came down from time to time from upper areas and, in absence of adequate geographical knowledge, they followed the easiest track. Gradually, the lower areas gave them shelter and they slowly established permanent settlements. Marauding raiders from beyond the frontier raided their settlements very often, and, as they were, at that time, not very powerful in their military prowess, in comparison with the raiders, they had to emigrate. There are no written records available, and we have, therefore, to depend on the people’s own traditions. The Karka Gallongs, for example, had their original settlements at pa – Pigru,

<sup>1</sup> The Nah: Dr. B. K. Borah.

near Tadadege just at the Indo-Tibetan frontier. Having migrated from this place they came down via the Bori area, through Pero, Kambang, Karbak, Boje, and Bole to Yomsha. Yomsha become their next permanent settlement from decades. But with increase in population, the village could not accommodate all, and consequently, from here also different migrations took place in different directions. Lombi came to Jirigi and finally settled at Lomti. Tirbin came direct to Tirbin. Gamlin came to Kadai and then to Gamlin. Esi came by the bank of the Rimi River.”<sup>1</sup>

“From the legends available, it appears that the ancestors of the Ramos and the Bokars were brothers. The Ramos descended in a direct line from Dungram, the elder brother of Dumgumi, the ancestor of the Bokars.”

“The ancestors of the Ramos left their original settlement, moved from place to place and finally came to Tadadege area and settled there. Their last migration from Tadadege to Rapum, which they still inhabit, took place long ago.”

“The ancestors of the Bokars due to pressure of population started migrating and settled near about Tadadege, in a place which is at present known as Pui. Another version claims that their ancestors came down from north and settled near the Simang river, presumably near the source of the Sike river, a tributary of the Siyom.”

“The Simongs seem to have migrated very late. From their original home somewhere on the other side of the great snow ranges of the Himalayas, they came down to the Nigong valley. They could not move further south beyond the present Simong village, as the Minyongs, the Padams and the Pangis were already in occupation of that area. Thus in course of time, they had to turn back northwards as far as Jedo.”

“It is said that the Padams came from the north and were originally the inhabitants of Bomi, a place near Ramsing.”

“The ancestors of the Minyongs used to live on some snow ranges near about Telilidung. In their southward migration, they did not follow the course of the Siang. Instead, they came down the Angong valley to Mini-Pere and crossed the Takek-Adi near Dibok and finally settled at Riga past Pangkang. Later they managed to cross the Siang near Tayek – Puigo near about Riu and

---

<sup>1</sup> L.R.N.Srivastava. *The Gallongs*, (Shillong, 1962), pp.5-6.



spread over the area from Kebang, Yemsing and Pangin as far as Ledukm."

"A study of the legends relating to their original home, would suggest that the Adis came from the north across the Himalayan barrier. The real cause of their immigration cannot be ascertained at present. It may have been occasioned by some great natural upheaval in their homeland or by large scale racial movements set in motion by political happenings in those regions. Nor can it be said whether they came in a single mass or gradually in small batches in successive waves through centuries. In the former case, it is just possible, they might have come in a sweeping mass down to the plains of Assam and been driven back afterwards into highlands, they occupy now, by a superior power. Anything definite cannot be said upon this point; but it is comparatively easy to picture their later dispersion. Once they had settled in the mountainous regions below the Himalayas, growing communities would be forced to send out colonies in search of lands. These colonists would establish settlements which, in their turn, would find others. It may be taken for granted that, in the initial stages, the expansion was from east to west, particularly, in the Siang area. The southward expansion occurred later, when this area was fully occupied and could not accommodate any further settlement."<sup>1</sup>

"Close to the northern borders of Siang live the Membas and Khambas who like the Monpas of the Kameng are Buddhist by religion. They are markedly different both ethnically and culturally from the Adis to their south. Though, perhaps, inferior to the Monpas culturally and economically, they are equally attached to their religion. The Khambas are inhabitants of the Yang Sang Chu valley and are famous for their colourful dances. The Membas are found around Gelling where, as mentioned, the Dihang or the Siang river cuts across the Himalayan range and enters the frontier of our country. They too retain their dances".<sup>2</sup>

The Membas living in the Mechukha Sub-Division of East Siang District are believed to have entered in the valley from different parts of Tibet, Bhutan and Tawang. D.K Dutta viewed that the Ramos, Membas and many other tribes of Tibet believed in animism. The Lamas of Tibet guided them to accept Buddhism.

<sup>1</sup> Sachin Roy, Aspects of Padam Minyong Culture, (Shillong, 1966) pp 12-17.

Also see Resarun 1975 "The Adis-their Origin and Migration" by T.K. Bhattacharjee.

<sup>2</sup> J.N. Chowdhury : Arunachal Panaroma, pp 167-168.

### ***Lohit and Dibang Tribes***

Waves of tribal migrations flowed through the Lohit Valley. Of the present Mishmi tribes of the district, the Idus (Chulikata) – now concentrated in Dibang Valley and Lower Dibang Valley district - were the first to come according to J.P.Mills. They were followed by the Taraons (Digaru), who appear to have entered the Lohit valley some five hundred years ago. The Kamans (Miju) came last.

“The term “Mishmi” has originated from the plains people “Akam” (Assam). The Akam (Assam) people used to call *Misha-Meeshi*, later foreign explorers termed as *Misha-mee*; Mishee-mee and finally it settled to Mishmi. The first British explorer Lt. Burlton in 1825 mentioned “*Misha-mah*”. And Rowlatt in 1844 mentioned as Mishmee”. The Mishmi traders in olden days were known to the plains people for wrong reason, as these hill tribesmen often distract from their words agreed upon in barter business. So, as an expression of anguish upon these hill tribes, the plains people often used the word “*Misha Meeshi*”, meaning liar. This abusive word might have finally settled down to Mishmi in due course of time. This theory do synchronizes with Needham’s opinion about the Mishmis, where he grades the Mishmis as treacherous, liar and cowardly.

“There are many stray theories and axioms that have cropped up in regard to the real meaning of the term but none substantiates. One of such studies assumes that the term “*Mishmi*” has it’s genesis from the Sanskrit word “*mishrita*” meaning “*mixed*”. According to Shastry, the yellow skinned people with short stature and flat or broad nose were categorized as the “*kirats*” or the Mongoloids as they are called in the modern period. According to him there was a region inhabited by the mixed group of tribals with mixed culture and tradition, yet they share significant similarities. Therefore, they came to known as the “Mishmis”. But this seems only an attempt to sanskritise, so as to assimilate these tribal to the Hindu sects. The other theory assumes that the term was coined by the Britishers. It was said that these tribals during the British period were drown in opium and they often missed the opportunities and they never came forward for appeasement and allegiance. So one of the Britisher called them “miss me”, to mean they would miss the developments that would have taken place, if they had been in allegiance with the Britishers. This par-

---

<sup>1</sup> Dimso Manyu–Arunachal Review Vol-I No. 1, July, 2009 ppl.

ticular humorous remark in the later days came to connote these tribes as "Mishmis". This is only a humorous remark and in no way substantiates the fact".<sup>1</sup>

"The Mishmis have no migration theory as such and they believe themselves to be aborigines of this hilly region popularly known as the Mishmi Hills. Many opine that they have migrated either from Burma (Myanmar) or Tibet (China). However, the fact is that they have not migrated from either of these (Myanmar or Tibet) but, they had been shifting from one place to other in this region. The Mishmis, basically were gatherers and jhumias (jhum cultivators) so, they often shifted their village in search of new fresh pastures after they had exhausted the resources at a place"<sup>2</sup>.

"The Lohit district is the home of the Mishmis, the Khamptis and the Singphos. From the point of view of language which has affinities with Kachins, Chin and Lepcha, it might be reasonably conjectured that the Mishmis had come across Burma (now Myanmar) in course of their migration in some remote past. They fall into three groups, namely the Chulikata or Idu, Miju or Kaman and Digaru or Taraon.

In the extreme north of the Lohit valley - in Walong and Kibithoo Circles of Anjaw district - two small groups by the names of Meyor and Zakhring live in small settlements. Their culture is said to be more akin to that of the Mishmis than to the Tibetans"<sup>3</sup>.

Next advent was of the Khamptis and the Singphos and they came in successive waves. About the Khamtis, Dalton noted in 1872 that they immigrated to Assam from a country known as Bor-Khampti near the sources of the Irrawady. They crossed over to Assam from their original home as a result of tribal feud between different clans. The Khamptis, a Shan tribe like the Ahoms, were on the move from North Burma (now Myanmar) towards India probably from the forties of the eighteenth century. Alexander Mackenzie referred to the Bor-Khamti area as the mountainous region which interposes between the eastern extremity of Assam and the valley of the Irrawady. They first entered Assam and in due course of time settled in Tengapani (in present Lohit district) with the permission of the Ahom king in 1751 A.D.

<sup>1</sup> H. Kri- The Mishmis (An Introduction), pp 16.

<sup>2</sup> H. Kri- The Mishmis (An Introduction), pp 18.

<sup>3</sup> J.N. Chowdhury : Arunachal Panaroma, pp 187-188.

As about the migration of the Meyors is concerned, no conclusive findings have so far been achieved. However, the Meyors consider themselves to have migrated from place called *Mei* which they say, exist somewhere in the far eastern part, most probably in the Upper Myanmar or Irrawady range.

Victor Landi recorded the statement given by Shri Tezi Meyor (67) in his book *The Meyors and their Language* (2005) which throws plausible light on the emigrational history of the Meyors. He claims: "Meyors had come from the direction of Khamti-Long in northern Myanmar, entering through Krongjang Pass, following the river course of the Kullung and settled in the area around the confluence of the Lohit and Kullung for some considerable period. They later on went further up the north. In fact, they were harassed and pushed by the Mishmis particularly Lamet clan who were recognized as the owner of the Kullung route. The first village, the Meyors has established was Dong (Don). Other Meyor settlements like Tinai, Mosai and Kahao followed".

There is yet another enterprising Adi (Padam) community living in the foothills of Lower Dibang Valley district about whom we have already discussed earlier.

### **Tirap Tribes**

#### **Noctes**

The name Nocte means village people (Noc – Village, te – the people). The Noctes trace their descent from a remote ancestor named Khunbao, the chief. Khunbao had two sons – Khunlung and Khunlai. They were succeeded by Tangthok and Tankam. The claim of the Nocte chiefs to royal descent is based on this genealogy. The Ahom chronicles bear evidence to the fact of Nocte settlements in the district of Tirap as early as the beginning of the 13th century. In the Ahom period and the early British period, the Noctes were referred to as various groups of people known as Borduarias, Paniduarias, Namsanias and Jaipurias etc.

As there is no written record or any account available relating to emigrational history of the Noctes, few stray legends which have been passing down from generation to generation orally are the only dependable source.

The legends of migration of the Noctes as recorded by Parul Dutta in

his book *"The Noctes (1978)"* opines that each village relates its own story of migration by traversing the Patkai through different routes. Some villages say that they came from Hakhi Haja in Burma (Myanmar), others say that they were from Hukong and Mankong and others from Ngaimung, Rangkhon, Sansik, Phanyu, Tangnu or Sansit.

### **Wanchos**

The Wanchos, like many tribes of Arunachal Pradesh, have their own traditions about migration. According to one tradition, original place from where they came is Nyannu Ofan. Another tradition traces the courses of their migration to their present abode through Tangnu and Tsangnu both in the Tuensang area of the present Nagaland. It is not known when they actually migrated. The Ahom Buranjis and the early British records, however, suggest that they came and settled in the south-west part of Tirap some hundred years ago.

"According to legends they came to their present habitat from a place called Nyannu Ofan known also as Ofannu situated somewhere towards the south-west beyond the Patkai or in the Tuensang District. Their memory does not go beyond Nyannu Ofan. According to some, Nyanna and Ofan are two different places while others think it to be one. From Nyannu Ofan they came to Tinao, a place near an unidentified river. From Tinao they split in two groups, each taking a different route, via Tangnu and Changnu, till both finally came to and settled in their present habitat. These two groups came to be known as Tangjan and Changjan- respectively. These two original groups (called *Jan* in Wancho) later broke up into smaller groups, each one of which also has its own legend of migration."<sup>1</sup>

### **Changlang Tribes**

#### **Tangsas**

The word "Tangsa" means hill people 'tang' for hill and 'sa' for people. The Tangsa story of migration alludes to the fact that search of cultivable land and inter-tribal feuds impelled them to migrate from their abode across the Patkai and settle in the present place a few centuries ago. The memories of migrations lived for generations, and they are still fresh in their minds.

"Though the Tangsas for generations have been settled in their present

---

<sup>1</sup> Parul Dutta-The Wanchos (1990) pp 17-25.

home, "there are, however, indications that they actually migrated from Burma some hundred years ago. Their habit of dress such as wearing the lungi indicates a definite affinity with the Burmese. Moreover, some of the Tangsa tribes have memories of their friends and relatives left behind in the villages of Burma, whom they call Ajanti (people from a land not well-known)".<sup>1</sup>

As per legend all the sub-tribes of the Tangsas have their own tale to tell. The Ron-Rangs believe that they originated in the hill called Masoi Sinrapum. They are said to have migrated in the quest of better land for cultivation and need to evade the frequent attacks and raid by Loomtos, Garans and others.

The Mosangs on the other hand are said to have migrated from Masoi Sinrapum to a hill called Wantokpum first. Before settling down permanently in the different villages they are now occupying, they kept moving from one place to another.

The Yoglis are said to have migrated from Masoi Sinrapum, they came to Hangneutam, a place situated in a valley. They migrated to their present place about three hundred years ago after series of wandering from one place to another.

The Khemsings came to Kangtao from Masoi Sinrapum through Tennai Wakrap. From Kangtao, they gradually moved to Khasu, Longthong and Longkey; and having settled in these places for a few generations, they again migrated to Lunglung, from where some moved onwards to their present place of habitation across the Patkoi Range about two generations ago. The Khemsings of this area have their friends and relatives at Lunglung and Longkey, which is current even today. Lunglung is situated on the other side of the Patkoi Range at the distance of about a day's march from Jotingkok.

The Lungris migrated from Masoi Sinrapum to their present habitat coming across the Patkoi Range through the Nyapket pass. They came via Kangtaom Tennai Wakrap, Munkham, Hangja, Sangti Sangkia and Kekolim. In each of these places they stayed for atleast a generation or two. Crossing the Patkoi Rangem they came to this side and settled down on the banks of the river Namchik from where they shifted to Puniyang and Ngarong villages. These are now the only two villages under the occupation of the Lungris.

---

<sup>1</sup> Parul Dutta-The Wanchos (1990) pp 17-25.

### *Singphos*

The Singphos, whose presence is largely seen in Changlang district are also living in Lohit district adjoining the Khampti settlement areas. The Singphos who are Buddhists by religion are reported to have made their first appearance about 1793 during the troubled time of the Moamaria rebellion in the reign of Raja Gaurinath (1780 – 1795). On their arrival through the Patkai Pass, the Singphos first came across the Khamptis whom they ousted from their settlement in the Tengapani area, east of Sadiya. Gradually, they spread out and occupied the whole level tract of the country watered by the Burhi-Dihing and the Tengapani rivers.

### *Lisus*

The Lisus, a small ethnic group inhabiting the remote easternmost corner of Changlang district popularly in Gandhigram. Earlier, the Lisus were scattered in the smaller habitats such as, Daodi (Vijonagar), Gwamidi, Chidudi etc. Before Gandhigram was formed, the whole area was popularly known as Shidi (Shi-thatch, di-plain area).

Their religion is part animist and ancestor worship. The Lisus believing in traditional religion called themselves as Maha-Lisus. However, the Lisus who were believed to have migrated from the Patkai Hills are generally Christians and are branded as Ha-Lisus.

“There are many views about the migration of Lisus. As per the traditional chronicle of the people, the Lisus first lived at a place known as Ngacheme. After spending a considerable period of time over there, they migrated from Ngamache to a place called Echeme due to decrease in the main source of their subsistence. The Lisus then stepped into Myanmar through the western side and settled down in the Putao area. They had been there for three generations. Compounded by pressure met upon them by the Myanmarese and breakout of famine, the Lisus entered India through Mughaphiko pass and finally settled in Daodi (Vijonagar), Gwamidi (Phaparbari), Chidudi, Hajuli, Shidi (Gandhigram) and Ebdì on the banks of Noa-Dihing river.”<sup>1</sup>

Morse (1974) observed; “The Lisus were scattered in the China-Burma border areas. In 1929, a party of Chinese Missionary was working among the Lisus at the border area of China and Burma. Many of the Lisus were settled

<sup>1</sup> Tribes of Arunachal Pradesh (2004), pp 119- 121: Edited by Bibhash Dhar and Palash Chandra Coomar.

around Putao, a Burmese city. The frequent local disturbances, economic problem, etc. made them force to depart from their colonies. Some of the Lisus moved towards India to escape from these bad elements”.

### **Kiratas**

Assam and its neighbouring hills came within the domain of the ‘Mahabharata’ in the pre-Christian era. The early people of the Bhramaputra valley and the hill tracts of what is now Arunachal Pradesh were known to the Vedic Aryans as Kirata.

According to the Indologists, the term Kirata occurring first in the Yajurveda and subsequently in the Atharvaveda, the Mahabharata and the Ramayana and other ancient scriptures refers to the Indo-Mongoloid tribes living in the hills and mountains, particularly the Himalayas and in the north-eastern areas of India. “From the Yajurveda onwards, the mountain regions of North and North-eastern India- the Himalayas particularly, are well attested as the abode of the Kiratas. In the Mahabharata, the Kiratas are dwellers in the Himalayan regions, particularly in the Eastern Himalayas.....

“We may be permitted to reconstruct the picture of the Kirata or Early Mongoloid movements on the soil of India right down to the beginning of the Christian era. They entered probably through Assam and their advent in the east might have been as old as that of the Aryans in the west, at some period before 1000 B.C. By that time they might have pushed along the Himalayan slopes as far west as the Eastern Punjab Hills. They came to be known to the Vedic Aryan as a cave dwelling people from whom the Aryans obtained mountain produce like drugs and herbs and the soma plant. The four books of the Vedas were compiled in all likelihood in the 10th century B.C., so that the passages in the Yajurveda and Atharvaveda mentioning the Kiratas are at least as old as that period. When the Mahabharata and the Ramayana were taking shape, between 500 B.C. to 400 A.D., particularly in the pre-Christian centuries, they had occupied the southern tract as the Himalayas and the whole of North-eastern India, North Bihar contiguous to Nepal and to the north of the Ganges, the greater part of the Bengal, and Assam, including the areas through which the Ganges (the Padma or Padda of the present day) passed into the sea. Eastern Nepal and the Lauhitya or the Brahmaputra valley were the lands specially connected with them.”<sup>1</sup>

<sup>1</sup> Suniti Kumar Chatterji, *Kirata-jana-krti*, (Calcutta, 1974), pp.30, 36-37.



The Kirata people of Assam, as observed by Dr. S.K.Chatterji, 'appear to have been of the great Tibeto – Burma tribe of the Bodos.'<sup>1</sup> According to him, the North-Assam tribes of the Adis, Akas, Nyishis, Miris and Mishmis, as already mentioned, may also reasonably be identified with the Kirata.<sup>2</sup>

In the Vedic literature the name Kirata was also applied to a people living in the caves (guha) or mountains as it appears clearly from the dedication of the Kirata to the caves in the Vajasaneyi Samhiita and from the reference in the Atharva Veda to a Kirata girl (Kairatika), who digs for a herbal remedy on the ridges of the mountains. In the Puranas, Kiratas are designated as 'forest-ers', 'mountaineers' etc. Kirata appears to be a common name given to all the Indian tribes of Mongoloid origin. They are described in the Mahabharata as 'gold-like', i.e. yellow in colour unlike other pre-Aryan people. In the Ramayana, they are mentioned as pleasant – looking with hair done in pointed top-knots (cf. the hair-do of the Nishis, Bangnis, Hill Miris and Apa Tanis) and shining like gold. Their yellow complexion evidently distinguished them from other peoples of India. They were experts in the art of weaving (as they still are), making cloth of various kinds. Their cotton and woolen fabrics were very much in demand among the civilized Hindus of the plains.

The Mahabharata bears eloquent testimony to the fact that the Kiratas of North-east India came into contact with the Vedic Aryans as far back as the Battle of Kurukshetra (c.900 B.C.). The Sabha Parva (Book II) of the Mahabharata testifies that Bhagadatta, the king of Pragjyotisha (Kamarupa of Assam), with his army of Kiratas took part in the battle as an ally of the Kauravas. He was defeated by Arjuna and both the king and his Kirata followers were compelled to pay tribute. Elsewhere in the Mahabharata, Bhagadatta is addresses as Shailalaya Raja or 'the mighty king whose home is in the hills,' and the Kirata soldiers of his army are describes as 'as appeared to be in gold; their troops had the appearance of a forest of Karnikaras (with yellow flowers).'

The Greek classical literature also bears evidence that the north-eastern region of India was not wholly unknown to the author of the Periplus of the Erythrean Sea (1st-2nd century A.D.) as also to Ptolemy, the Geography of Ptolemy (c.150 A.D. states that Serica, a country probably located in Assam, is bounded on the east and the north by hills and forests where canes are used for bridges. Verily, there are wondrous cane-bridges in Arunachal Pradesh even

<sup>1</sup> Suniti Kumar Chatterji, the Place of Assam in the History and Civilization of India, (Guwahati, 1970), p.17.

<sup>2</sup> Suniti Kumar Chaste, Kirata-Jana-Krti, (Calcutta, 1974) p.38.

today, and they display the superb craftsmanship and engineering skill typical of its people. Although these vague allusions do not convey much about the land and people, the Kirrhadae mentioned in the Periplus and the Kirrhadae of Ptolemy have an unambiguous reference to the country of the Kiratas extending from the far-off North-East India to South-East Bengal.

#### **Account of Hiuen Tsang**

Hiuen Tsang, the great Chinese traveller who came to Assam in about 642 A.D. during the reign of Bhaskaravarman noted that the country of Kamarupa was ruled over by a Hindu king and its extent was about 10,000 li (nearly 1700 miles) in circumference. He observed that the manners of the people were simple and honest. The men were of small stature and their complexion a dark yellow. Their language differed a little from that of mid-India.

The boundary of Kamarupa as ascribed by Hiuen Tsang suggests that it included almost the whole of erstwhile Assam. Incidentally, the Yogini Purana (8th Century A.D.) states that Kamarupa extended right up to the Himalayan range in the north. The description of the people as having short stature and yellow complexion may be taken as proving their Kirata or Indo-Mongoloid origin, more particularly their Bodo characteristics.

### **MEDIEVAL PERIOD**

#### **Ahom Ascendancy**

The political scene of north-eastern India in the late medieval period was dominated by the Ahoms, who ruled in Assam for long six centuries from 1228 A.D. to 1826 A.D. Our sources for this period are mainly a series of valuable chronicles known as the Ahom Buranjis. These buranjis are written records, which contain *inter alia* a wealth of information about the political relations the Ahom had with the tribes of the hill tracts now known as Arunachal Pradesh, and these records throw a flood of light on the late medieval history of this territory.

Indeed, from the days of the Ahoms onwards we can clearly trace the main course of political developments that took place in the north-eastern region although the Buranjis do not give us a connected account; they are precise as historical documents. The written history of this part of the country evidently begins with the advent and ascendancy of the Ahoms.

The Ahom invasion of Assam led by Sukapha began in 1228 A.D.

They came from North Burma crossing the Patkai range, and made steady advances along the course of the Noa-Dihing river and then forced their way along the western course of Brahmaputra. In their bid to gain supremacy in Upper Assam, the Ahoms had to measure their swords first with the Chutiyas<sup>1</sup> and the Kacharis, the two powerful Bodo tribes of the north-eastern Assam, and in a series of battles lasting for centuries they came out victorious. Consequent on the decline of the Chutiyas and also of the Kacharis the Ahoms gradually annexed the whole strip of land from Sadiya up to the area east of the Kameng (Bhareli) river on the north bank of the fringed by the hill ranges of Arunachal Pradesh, and in doing so they gradually came into contact with the northern tribes of Arunachal Pradesh, such as Mishmis, Adis, Nyishis, Hill Miris and Akas, and established extensive relations with them.

The works of the Muslim writers and historians of this period contain valuable information about the political relations between the Ahoms and the northern tribes. One such writer was Shihabuddin, also known as Talish, who accompanied a Mogul expedition to Assam in 1662 – 63 led by Mir Jumla during the reign of Jayadhwaj Singha (1648 – 63). Mir Jumla's forces advanced to the fringes of the present Arunachal Pradesh bordering Assam. Shihabuddin's *Fathiyah-i-Ibriyah* conveys that 'although most of the inhabitants of the neighbouring hills paid no taxes to the Raja of Assam yet they accepted his sovereignty and obeyed some of his commands'.

Another document containing an account of the interview which the Assamese ambassador Madhabcharan Kataki had with the Mogul commander Raja Ram Singh refers to the tribal regions of the Ahom army and it declares, 'Numerous chieftains of the mountainous regions have become our willing allies in the campaign. They consist of a total strength of three lakhs of soldier..... Their participation in this campaign has been directly sanctioned by His Majesty.'

#### **AHOM-TRIBAL RELATIONS**

The Ahoms, as already stated, gained gradual control of the entire stretch of level area on the north bank of the Brahmaputra. In the adjoining northern hills and valleys extending westward of the Subansiri river to the bank of the Bhareli in Kameng lived the Nyishis and Bangnis (now clubbed with Nyishi). As history goes, the Nyishis of Subansiri and the Bangnis of Kameng

<sup>1</sup> The name Chutiya is also spelt as 'Sootiya'.

are, as shown earlier, cognate tribes belonging to one great tribal fraternity, and both of them appear to have been commonly mentioned in the Ahom chronicles as 'Dafla'.<sup>1</sup> The Bangnis and Nyishis living across the northern borders of the Darrang and Lakhimpur districts of Assam were previously referred to as 'Paschima Daflas' or 'Western Daflas' and 'Tagin Daflas' or 'Eastern Daflas' respectively. They were also called by various other names. The Westerners, however, call themselves Bangni, while their kinsmen the Easterners are known as Nyishi. The term 'Tagin Dafla' used to mean the Nyishis is obviously a misnomer, for the Tagins and the Nyishis are two different tribes, although they have cultural affinities with each other. It was unlikely for the Ahoms to come across the Tagins living rather remotely in a formidable tract of the present Upper Subansiri District of Arunachal Pradesh.

Michell observed as early as 1885 that "the Daphlas (Nyishis) extend from the hills to the east of the Bhoroli (Kameng) river to the mountains on the east of the Ranga (Panyor) river (in the Lower Subansiri District), that is to say, about 60 miles from east to west."<sup>2</sup>

As the Bangnis and the Nyishis are the western and eastern sections of one and the same tribal community and both of them were previously addressed as 'Dafla' meaning Nyishi, they may be conveniently referred to as Western Nyishi and Eastern Nyishi respectively. The single word Nyishi is commonly used in this context for both of them.

Formerly the Nyishis were divided into many clans under numerous chiefs, for which they were incapable for combined action except casually. As observed by Robinson and Dalton, there were as many as 238 Nyishi *gams* or chiefs who received since 1836 – 37 a compensation amounting to Rs. 2,543 for the loss of *posa* granted to them by the Ahom rulers. The Nyishi owed allegiance to an oligarchy of chiefs numbering from two or three to thirty or forty in a clan. Their villages consisted of long houses and a house was occupied by related families. They were usually attached to the house rather than to the village.

Yet, of all the Arunachal tribes met by the Ahoms, the Nyishis were

<sup>1</sup> The term Dafla substituted by Nyishi through Constitution (Scheduled Tribes) Order (Amendment), Act 2008 which modified the list of Scheduled Tribes in the State of Arunachal Pradesh on 1st April, 2008. The term 'Dafla' was in former times used to denote the Nyishis. This foreign appellation given to them might have carried with it a derogatory undertone and it has now been discarded.

<sup>2</sup> John F. Michell, *The North-East Frontier of India* (Delhi, Reprint 1973), p.255.  
(Words within brackets are insertions in the quoted passage).

found to be the most formidable. According to Mohammad Kazim, a writer and a contemporary of Aurangzeb, the Nyishis were an independent people. In fact, the Ahoms were never quite successful in their attempts to reduce the Nyishis to complete submission. When King Udayaditya Singha (1670 – 72) wanted to send a force to punish the Nyishis for having taken away from the plains a number of men, women and children, his celebrated Prime Minister Atan Buragohain said that it was impossible to capture the Nyishis. The Nyishis in their inaccessible hill abode were invincible indeed.

A work written in the 17th century on the political geography of Assam valley contains the names of tribes who were tributaries of the Ahom Kings. The Nyishis, Akas and Bhutias were referred to in this list. It also makes mention of the tributes paid by them and the passes by which they descended to the plains. The work further gives description of certain villages of the Mikirs and Miris which were under direct Ahom rule.

The Ahom Buranjis made the first mention of the Nyishis as allies of the Koches who invaded Assam in 1562 A.D. After the withdrawal of the Koches, the Ahom king Sukhampha, Khora Raja (1552 – 1603) brought the lost territories on the north bank of the Brahmaputra up to the river Bhareli directly under the Ahom administration and a new officer called Salal Gohain was appointed to administer it. This measure was taken to keep the Nyishis and the Akas in check.

The Buranjis refer to several Ahom expeditions into the Nyishi country. The first was directed against the Western Nyishis in 1614, which ended in a total defeat of the Ahoms. In order to resist the Nyishis, king Pratap Singha (1603 – 41) constructed a fort called Dafla-garh in the Darrang District (now Sunitpur district) which was also known as Rajgarh (i.e. royal fortification). He also granted the Nyishis right of *posa*, that is the right to receive payments from certain specified villages in the foothills, provided they paid annual tribute to the king. *Katahis* were appointed for this purpose. A number of *paiks* settled in the duars of passes were assigned to the Nyishis in order to supply them certain necessities of life. These *paiks*, who were actually 'cultivators' working under an officer called Daflaparia Phukan, came to be known as 'Dafla-bahatias or serf of the Nyishis. This was a special privilege enjoyed by the Nyishis.

The records of 1825 as quoted by Mackenzie testify that the Nyishis were entitled to receive, from every ten house at the foothills, one bauble cloth,

one single cloth, one handkerchief, one dao, ten heads of horned cattle and four seers of salt.

Mackenzie also noted that 'the different clans of Nyishis did not interfere with each other on the plains. Each knew the villages to which it had to look for *posa*. But they claimed a right to collect from their allotted *paiks* wherever these might migrate, and they demanded full dues whether the *paiks* could pay or not. This exacting spirit made them very difficult to deal with'.<sup>1</sup>

Despite the grant of *posa* the Nyishis could not be prevented from committing raids in the plains of Assam. In 1646, during the reign of Sutyinpha also called Naria Raja (1644 – 48), a punitive expedition was sent against the so-called Eastern Nyishis to avenge the outrages committed by them. The expedition failed and a second expedition against the same tribe was undertaken in 1648. This time the Nyishis were assisted by the Hill Miris. After a fierce battle the Ahoms compelled the allied forces to retreat. The Nyishis, however, proved that they were not to be subdued easily. They yielded at length only when they faced an acute scarcity of food.

The Nyishis reciprocated the help rendered by the Hill Miris by taking side with them in their rebellion against the Ahoms during the reign of Chakradhwaj Singha (1663 – 70).

A section of the Eastern Nyishis rose in revolt in 1672 and refused to pay tribute to the Ahom King. They raided a village called Taiban in the Lakhimpur District and carried off a number of people. Some of the Buranjis assigned the cause of the raids to the extreme sufferings of the Nyishis for want of food. As mentioned earlier, the reigning king Udayaditya Singha dispatched a retaliatory force against the Nyishis, ignoring the caution of his wise Prime Minister. The expedition dragged on for some time until it ended in a failure with heavy loss of lives.

Hostilities between the Ahoms and the Nyishis continued until the latter came to terms during the reign of Rudra Singha (1696 – 1714), the mighty king of the Ahoms. The Nyishis agreed to supply six hundred soldiers to the Ahom army, four hundred from their western section and two hundred from the eastern section. The peace and friendship, however, did not last long. The Nyishis committed to series of raids in the plains of Assam following the death

---

<sup>1</sup> Alexander Mackenzie, *The North-East Frontier of India*, (Delhi, Reprint 1979).

of Rudra Singha. The eastern Nyishis were subdued in 1717 by the next Ahom King, Siva Singha (1714 – 44), and an embankment was raised along the border of the hills to foil future incursions of the Nyishis. To counteract the raids of the Western Nyishis, King Rajeswar Singha (1751 – 69) imposed a blockade on them by closing the passes leading to their hills, and fortifying the strategic points along the border. Consequently, the Nyishis led a deputation to the king and gave him presents. They also returned the captives taken away previously. But the arrest of the Nyishi representatives taken by the king resulted in the renewal of hostilities, and finally in the restoration of the right of *posa* to the Nyishis.

When the Moamaria rebellion broke out in Assam in 1769 and continued till the early part of the 19th century, the Nyishis made a common cause with the rebels in their bid to overthrow the Ahom domination. They rose in sporadic revolts and were said to have devastated a couple of villages on the north bank of the Brahmaputra. During the reign of Kamaleswar Singha (1795 – 1811) they once proceeded as far as Doimuni-sil in Koliabor in Assam, but were defeated by the Ahoms. The rebellion eventually subsided.

#### Ahom-Aka Relations

The Akas are renowned in history. An energetic tribe as described in the old records, the Akas were a force to be reckoned with.

The Akas were divided into eleven clans or sub-clans. The most important are the *Kutsun* and *Kovatsun* who figured in early British accounts as *Hazarikhowa* and *Kapaschor*. Each of these clans was organized under a *Raja* or Chief.

The *Hazarikhowas* had a right to *posa*, granted by the Ahoms. This right formally entitled them to get a share of the produce of the Charduar area in the plains of Assam. The *Kapaschors* had no such rights, but they managed to extort certain contributions from the cultivators of the plains. These relations of the Akas with the plains seem to have earned for their two main clans the *Kutsun* and *Kovatsun* the sobriquets of *Hazarikhowa* and *Kapaschor* respectively.

The Akas were a small tribe, yet they wielded considerable power and authority over the wide region. They were for many years dreaded by the neighbouring people, particularly of Charduar in the Darrang District (now Sonitpur) of Assam. Led by their chief, Tagi Raja, the *Kapaschors* made a

series of daring raids upon the plains in the early decades of the nineteenth century. They long defied the might of both the Ahom and the British governments. In their activities the Akas were greatly helped by their powerful kinsmen, the Mijis, who reinforced their ranks when occasions so demanded.

It is important to note that the buranjis of the Ahoms make no mention of any direct confrontation between the Ahoms and the Akas during the whole period of Ahom rule in Assam. The Ahoms seem to have befriended the Akas by conceding to them the right to *posa*.

### **Ahom-Hill Miri Relations**

The word Miri is a common name given indiscriminately to a number of tribal groups living in the hills and the plains, a motley tribe, live scattered in the foothill areas of Arunachal Pradesh. They have been mentioned in the Ahom accounts as go-betweens of the Adis and the traders of Assam, a fact in which the Assamese word 'Miri' meaning intermediary has had its origin. The Hill Miris living in the valleys of the Kamla and Subansiri region as far as the Plains are, however, a separate tribal group quite distinct from the Miris of the plains. They have been called, as noted by Verrier Elwin, the 'Hill Miris' for want of a better name. As far back as 1872 Dalton made a distinction between the Miris of the plains and of the hills and referred to the latter as Parbatia or Hill Miris. The Report of the Miri Mission (1911 – 12), which made the first ever extensive survey of the district, states that the name Miri is purely an Assamese word originally used to denote all the hill people between the Nyishis of the Ranga Valley and the Adis of the Dihang.

"The first reference to the Miris, in the Buranjis of the Ahoms we get in the reign of King Pratap Singha (1603 – 41 A.D.). In order to stop the acts of oppression committed by the Miris, King Pratap Singha appointed Katakis to watch them and keep the authorities informed of their movements. With that end in view he introduced the 'posa' system in order to conciliate them. In recognition of this privilege granted to them, he arranged for the payment of annual tribute by the Miris to the Ahom government and hereby compelled the Miris to recognize the over lordship of the Ahom King. The arrangement made by king Pratap Singha with the Miris remained intact till the end of Ahom rule in Assam."<sup>1</sup> The Miris referred to here are evidently the Hill Miris, who had the right to *posa* as enjoyed by the Nyishis, while the Miris of the plains did not

<sup>1</sup> Lakshmi Devi, Ahom – Tribal Relations, (Guwahati, 1968) p-159.



have any such right. It was noted by Mackenzie that the Hill Miris had acquired an acknowledged right to *posa*.

### **Ahom-Adi Relations**

The Ahom Buranjis do not explicitly account for the relationship that existed between the Adis and the Miris of the plains. But they indicate that during the reign of Pratap Singha, (1603 – 41) some villages with paddy fields in the plains and beels (fishing lakes) were assigned to the Adis. On account of these assignments, the Ahoms are stated to have exempted the cultivators of these villages and the fishermen, who were to supply paddy and fish to the Adis, from paying taxes. In return for these privileges, the Adis had to pay annual tributes to the Ahom Government.

The “Adis claimed an inalienable right to all the fish and gold found in the Dihang and other rivers flowing from their hills through the Miri settlements. The Ahom Government anxious to conciliate their highland neighbours accepted this claim and relieved the Miris of all revenue charges, acknowledging thereby the subjection of the Miris to the Adis.

A striking feature of the Ahom – Adi relations is that unlike the other northern tribes, the Adis, though very powerful, had no acknowledged right to *posa*. It appears that the relationship that existed between the Adis and the Ahoms was not direct, but through the Miris, who were officially recognized to be the interpreters of the Adis. The reason of the Adis not having the right to *posa* was also evidently due to their comparatively remote situation, separated as they were by the great river Dihang from the cultivated country along the Brahmaputra Valley. Moreover, the conciliatory policy of the Ahoms must have contributed towards developing friendly relations with the Adis. It is, therefore, in the fitness of things that the Buranjis speak less about the Adis and nothing at all about any Ahom-Adi conflict.

### **Ahom – Mishmi Relations**

The Ahom Chronicle (Buranji) pertaining to the reign of the Ahom king Sutyinpha Naria Raja (1644 – 48) refers to a rampart called ‘Mishmi – garh’. The rampart was probably constructed to resist the Mishmi raiders. This information is particularly important in that there the Mishmis were mentioned for the first time in the chronicles of the Ahoms.

In the entire period of the Ahom rule in Assam extending for six hun-

dred years from 1228 A.D. to 1826 A.D., there is only one recorded instance of aggression committed by the Mishmis on the Ahom territory. This took place during the reign of Ahom king Suklampha also known as Ramadhwaj Singha (1673 – 75 A.D.). The Mishmi raided Sadiya in June 1675, and killed four Ahom Priests. Compelling the Ahom forces led by the Sadyakhowa and Hatkhowa Gohains to retreat, they advanced occupying a number of villages that came on their way. The Ahoms, however, defeated them after having received a strong reinforcement. The Mishmis surrendered the murderers and got a reprieve by paying tributes to the Ahoms.<sup>1</sup>

An octagonal stone pillar found near Sadiya bears an inscription in the Ahom language. The substance of the inscription is as follows:

“I, the Dihingia Bargohain, do engrave on the stone pillar and the copper plate these writings (with the strength of which) the Mishmis are to dwell on the hill near the Dibong river with their females, children, attendants and followers. They will occupy all the hills. They will give four basketfuls of poison and other things as tribute and keep watch on the body of the fat Gohain (Sadyakhowa Gohain). If anybody happens to be in possession of and wishes to remain on all sides (of the hills), he is prohibited from encroachment. .... I do proclaim wide if anybody sits exalted (i.e. comes in power, i.e. becomes ruler) he should not break (the agreement) and break the stone.”<sup>2</sup>

This edict was probably inscribed in about 1687 under the direction of Dihingia Borgohain, who was obviously the Ahom overlord of this region.<sup>3</sup> In a probability, the edict was an after-effect of the Mishmi raid of 1675, which prompted the Ahoms to make a settlement with the Mishmis as embodied in what is known as the Sadiya Stone Pillar inscription.

It is important to note that “unlike the Nyishis, Akas, Miris and the Bhutias, the Mishmis did not enjoy any ‘*posa*’, that is the right to levy tribute from certain villages in the plains set apart for the purpose by the Ahom Government”.<sup>4</sup> It indicates that the Ahom jurisdiction was firmly established up to the confines of the Mishmi Hills, and that the Mishmis were reconciled by the settlement inscribed on the Sadiya Stone Pillar. The Mishmis were also al-

<sup>1</sup> See Lakshmi Devi's Ahom-Tribal Relations, (Guwahati, 1968), pp.185-86, for details.

<sup>2</sup> Assam District Gazetteers (Vol-XI) - The Sadiya and Balipara Tract Gazetteers (Vol-XI)-The Sadiya and Balipara Tract Gazetteer; part I&II, (Shillong, 1928) pp.18-19.

<sup>3</sup> (a) Lakshmi Devi, Ahom-Tribal Relations (Gauhati, 1968), p.186.

(b) Edward Gait, A History of Assam (Calcutta, 1967), p.90(foot-note)

<sup>4</sup> Lakshmi Devi's Ahom-Tribal Relations, (Gauhati, 1968), p.178.

lowed to carry on their trade with the plains. The grant of trade facilities was probably one of the reasons which dissuaded the Mishmis from making further raids in the Ahom territory. Evidently, the Ahom policy in relation to the Mishmis was conciliatory.

### **Ahom – Khampti Relations**

The Khamptis, a Shan tribe like the Ahoms, were on the move from North Myanmar towards India probably from the forties of the eighteenth century. They migrated from the country known as Bor-Khampti (or Mung – Khampti – Lung, meaning vast. The word ‘bor’ in Assamese also means great or vast) near the head-water of the Irrawaddy. They are Buddhists. Their racial kinship with the Ahoms induced the latter permit them to settle on the Tengapani river in 1751 A.D. During the Moamaria rebellion, which broke out in Assam in 1779 A.D. and continued till the beginning of the nineteenth century, the Khampti saw a chance to grab more land. Taking advantage of the internal dissensions which weakened the Ahom authority on the outlying provinces, the Khamptis advanced towards Sadiya crossing the Brahmaputra. Headed by their two chiefs Burha Raja and Deka Raja, they become the masters of Sadiya. In 1794 A.D. they deposed the Sadiyakhwa Gohain, the Ahom Governor of Sadiya. Emboldened by this success, the Khamptis threw a challenge to the authority of the Ahom king Kamaleswar Singha (1795 – 1811). In 1799 A.D., the Burha Raja led a large army against the Ahoms. According to some Ahom Buranjis the other Shan tribes, such as Naras and Phakials, and also the Miris, Mishmis and Adis joined the Khamptis. The Ahoms took position at Sadiya after crossing the Brahmaputra and repulsed the combined force. Burha Raja together with a large number of his soldiers was taken prisoner. The Ahom rule in Sadiya was restored with the appointment of new Sadiyakhwa Gohain. But the Ahoms failed to retain their hold on Sadiya for long, as it appears that the Khamptis, after a short interval of subjection, regained their grip on this area during the troubled period of the Burmese invasion of Assam (1816 – 24). With the signing of Treaty of Yandaboo (1826), the administration of Assam was transferred by king to Burma (now Myanmar) to the British. During that period, the entire area of Sadiya region was found to be under the rule of the Khamptis.

### **Ahom-Singpho Relations**

Another Tribe who played an important role in shaping the history of this frontier are the Singphos. They made their first appearance on the eastern

tip of Assam in about 1793 A.D., when the country had fallen into a state of anarchy due to the Moamaria Rebellions and the reign of terror let loose by the Ahom king Gaurinath Singha (1780 – 1795). On their arrival through the Patkai Pass, the Singphos first came across the Khamptis whom they ousted from their settlement in the Tengapani area, east of Sadiya. Gradually, they spread out and occupied the whole level tract of the country watered by the Buri-Dihing, the Noa-Dihing and the Tengapani rivers.

The Ahoms clashed with the Singphos when the latter joined hands with the Moamaria rebels in 1797 A.D. The Singphos fell back when the Ahoms stormed their fortress. The Ahom, however, tried to win them over by a matrimonial alliance. But the Singpho Chief Bichanong preferred to side with the Burmese (Myanmarese) when they invaded Assam and its adjacent eastern region resulting in vast devastations and distress of the people of whom many were carried off as slaves.

#### **Ahom-Nocte-Wancho Relations**

The Ahoms, as already stated, came across the Noctes of Tirap on their way to Assam. The salt springs and wells of the Noctes were a source of friction between them and the Ahoms and they clashed with each other over the question of occupancy. According to the Buranjis, the Ahoms seized a salt well in Mohong in 1536 A.D. and in course of time enjoyed either exclusive rights on several such wells or shares in the salt produced in them.

Some of the tribal groups appear to have entered into friendly relations with the Ahoms. "There is a story that a Bandera (Banpha or Banpara) Naga Khunbao (i.e. chief) had made close friendship with king Supimpha (1493 – 97)." The friendly relations between the Banfera Nagas and the Ahoms are also borne out by the fact that the Banfera Nagas sought help from the Ahoms repeatedly in 1549 A.D. and 1665 A.D. when they were attacked by another groups of the Nagas called Banchang. The help was given and the Banchang Nagas were defeated.

But some other groups of the Noctes living close to the border of the Dibrugarh District of Assam committed occasional raids in the Ahom territory. To keep them in check, the Ahom king Pratap Singha (1603 – 1641) constructed a rampart called *Naga-garh*. Scarcity of food was the main reason for these tribal raids. And this fact prompted the king to grant the tribal chiefs 'Khats' or lands to make up their food deficiency. These estates, known as

*Naga-khats*, were looked after by some Assamese agents called *Naga katakis*. In return for the grant of these cultivable lands, the tribal groups of each '*duar*' or pass were obliged to pay annual tribute to the Ahom king in the shape of *mithun* (an animal of the bovine species), elephant tusk, goat's hair, cane slips coloured in red, salt and various other articles produced in the passes.

During the reign of the Ahom king Gadadhar Singha (1681 – 1696) A.D.), the Namsangia Noctes committed a daring raid on a Ahom salt mine in 1692 and killed some twenty three persons. A punitive expedition was sent against them and it took a terrible reprisal. Another skirmish between the Ahoms and the Noctes took place in 1701 in the salt mine at Barhat in which both sides suffered casualties. The Ahom king Rudra Singha (1696 – 1714) sent an army against the Noctes. No blood was, however, shed. The Noctes compromised and in the rapprochement the king gave them presents. No uprising against the Ahoms during the rest of the 18th century was recorded.

### **Ahom Policy**

The Ahom, as already stated, had extensive political relations with the Northern tribes. Special officers were appointed by them to keep close contact with the hill tribes and also to regulate the relations between the tribesmen and the villagers living in the plains along the foot hills belt. In order to induce the tribal people to settle on peaceful life, they granted them what is called *posa* and other concessions in return for tributes paid by them to the Ahom kings. The Ahoms, however, in exercise of their sovereignty sent out punitive expeditions to the hills and imposed blockades when there were serious raids and outrages committed by the tribes whom they tried to contain in their own hills. They adopted and successfully pursued a policy of conciliation backed by force.

The Ahoms granted the Nyishis and the Akas the right of *posa*. The word *posa* literally means a collection or subscription for a common purpose. In the olden days, the various hill tribes from the north would descend annually to the plains to receive subscriptions for certain border villages the subscription raised by a village to meet the customary demands of the Hillman was paid in kind. It appears that the quantities demanded from each village or hamlet were fixed and well known to both parties and as no individual inhabitant of a plains village was liable for any particular article, the whole amount was raised collectively a village subscription, or '*posa*'.

After the British took over possession of Upper Assam from the Ahom

king Purander Singha (1832 – 38), in 1838 the payment of *posa* in kind was commuted for fixed money payments. In 1852, the Nyishis were finally induced to commute their claims for a money payment. The system of *posa* introduced by the Ahom king Pratap Singha (1603 – 41) to deal effectively with the northern tribes and maintain peace and order in the country was in fact followed by the British for many years as a legacy until the payment was finally stopped from the forties of the 20th century by order of the Government.

The policy of the Ahoms towards the hill tribes, as we have seen, was conciliatory. But they made full use of their political authority to make the policy effective. In exercise of their sovereign power, they mediated and settled disputes and regulated relations between the tribal people and those of the plains. The part played by them as a unifying force is of great historical importance. In fact, the Ahoms controlled and shaped the course of history of the north-eastern region they ruled over till the British annexation.

### Modern Period

The British gained ground in Assam as the decline of the Ahom began towards the end of the eighteenth century. Misrule of some weak and incompetent kings, internal dissensions and uprisings in different parts of Assam had shaken the very foundation of the Ahom kingdom. The serious turmoil caused by the Moamoria rebellion was further aggravated by the Burmese (Myanmaress) incursions in Assam (1816 – 24), which finally led to the downfall of the Ahoms. The devastated Brahmaputra Valley fell into deplorable state of chaos; disorder and extreme sufferings of the people. The Burmese (Myanmarese) were driven out with the help of the British, but the Ahoms were then spent force and there was no effective administration. In the absence of a strong central authority, the stage was set for the British to annex Assam gradually. The appearance of the British as the ruling power was indeed a great turning point of history. It was decided that the Brahmaputra Valley with the exclusion of two tracts in Upper Assam, namely Sadiya and Matak,<sup>1</sup> would be provisionally administered as a British province. In 1823, David Scott was appointed Agent to the Governor General for administration of the whole eastern frontier. By the Treaty of Yandaboo (1826) Assam was ceded to the British. Eventually, in 1838, as already mentioned, the British took

<sup>1</sup> Matak lay to the south of Sadiya between the Brahmaputra and the Buri-Dihing and was inhabited by people belonging mainly to the Moameria Sect. Sadiya and Matak tracts were annexed to the British territory in 1842.

over the administration of Upper Assam from Raja Purandar Singha, the tributary ruler of that region, who was for his misrule deposed and pensioned "When the British took over the control of Assam from Purander Singha in 1838," Write Verrier Elwin, "they found that the warlike tribes of the frontier had become even more aggressive as a result of the breakdown of the authority of Government, and for the remainder of the century they largely followed the policy of the Ahom kings. They did what they could to make friends with the tribes; they protected the plains people against their raids; they established outposts in the foothills, and from time to time imposed blockades and made punitive expeditions into the interior. In addition, a few daring explorers penetrated deep into the mountains, but it is doubtful whether they had any very great effect upon the outlook of the people, most of whom continued to recent visitors."<sup>1</sup>

### British-Tribal Relations

During the entire period of the Ahom rule in Assam, the Bangnis called 'Paschima Daflas' or Western Nyishis and their kinsmen the Eastern Nyishis of Subansiri were, as we have seen, restive and turbulent. They enjoyed the right of *posa* conceded to them by the Ahoms, and they continued to assert this right during the rule of the British, who had no other option than to acknowledge it. It was further observed by Mackenzie that 'from the beginning of the British occupation of Assam they gave much trouble to the local officers, and many fruitless efforts were made to induce them to resign the right of collecting *posa* directly from the *ryots* (subjects)'. The intention of the Government was to make money payments in exchange for *posa* so as to relieve the *ryots* and evade many complications that were inherent in the system of *posa*. With this object in view they endeavoured to persuade the tribes to agree to commutation of *posa*, but the government offer was not acceptable to the tribesmen, probably for the reason that at that time money had no exchange value in the interior areas where barter of goods was the mode of transaction. 'It was not, however, till 1852 that the *posa* was finally commuted for a money payment.'

The Western Nyishis of Charduar, who were probably in alliance with the Akas under Tagi Raja, committed a raid at Orung in Darrang in April 1835. As a measure of punishment, they were forbidden to enter the plains to collect *posa*. In the following month of November, the Nyishis made a retaliatory

<sup>1</sup> Verrier Elwin, A Philosophy for NEFA (Shillong, 1964), p.2.

attack on that place and carried off a number of Assamese subject. A punitive expedition of small force was sent out to the hills, which succeeded to rescuing the captives and also arresting two Nyishi *gams* or Chiefs. Consequently, eight out of thirteen Nyishi clans north of Charduar made their submission to Captain Matthie, the officer-in-charge of Darrang, "They agreed to resign the right of collecting direct from the *ryots* and consented for the future to receive the articles of *posa* from the *malguzar* or Revenue Officer of the villages according to a revised tariff. Any complaints they might have against the *malguzars* they promised to refer to the Magistrate. They undertook not to aid the enemies of the Government and to help to arrest offenders".<sup>1</sup> Thus the Western Nyishis of Charduar were the first to come to a settlement.

The remaining five chiefs were successfully negotiated by Lieutenant Vetch, who succeeded Matthie in charge of Darrang, and in 1837 they also surrendered their right of collecting *posa* directly.

It was however, not found easy to bring the Nyishis of Naoduar to terms. Despite a consent given by them in 1837 that they would receive their dues through the *malguzars*, they claimed a right to two-thirds of all the revenues paid by the *paiks* called '*Dafla-bahatias*' as previously mentioned. They became so turbulent and defiant that the payment of *posa* was for the time being completely stopped. Unexpectedly though this measure had the desired effect on the concerned clans, who preferred a settlement to loss of *posa*. It appeared that the Nyishis of the remote higher regions, apprehending a loss of regular payments, had insisted the Nyishis of the lower areas near the plains on submission being made.

Up to 1852 the Nyishis had been a source of frequent anxiety to the Government, for which it became necessary to establish military posts along the frontier to secure its peace. 'From 1852, however, the Nyishis, much to the relief of the local officials and somewhat to their surprise, settled quietly down, many of them devoting their attention to agriculture and residing permanently in the plains.' In the year 1853-54, at the time of Mills inspection of Assam, the following payments were made to them:

---

<sup>1</sup> Alexander Mackenzie, the North-East Frontier of India, (Delhi, Reprint 1979), p.28.



From Tezpur Treasury to

Nyishis of Charduar and  
Noaduar

| Rs    | as | P |
|-------|----|---|
| 2,494 | 0  | 0 |

From Lakhimpur Treasury  
to Nyishis of Charduar

|       |    |   |
|-------|----|---|
| 1,243 | 14 | 5 |
|-------|----|---|

From Lakhimpur Treasury  
to Nyishis of Banskotta

|     |   |   |
|-----|---|---|
| 392 | 1 | 6 |
|-----|---|---|

with 24 maunds of salt to the last-named in  
lieu of *hath* or market dues.

The tribe remained quiet and gave no cause of anxiety up to 1870.<sup>1</sup>

In 1870, there were, however, reports of two incidents of outrages committed by the Nyishis of the upper regions on certain Nyishi villages in Noaduar within the district of Darrang (now Sonitpur). Besides these, the Eastern Nyishis perpetrated a massive raid on the village Amtola near Gohpur in Darrang in February 1872. The Administrative Report of 1872 – 73 described the raid to be 'too serious to be overlooked.' Directed against the Nyishi settlers in the plains, the raiders sacked the village, killed two persons and carried off some 44 Western Nyishi villagers. To punish the offenders, all the passes leading to the country of the Eastern Nyishis to the east of Darrang and along the Lakhimpur districts of Assam were blockaded, and annual payments to them were stopped. 'The cause assigned for the outrage is a curious one. The hill men had, it seems, been much troubled by an epidemic, which they believed to have been imported from the plains. They called upon the Nyishis of the plains to compensate them for the loss they had sustained in children and adults from the disease; and because Nyishis of Amtala declined to meet their wishes, they came down to recoup themselves by seizing them all as slaves. The Eastern Nyishis refuse to surrender the captives save on ransom paid, and even threaten further raids if the blockade is maintained<sup>2</sup>. The blockade, though strictly maintained, having proved ineffectual, a military force was despatched into the hills in 1874 – 75. It succeeded in obtaining the release of the captives without any active opposition being offered by the Nyishis.

The later history of the British-Nyishi relations up to forties of the 19th century is comparatively uneventful except for some sporadic raids and en-

<sup>1</sup> Alexander Mackenzie, the North-East Frontier of India, (Delhi, Reprint 1979), p.28

<sup>2</sup> Alexander Mackenzie, The North-East Frontier of India, (Delhi, Reprint, 1979), p.31.

demic feuds raging now and then, and the Government taking stern punitive measures to avenge serious crimes for maintenance of law and order.

The Annual Administrative Report for 1927 – 28 sent by (1914 – 1928) the Western Section, North-East Frontier Tract Captain G.A.Vevill, Political Officer, later known in 1919 as the Bali Para Frontier Tract, shows how a friendly relationship was gradually growing. It is interesting to quote the following from his report:

“As years have passed by, the Akas, Dufflas and the other tribes have gained confidence and learnt to appreciate the benefits of the new order. The people are increasingly bringing their disputes for settlement and they fully appreciate the fact that their grievances are sympathetically listened to death with when possible.”

“This growing friendliness has brought about the desire for a still closer relationship. Now a days the constant request from all sections of the hills is to established a garrison in their country. Wherever I go, I am asked to plant a boundary post so that others may know this portion is under my immediate control. This request is not made by the small villager frightened of his stronger neighbours but invariably by the wealthiest and most important men in the villages. The reason being that in Duffla land a most terrible state of unrest prevails; amongst the tribes there is no cohesion or combination. Every village is an independent unit, and even in the village there may be several factions....There is no certainty of life and no peace. All Dufflas realize the benefit of peace, but owing to their entire lack of combination they are unable to make a united effort to stop this anarchy. I have constantly been asked to help one faction against another. Of course such action is out of the questions. I have many times called a meeting of headmen and explained the benefits of a miniature League of Nations. Such meetings always end with the request that I should come and administer affairs for them I have constantly arbitrated between two villages and have been able to patch up quarrels and effect peace which in some cases has been lasting.

“However with the headquarters sited in the plains out off from the hills from June to October the Political Officer cannot in any way administer the Hill Tracts nor can be exercising very much control in inter-village or inter-tribal affairs.

I am quite convinced that the only way to effectively deal with the

tribes of this Frontier is to make roads and establish outposts at different points in the Hills.”

“A small garrison with a British Officer, a dispensary and a Sub-Assistant Surgeon should be attached to every post....”<sup>1</sup>

### **British-Monpa Relations**

Mackenzie in his book ‘History of the Relations of the Government with the Hill Tribes, of the North-East Frontier of Bengal (1884); has devoted one full chapter to what he entitled ‘the Extra Bhutan Bhutias’. The title is rather curious in that the appellation was seemingly used to denote the Monpas and the Sherdukpens for the reason that they resemble the neighbouring Bhutanese in some ways.

The British relations with the so-called Bhutias of the present West Kameng District were entwined with the question of holding the *duars* or passes to the north of Darrang leading to the interior of the hills. A flourishing trade between Assam and Tibet was carried on through these duars. The Kuriapara *duar* was a principal channel of this trade. An annual fair was held in this area at Udalguri in the Darrang District (now Sonitpur) of Assam, where traders from Lhasa and all other parts of Tibet brought down valuable goods. During the Ahom rule, the so-called Bhutias of the Kuriapara *duar* under the Sath Rajas, or seven kings were permitted by an agreement to hold the duars for eight months in a year. Accordingly the duars remain under the control of the Ahom Government for the rest of the year. ‘These Sath Rajas called themselves subordinates of the Tawang Raja or Chief.’ Between 1830 and 1840, the so-called Bhutias gave the British authorities as much trouble as their neighbour in the west and as a result of some outrages committed by them, the Kuriapara *duar* was resumed by the authorities of Darrang. “In the cold season of 1843 – 44, the Sath Rajas, in company with representatives of the Tawang Durbar, has an interview with Captain Gordon, Assistant to the Governor General’s Agent, and formally relinquished all claim to the lands of the Kuriapara *duar* in consideration of an annual payment of Rs. 5,000/-. This sum very nearly representing the amount which they use to realize from the tract by direct collection during the eight months of the year for which they held it”<sup>2</sup>.

<sup>1</sup> Sir Robert Reid, History of the Frontier ‘Areas Bordering on Assam, (Delhi, Reprinted 1983), pp.291-292.

<sup>2</sup> Alexander Mackenzie, The North-East Frontier of India, (Delhi, Reprint, 1979).p.16.

In 1844, the Chief of Tawang, called the Deb Raja, and his dependents made a submission to British authorities and agreed to recognize the Government jurisdictions. An annuity of Rs.5,000/- was paid to them on the condition that they would abide by all the terms of their undertakings<sup>1</sup>. Besides them, other chiefs of the so-called Bhutiyas also undertook in the same year 'never to join any person or persons that may be at enmity with the British Government; and furthermore to oppose every effort made against the Government.' They also agreed 'to act up to any orders they may get from the British authorities.' On these conditions as well as of an assurance of good behavior they were given a monthly pension.

The relations of the government with the Thalong Bhutia 'tribes as existing in 1867 were stated to have for many years been perfectly amicable, and limited mainly to payment of the annual stipend, and the commercial intercourse of the Udalguri fair.' The Assam Administration Report for 1879 – 80 bears clear evidence to the existence of friendly relations between the British authorities and a group of the so-called Bhutias. The annual Report for 1885 – 86 of the Deputy Commissioner, Darrang states that the Tawang representative attended the *darbar* (council) held by him, where a dispute between the traders of Tawang and the Kuriapara people over question of exchange of salt for rice was settled. The Tawang representative receive his annual pension of Rs.5,000/- at his *darbar*. He had also informed the *darbar* of the economic conditions prevailing in Tawang at that time. This incident testifies that the administrative jurisdiction of the Government was exercised as far as the international boundary in Tawang and Tawang's acceptance of the British sovereignty.

Captain R.M. Bailey was the first British Officer to visit Tawang. His report on 'Explorations on the North-East Frontier 1913' states:

Monyul (*the lower land*) consists of the Tawang Chu, down to the Bhutan Frontier, the Nyamjang Valley and the Dirang Valley as well as some valleys south of this down to the plains. The Monpas are distinct in many ways from the Tibetans. Tibetans as a rule do not live below 10,000 feet and prefer high altitudes whereas the Monpas live at altitudes between 4,000 and 10,000 feet. Their language is distinct from Tibetan though they have many Tibetan words: they say that their language is nearer to the Bhutanese of Eastern Bhutan than to Tibetan. We usually found one or two people in the Monpas villages

---

<sup>1</sup> The text of this undertaking was published in 1862 in C.U. Aitchison's 'A

who could speak Tibetan. At Trimo (Khrimu), the people all speak Tibetan well. The people had cushions for us to sit on—they also grow peach trees on which we found excellent fruit. Both in the nature of the country they inhabit, customs, dress and method of building houses the Monpas are very distinct from the Tibetans and resemble more the inhabitants of Bhutan and Sikkim. Their country is low-lying and well-wooded and their villages large and prosperous.

“In Captain Bailey’s report there is a slight inaccuracy. Dirang is described as a part of Monyul whereas actually it lies south of Sela. The Tawang Gumpa had extensive taxation rights south of Sela but Monyul itself refers to the present area of Tawang which lies wedged between Bhutan and Tibet, connected with the rest of the country by the Sela Pass.....”<sup>1</sup>

In the early part of 1914 Captain Nevill, Political Officer of the head of the ‘Aka Promenade’ visited Tawang and other areas of Kameng further south inhabited by the Monpas and the Sherdukpens. His report contains detailed description of the conditions obtaining in these areas and suggestions for their better administration. He observed that the condition of the Tawang Monpas, more especially those south of the Sela, was one of extreme poverty. They were greatly harassed by the Lobas (or Lopas), who are supposed to be either Mijis or Akas. They were also oppressed by the monastic authorities of Tawang, who imposed on them excessive and unjust taxation which was collected in kind. In order to ameliorate the conditions of the Monpas, Neville suggested that (1) the depredation of the Lobas must be stopped and the police posts be established at Dirang and Rupa and possibly in the Aka country to give protection to the Monpas, and (2) the value of the supplies drawn by the monastery from the district should be carefully assessed so as to subsidise the monastery on the basis of this assessment. He further suggested that the annual pension of Rs.5000/- paid by the Government should be used for the Tawang monastery; and not sent to the Drepung monastery in Lhasa to which the former owed religious obligations. He also made an important recommendation that an officer should be stationed at Tawang for effective administration.

At this time the World War of 1914 – 18 overshadowed the developments in this North-East Frontier Tract, and the administrative measures suggested by Neville lost their immediacy. Sir Archdale Earle, the Chief Commissioner of Assam (1912 – 1918, reserved his recommendations on the proposals

---

<sup>1</sup> Neeru Nanda, Tawang – The Land of Mon, (New Delhi, 1982) p.2.

put forward by Neville as he understood that 'the Government of India were averse from anything in the shape of a forward move upon the frontier at the present moment'. He also observed that the country awaited a more advanced form of government for proper development.<sup>1</sup>

The Annual Administrative Report of the Balipara Frontier Tract for the year 1918 – 19 contains information about administration of Tawang by the Political Officer representing the Government of India. That the Political officer held the administrative charge of the entire area is borne out by the facts that he regulated the inter-tribal relations of the Monpas sent regular reports on the local economic conditions and received complaints from the people of Rupa and Shergaon requesting him to redress their grievances.

As stated earlier in Chapter 1, the traditional and customary boundary of India in the Eastern Sector obtained the added sanction of treaties in 1914 when the Indo-Tibetan Boundary Agreement of 24-25 March 1914 and the Simla Convention of 3rd July 1914 were concluded. The boundary agreement between India and Tibet was concluded by an exchange of letters between the British and the Tibetan plenipotentiaries on the 24th and 25th of March 1914. The exact alignment of the boundary from the east of Bhutan to the tri-junction of India, Tibet and Burma (Mynmar), was delineated on a map.

The Chief Secretary of Assam in a letter dated the 17th September 1936 to the Political Officer of Balipara Frontier Tract stated, "The Tibet Conference of 1914 resulted in the delimitation of the Indo-Tibetan frontier from the eastern frontier of Bhutan to the Isu Raji pass on the Irrawaddy –Salween water parting. The line, which was accepted by the Government of Tibet, was demarcated on maps then specially prepared, and is known as the Mc Mahon Line. Sir Henry Mc Mahon recommended in his memorandum that while great care should be taken to avoid friction with the Tibetan Government and the vested interests of the Tawang monastery, an experienced British Officer should proceed to the western part of the area south of the Line to settle its future administration."<sup>2</sup>

The Government could not give immediate effect to Mc Mahon's recommendation for extension of administration in the Tawang area, which was within the Indian Jurisdiction, due mainly to the exigencies of the World War of

<sup>1</sup> Sir Robert Reid, *History of the Frontier Areas Bordering on Assam* (Delhi, Reprinted 1983), p.289.

<sup>2</sup> Sir Robert Reid, *History of the Frontier Areas Bordering on Assam*, (Delhi, Reprinted 1938), p.29.

1914 – 18 demanding prompt attention. The importance of the recommendation was emphasised in a letter of May 1937 written by the Governor of Assam to the Government of India, which *inter alia* stated that 'the time has now come when the policy advocated in 1914 but so long held in abeyance should be carried out,' and an officer should proceed to Tawang.

After further consideration it was decided that, as a preliminary, a small expedition should go up to Tawang. The expedition led by Captain G.S. Lightfoot, Political Officer, Balipara Frontier Tract, reached Tawang on 30 April 1938. He sent a full report on the condition prevailing in Tawang and suggested concretely that the Tibetan Government should be asked to withdraw their officials because only with the departure of these officials would automatically disappear their exactions of tribute and forced labour, the oppression which the Monpas bitterly resented. He also made a strong plea that the Tibetan officials should be withdrawn from the Tawang Monastery belonging to the Monpas, for as he pointed out, 'so inextricably are State and religion intermingled in Tibet that till the Tibetan monastic officials are withdrawn, Tibetan influence and intrigue must persist in the surrounding country'.

The acting Governor accepted in general Captain Lightfoot's proposals. In September 1938, he forwarded these proposals with his recommendations to the Government of India. Eventually, it was decided in July 1939 that the question of future policy should be determined after the expiry of one year. Meanwhile, the Second World War began and the whole issue remained again in abeyance.

It may be noted incidentally that in December 1938, an expedition visited the Miji-Aka village of Nakhu in order to warn them that raiding and taking tribute from the Monpas of the Dirang-Dzong area must stop. In 1944, the Assam Rifles outpost was established at Dirang, and Mr. Mills, the then Adviser to the Governor of Assam, visited Dirang-Dzong in May 1945.

The question of Tawang was engaging Government's attention for quite a long time past and at last in 1950 after the independence the Government of India decided to take effective steps. An expedition led by Major Bob Khathing, the then Assistant Political Officer, was sent to Tawang in 1951. He succeeded in establishing the headquarters of an Assistant Political Officer at Tawang, which from then only Tawang came under regular administration. The fact that Indian jurisdiction extends over Tawang was soon realized by the local Tibetan officials, who gradually withdrew from the area.

In 1959, an Additional Political Officer was posted to Tawang. Tawang, which has been functioning as Sub-Division in the West Kameng district was declared district on 6th October, 1984.

### **British – Miji Relations**

The Mijis of the Bichom and other valleys north of the Aka territory went unnoticed for a long period of time. The early British records refer to them cursorily. But, the records, however scrappy, reveal that the Mijis were a powerful tribe, a strong ally of the Akas. The Akas seem to have depended largely on the Mijis for the success of their daring raids and their alliance proved to be formidable. The Monpas, in particular, who were their western neighbours, suffered long for the plundering raids and outrages committed by the Mijis. They also exacted tributes from the Sherduppens and the Monpas of the Digien Valley. The Mijis were comparatively a small tribal community, but strangely enough they dominated over some of their neighbours, who they practically put under their subjection. They lived in some 25 villages, the chief among who were Nakhu and Kujjalong.

*Hesselmeyer wrote about the Mijis in 1868:*

“The Mijis, it would seem, are not in the habit of visiting Assam except only one small Chief; but they highly prize the silk and cotton cloth the Akas are able to procure from the plains, and for which these demand from the Mijis exorbitant prices.”<sup>1</sup>

Captain Neville visited the Miji villages in the Bichom valley early in 1914, and left the following account.

“The Mijis are very like the Akas in the most things, but have no Chief; each village is the unit having each its own council and headman, who settle all the external and internal affairs of the village. There is, however, a good deal of tribal spirit amongst the Mijis; there are practically no inter village quarrellings, and in affairs concerning the whole community, the different village representatives meet together and talk the matter over. Against a common enemy, I think there would be a solid combination”<sup>2</sup>. Neville also visited the Monpa villages of But and Konia, the people of which he described as ‘a miserable lot..... entirely under the thumb of the Mijis who make them cultivate for

<sup>1</sup> Reverend C.H.Hesselmeyer, the Hill Tribes of the Northern Frontier of Assam, J.A.S.B., 1968, Vol.XXXVII, p192 ff,quoted by Verier Elwin in his India's North East Frontier in the Nineteenth Century, (London, 1962), p.439.

<sup>2</sup> Sir Robert Reid, History of the Frontier Areas Bordering on Assam, (Delhi. Reprinted 1983), p.285.



them....very poor.

Neville's report contained, among other things recommendations for establishment of police posts at Dirang and Rupa, and possibly in the Aka country to enforce law and order. He indicated how the Lobas (or Lopas), who were presumably the Mijis, harasses the people and indulged in blackmailing raids. 'They look on the Monpas as their lawful prey and talk of their visits as collecting taxes. These things must be stopped at once, and the Lobas be clearly told that this state of things cannot continue.'<sup>1</sup>

In December 1938, as mentioned earlier, an expedition was sent to the Nakhu and several other villages of the Bichom valley to keep the Miji raiders in check. The chiefs of Nakhu and Kujjalong were warned that they must stop oppressing the Monpas of the Dirang-dzong area. But, the Mijis seem to have ignored the warning and continued their depredations. In 1939 – 40, they again became troublesome, 'attempting to exact tribute from the Monpas of the Dirang-dzong and Sherdukpen areas, Nakhu again begin conspicuous.' In 1939, a temporary outpost was established at Rupa, and Shergaon in the Sherdukpen area to prevent the Mijis as also the Akas from harassing the villagers. Two Miji chiefs trying to extort tribute from these two villages were heavily fined by the Political Officer.

Besides these administrative measures, the Political Officer took a more effective step to discuss matters straight with various groups of tribal people concerned. In 1940, he called a *Mel* (meeting) at the Monpa village of Kudum, which was attended by the Mijis, Monpas and Sherdukpens. The Mijis agreed to stop taking tribute from the Sherdukpens, but they claimed that their right to take tribute from the Monpas was based on a written agreement concluded between themselves and the Tawang Dzongpens, which was kept either at Dirang-dzong or Tawang-dzong. There was no means of confirming the authenticity of the claim, and hence no settlement could be reached on the question of tribute extorted from the Monpas.<sup>2</sup>

The Assam Rifles outposts were established at Rupa in 1941 and Dirang in 1944. These and other measures taken to regulate inter-tribal relations and exercise an administrative control were conducive to bring about a semblance of peace in this area. The Mijis were in a way held in check. At this time, they

<sup>1</sup> Sir Robert Reid, *History of the Frontier Areas Bordering on Assam*, (Delhi, Reprinted 1983).

<sup>2</sup> L.N. Chakravarty, *Glimpses of the Early History Arunachal*, (Shillong, 1975) p.14.

themselves were involved in troubles because of their inter-village feuds and the constant pressure exerted on them by their powerful eastern neighbours, the Bangnis (Nyishis). They sought Government help and wanted to have an Assam Rifles post set up also at Kujjalong for their protection against the Nyishi inraids.

The Mijis of the Pachak Valley appeared to be particularly restive. In collaboration with their Nyishi neighbours, they used to commit raids on the Monpas and also on the Mijis of the Bichom and Dinam Valleys, and demand heavy ransom for the captives. In late 1946, the Political Officer visited the Miji country, and secured release of the captives held by the Mijis of Lada and Sokong villages, which made their surrender. The visit was successful in that a friendly rapport was established with the turbulent Mijis, and the position of the Monpas of But and Konia villages was somewhat safeguarded. These two villages, under the brunt of constant Miji raids, were in the process of gradual disintegration. The Monpas, who shifted their houses to other villages, now started returning to their original abodes.

In 1946, an Assam Rifles outpost was opened at But to bring the area under more effective administration. At about this time, two groups of the Mijis of Sachong village came into conflict as a sequel to an old feud, which resulted in the death of eight persons. The situation was promptly brought under control by a patrol sent from the outpost at But.

### **British-Aka Relations**

The Akas figure prominently in the British account. Indeed, they played an important role in shaping the fabric of history of the Kameng region and the adjoining plains of Assam. According to the early records, as already stated, the Akas were divided into two main clans, the Kutsun or Hazarikhowa and Kovatsun or Kapachor. They were, as noted by Aitchison, 'small but on account their superior civilization they are much respected and even feared by the surrounding tribes.' Kennedy, who accompanied the Aka Promenade in 1914, observed that 'the Akas are comparatively an enlightened and civilized people.' 'The Akas in later years continued to win the respect of these who visited them,' remarked Dr. Elwin. Thus Captain Neville wrote of them in 1925 that 'these Akas are an excellent and most interesting people....they are capable of great improvement.'

Each of the two main clans of the Akas had a *raja* or chief who was

the nominal head of the clan and whose post was elective. As mentioned earlier, the Hazarikhawas were granted by the Ahoms a right to *posa* that is the right to receive collections from certain specified areas in the adjacent plains of Assam. "According to the records of 1825, it would seem that the Hazarikhawas were entitled to receive from each house of their allotted *Khels* 'one portion of female dress, one bundle of cotton thread and one cotton handkerchief.' At this period the Kapachors (or Koppa-turas as the old records style them) were probably not looked upon as a separate clan, for we read that the Hazari-khowas were expected to give 'a part' of their collections to the Kapachors.<sup>1</sup>

The Akas, like other hill tribes who had a right to *posa* since the days of the Ahoms, would descend annually upon the cultivated lands to collect their petty dues. Quarrels and outrage were the natural concomitants of such a custom which also gave rise to a good deal of complications. The British Government soon felt that the practice of permitting the tribal hordes to come down to the plains to extract their dues was unbearable, and wanted the hills men to surrender their right of direct collection for an annual lump payment in lieu. The claims of the Hazarikhawas were eventually commuted for a yearly sum of Rs.175/-. They did not continue to draw this sum for long because their connection with the Kapaschors brought them into trouble with the Government in 1835. At last in 1844 they finally came to terms.

The Kovatsuns or Kapaschors under the leadership of their mighty chief, Tagi Raja, had for a long time created terror in the neighbouring region, particularly along the adjoining border areas of the Darrang District (now Sonitpur) of Assam, by their raiding campaigns. Shortly before the British annexation, Tagi Raja 'murdered the native officials in charge of Char Dwar, with twenty of his immediate followers. As a punishment, the clan was outlawed, and David Scott, who was appointed Agent to the Governor General in 1823 forbade their entering the plains; 'but they nevertheless extorted from the *ryots* of Burgong a contribution of cloths year by year, just as though they were implicated in a quarrel with their kinsmen, the Kutsuns or Hazarikhawas, and their leader, Tagi Raja, fled to Assam, where he was arrested and imprisoned in the Gauhati Jail. He returned to the hills after being released in 1832, mobilized his broken clan and 'murdered all who had been in any way concerned in his capture.

---

<sup>1</sup> Alexander Mackenzie, The North-East Frontier of India, (Delhi.Reprinted 1979)p.22.

The most stunning and daring act of his career was his attack on the police outpost at Balipara in February, 1835. The outpost was cut up and burnt, and had suffered a number of casualties. Mackenzie writes.

"In this outrage it was believed that the Tagi Raja had been assisted by the Hazari-khawas, and there were good reasons for suspecting that his energy and daring had made him at this time virtual Chief of both clans of Akas, and given him influence even over the Duphlas (Nishis in the neighbouring hills.)"<sup>1</sup>

As a result of this outrage, the money payment made to the Hazarikhowas in lieu of *Posa*, as already mentioned, was stopped by the Government for seven years after the Balipara incident. Tagi Raja, the 'successful brigand haunted the border jungles evading every effort made for his capture, and leading repeated forays into Char Dwar.' To avenge a previous grudge, he, in April 1835, raided the house of a Patgiri, Madhu Saikia at Orang, killing three persons.<sup>2</sup> In December 1837, he carried off several captives, and he kept on committing similar raids in 1838 – 39, and yet again in March 1841. But surprisingly enough in 1842, when the Government was contemplating an expedition for a drastic action, Tagi Raja all on a sudden came in and surrendered. The Raja was, however, released on a solemn oath taken by him; that he would not cause any further injury or trouble. "He gave hostages for his good conduct, the Kotokis (an officially recognized class of interpreters and clan-agents) on this occasion becoming his formal sureties. He even agreed to live permanently on the plains and a small allowance of Rs. 20/- was settled upon him."<sup>3</sup> Stipends amounting to a total of Rs. 360/- per annum were also granted to the other leaders of the Akas, who accepted it, and bound themselves to preserve the peace of Charduar.<sup>4</sup>

The oaths taken by the Akas were on the whole observed faithfully, though they made several attempts to get their allowances raised. The annual stipends of Rs. 360/- were gradually enhanced to Rs. 668/-. In April 1857, they were reported to have refused to accept their stipends, and Tagi Raja was believed to be the leaser behind this move. The Government took a serious view of this matter and at once stopped payment of the stipends and also

<sup>1</sup> Alexander Mackenzie, *The North-East Frontier of India*, (Delhi, Reprinted 1979), p.23.

<sup>2</sup> H.K. Borpujari, *Problem of the Hill Tribes, North-East Frontier* (Guwahati, 1970), Vol.I, p.122.

<sup>3</sup> Alexander Mackenzie, *The North-East Frontier of India* (Delhi, Reprinted 1979), p.23.

<sup>4</sup> See C.U. Aitcheson, *A collection of treaties, Engagements and Sanads* (Delhi, Reprinted 1983), Agreement Nos.XXXII and XXXIII vol.XII, pp 149-150.

closed the *duars* (passes) to trade. As a result, early in 1859 some of the chiefs made their submission. In 1860, Tagi Raja himself submitted, and he was benignly allowed to draw his former pension.

The boundary line of the Akas was demarcated with those of their western tribal neighbours in 1872 – 73. The Kutsuns took no objection to this line. In 1873, they were granted by the Government 49 acres of land in the plains, and for this gesture they were much gratified. But the Kovatsuns did not at first agree to recognize the line between the Bharali and Khari Dikrai river, and were said to have made excessive claims. Their Chief, Medhi, the son of Tagi Raja, eventually gave in and the line was demarcated in 1874 – 75. The later events however, show that the Kovatsuns had their own reasons for objection to the boundary as was delineated, and they strongly felt that their grievances were not redressed. The smoldering discontentment coupled with an incident as described by Mackenzie as follows incensed them.

“When a grant of land was made to the Hazari-khawas in 1873, a similar grant was made to the Kapachors to be devoted to the maintenance of Cachari Priests. The Kapachors were not satisfied with their grant; in 1875 they demanded much more, and this was summarily refused. They have, therefore, never taken possession of their grant. It has already been stated that they objected to the boundary line laid down in 1875, though they afterwards professed to accept it. This boundary line cut them off from a tract of land claimed by them between the hills and the Bhoroli River. Present at the demarcation on behalf of Government was one Lakhidar, the Mouzadar or native Revenue Officer of Baleepara. The tribe has also by the extension of forest reserves been deprived of what it doubtless considers its ancient right to tap rubber trees at pleasure. They had further been forbidden to catch elephants within the reserves, and threatened by the forest officers with the loss of one of their paths to the plains which runs through what is now a Government forest. Such being the state of things, the Deputy Commissioner of Darrung deputed Lakhidar to procure for the Calcutta Exhibition specimens of agricultural and other implements of the Akas, and to persuade some individuals of the tribe to come down to be modeled. Now, hitherto none but the regularly recognized Kotekies or clan-agents had even sought to penetrate into the Aka Hills. Lakhidar, however, took with him; twelve village elders and *ryots* of Baleepara and a private servant, and went straight to Medhi’s village. The Akas declare, and the evidence of one of the Mouzadar’s companions supports the statement, that Lakhidar said he had been sent to take down to Calcutta a ‘Rajah and a Rani

with all their ornaments, for which he was ready to pay. The Akas professed to be furious at this demand, alleging that, when they had given ornaments on former occasions, they had only been partly paid; while the idea of sending a *Rajah* and *Rani* to the show was intolerable to them. Any way after some days palaver, charging the Mouzadar with being the man who had robbed them of their land, they sent him and his servant under guard to another village. The rest of the party they kept for a week and then let them go.”<sup>1</sup>

On November 10, 1883 a raid on Balipara took place when a party of about 100 Aka young men led by Chandi, brother of Medhi, who had been educated at Balipara School carried off to the hills the Forest Ranger, a clerk, two guns and some money.

The return of the captives was demanded, but the Akas in response sent ‘very insolent letters’ reiterating their claims to the land and forests in the plains, and ‘announcing at the same time the death from fever of the Mouzadar.’ It was however, proved subsequently that ‘no violence was use on him’.

A military expedition was promptly organised to recover the captives, and punish the offenders, and ‘a flying column’ started for Medhi’s village from the base camp at Dijumukh on December 17, 1883. Attempts for negotiations failed, and the Aka, aided by the Mijis, made a surprised attack on the column when it was camping at Maj Bhareli on the night of December 23. Even though the Akas suffer rather heavy casualties, they again attacked this column when it was attempting to cross the Tengapani, the river which lay between the expeditionary force and Medhi’s village, and compelled it to fall back on its precious camp. “When the troops advanced to the Tengapani”, writes Mackenzie, “they found it strongly held by the Akas, whose clouds poisoned arrows the sepoys much dreaded”.<sup>2</sup> Reinforcements soon arrived and Brigadier General Sale Hill, who was in charge of the operations, reached the camp on January 5, 1884. The advance began on January 8 and the Akas retreated before the superior fire-power of the British. Medhi’s village strongly stockade, was taken.

The captives were surrendered after a few days, but the chiefs did not submit. The houses of Chandi, Naloo and Kota, who were alleged to be the ring leaders of the Balipara raid, were destroyed. Meanwhile, General Hill became anxious to withdraw and the force returned hastily without any con-

<sup>1</sup> A. Mackenzie, quoted by Verrier Elwin in *India’s North-East Frontier in the Nineteenth Century*, (London, 1952), pp.433-434.

<sup>2</sup> Idid, page, 474.

tact having been made with the chiefs. The Kutsuns, it may be noted, remained perfectly friendly all through the period of these incidents.

While the expedition was, on the whole, regarded as successful from a military point of view, the Chief Commissioner of Assam observed that 'the political success would have been more complete if the force had remained longer in the hills and if more time had been allowed for the chiefs to come in.'<sup>1</sup>

To secure the submission of the Kovatsun Akas, a blockade of their country was imposed immediately after the expedition. It was not lifted until Medhi and Chandi made their submission in January 1888. The chief had sworn to abide by the written agreements<sup>2</sup> that were executed, but the payment of *posa* to them was withheld for two years. In 1889 – 90, the Kovatsun Aka chief came to Tezpur and received the *posa* withheld since 1883.

In the cold weather on 1913 – 14, Captain G.A. Nevill, Political Officer, Western Section, North-East Frontier Tract, visited the Aka country, with the objects of establishing friendly relations with the hill tribes, the Akas, the Mijis and the people living north of the Akas; and also surveying as much of the country as possible. The expedition of Captain Nevill with a large party, which was carried out on a considerable scale, came to be known as the 'Aka Promenade'. In the course of the promenade, he met the Akas, Mijis and Monpas and was accorded friendly receptions everywhere. He also came across the Nyishis. He reached Tawang on April 1, 1914 and received what he described 'a most overwhelming welcome'. His report also mentions that 'most excellent relations were established with the Akas'. And 'over 4,000 square miles of country was surveyed.'<sup>3</sup>

In February, 1925, Captain Nevill visited the Akas again, this time at their own request. He wrote of them as follows:

"Since Kalao and Tagi the two old chiefs died there has been no one to take their place, all the older men of standing have died and only young men with no experience remain. The most important people in the country are Kelime, widow of Tagi, and Dibru, the present head of the Jovatsun. These two and all the principal people early in the season put in a petition to Government that we

<sup>1</sup> Sir Robert Reid, *History of the Frontier Areas Bordering on Assam*, (Delhi, Reprinted 1983), p.272.

<sup>2</sup> See C.U. Aitchison, *A collection of Treaties, Engagements and Sanads* (Delhi, Reprinted 1983) Vol. XII, pp. 164-65.

<sup>3</sup> Sir Robert Reid, *Op. Cit.*, pp.286.

should station a guard in their country and establish a dispensary.

“The reason for this is that for the past three years they have been much worried by the Mijis, a neighbouring tribe closely related to them who finding they are weak and leaderless have taken to bullying them.

“They also have become painfully aware that for sometime their death rate is larger than their birth rate and that their numbers are seriously decreasing. This is why they are so anxious for dispensary, that is not a new idea, but they have continually spoken about it for the past ten years.”

“I strongly recommend that a garrison should be stationed in the Aka hills and that a dispensary with a good competent Sub-Assistant Surgeon be established”.<sup>1</sup>

*Establishment of an Assam Rifles out-post and a dispensary at Jamiri*, an important Aka village, was soon sanctioned. The outpost was temporarily opened in 1928 – 29. At about the same time, construction of the Jamiri-Charduar road was also started. This road proved to be of great help to the Akas.

In about 1933 – 34, Dibru Jushosho, the Aka Raja, a most influential man in the hills and a good friend of the Government, died. He was succeeded by his son Shree Shadeo, who was elected the *Raja* or Chief. The old ‘*Rani*’ Kelime, widow of Tagi Raja died some time in 1936 – 37. She had great influence over her people, who held her in high esteem. In 1939 – 40, the Government’s relations with the Akas were somewhat strained over the question of forbidding them to exact tribute from the Sherdukpens. Violation of the Government orders was, however, suitably dealt with.

### **British-Sherdukpen Relations**

Some indications of the nature of relations the Sherdukpens had with the Government and also with their neighbouring tribes – the Monpas, Mijis and Akas - have been given in the preceding contexts. In fact, the history of a tribe of this region is closely interrelated with that of their neighbours, and this relationship between themselves and their response to the government policy had considerably influenced the course of political and administrative developments in this area during the British days.

In the British records, the Sherdukpens have been variously referred

<sup>1</sup> Sir Robert Reid, *Op.Cit.* pp.290-291.



to as 'Rooprai Gaon and Sher Gaon Bhutias, who claim to be independent of Tawang'<sup>1</sup>, 'the Monpas of Rupa and Shergaon'<sup>2</sup> 'Charduar Bhutias' and so on. Rupa (formerly called Rooprai Gaon) and Shergaon are, as mentioned earlier, the two most important villages of the Sherdukpens, lying beyond Charduar or the 'the four passes' to the east of Kuriapara duar. Like those of the so-called Bhutias of the Kuriapara *duar*, who were apparently the Monpas, the Sherdukpens had also a body of Chiefs called Sath Rajas or Seven kings, the principal among them was known as Durji Raja. As stated earlier, five of the rajas were from Rupa and two from Shergaon.

At the outset of the British administration of Assam, the Sherdukpens claimed a tribute or payment from the plains which they collected annually. In 1826, by virtue of an arrangement made with them by Captain Matthie, the Sherdukpens relinquished their right of direct collection in lieu of a compensation of Rs. 526-7-0. In 1839, the payment was stopped as they were suspected of having lent a hand in the murder of one Madhu Saikia, 'the faithful Patgiri' of Orung. The Durji Raja together with the other *rajas* pleaded innocence most earnestly and pleaded themselves to act up to the terms of an agreement executed in 1844, and eventually a reduced allowances of Rs. 1,740 was granted to them.<sup>3</sup>

The boundary line of the 'Charduar Bhutias,' who were obviously, the Sherdukpens, was laid down in 1872 - 73 'from the Rowta river on the west to the Ghabroo river on the east.' Their claims on lands in the plains were rejected. At a meeting with the Deputy Commissioner of Darrang held in 1876, the Sherdukpen chiefs expressed themselves satisfied with this decision. They came down to Doimara regularly every cold season to trade, and for them the Inner Line Regulation had been kept in abeyance.<sup>4</sup>

The Sherdukpens were a gentle, peace-loving and law-abiding village community settled on agriculture. "Once they told the Political Officer that they have never heard of a murder committed by their people."<sup>5</sup> The Sherdukpens had undergone a period of distress owing to the marauding activities of the Akas and the Mijis. The Akas exacted heavy tolls from them and the Mijis forced them to pay tributes.

<sup>1</sup> Alexander Mackenzie, Op.Cit. p.18.

<sup>2</sup> Sir Robert Reid, Op.Cit. p.292

<sup>3</sup> (a) C.U. Aitcheson, A collection Treaties, Engagements and Sanads, (Delhi, Reprinted 1983), Vol.XII. Pp.150-151.

(b) Alexander Mackenzie, Op.Cit. p.19.

<sup>4</sup> Alexander Mackenzie, Op.Cit. p.19.

<sup>5</sup> L.N. Chakravarty, Glimpses of the Early History of Arunachal,(Shillong, 1973). p.7.

"It may be mentioned here that, before the coming of the British, the Sherdukpens, by an established convention, used to pay a token tribute to Tawang-dzong once in every three years possibly in the hope of getting some measure of protection against the inroads of the Lobas. But it did not stop the marauders from carrying on raids. The Tawang-dzong was clearly incapable of giving any protection to them against the inroads of the Akas and the Mijis. A temporary clash of interest arose in 1934 – 35 between the tribes and the Tawang-dzong when he claimed a third of the annual *posa* being paid by the British Government in cash to the Monpas and the Sherdukpens."<sup>1</sup> The claims was, however, not insisted upon from the next year.

An effective measure to stop the depredations of the Mijis and Akas and protect the Sherdukpens was taken in 1941 when a permanent Assam Rifles outpost, as already stated, was opened at Rupa.

A striking feature of the early inter-tribal relations in this region is that a powerful group often tried to exploit its neighbours, who in turn made attempts to extort payments from the weaker, peaceful or less turbulent group. As a result, the pressure of one fell heavily upon the other. Thus, the Akas were at times harassed by their ally the Mijis while the Mijis were pressed by their eastern neighbours, the Nyishis. The Monpas were oppressed by the Mijis, but although the Sherdukpens suffered from the depredations of the Mijis and also the Akas, they themselves had recourse to extract payments from the people of the adjacent plains of Assam. It should, however, be noted that the internecine strife and feuds, which may be largely due to the prevailing socio-economic conditions of the tribes living in a state of poverty, turmoil and isolation, are not the whole of history of tribal relations of this period, there are evidence of friendly negotiations and understanding. With the establishment of a central authority during the British rule, the law and order situation in this area showed signs of steady improvement and the tribes increasingly responded to the government endeavours for settlement of disputes and reconciliation.

### **British-Tagin Relations**

The Tagins were hardly mentioned in the British records as a separate tribal group. The term "Tagin Daflas" appearing in the 19th century records referred to, as already indicated, the Eastern Nyishis or the Nyishis of Subansiri living across the Lakhimpur District of Assam. The reference to so-called Tagin-

---

<sup>1</sup> J.N. Chowdhury, *Arunachal Through the Ages*, (Shillong, 1982) pp.99-100.

Daflas did not certainly mean the people of the far north and north-eastern Subansiri, whom we know today as Tagins and who were scarcely known in the last century as a separate tribal group distinct from the Nyishis. The Assam Census Report of 1881 states that the following:

“The origin and meaning of the name Daphla are not known. As pronounced in Lakhimpur, it would be written Domphila. They call themselves Niso or Nishing. The Miris they call Bodo and the Abors Tagin, but this last word seems to be merely the name of a tribe common to the Abors and Daphlas....”<sup>1</sup>

### **British – Apa Tani Relations**

The Apa Tanis appear on the British records as the Ankas (sometimes called Tenai Miris), Apas or Apa Tanang. The last name as pointed out by McCabe is a complete misnomer. E.T Delton said of them that “between the Duphla and Miri countries there is a tribe called ‘Akas’ and ‘Auka Meris’ (clearly, the Apa Tanis) by the Assamese, who never visit the plains...”<sup>2</sup>. Major Graham’s report on the ‘Dafla Expedition of 1874 – 75’ referred to the Apa Tanis for the first time. Mackenzie did not make any mention of the Apa Tanis in his book ‘History of the Relations of the Government with the Hill Tribes of the North-East Frontier of Bengal’. These records are suggestive of the fact that the Apa Tanis were little known to the plains people of Assam in the 19th century, who looked upon them as a group of the Miris and called them Aukas or tattooed.

The Apa Tani valley was first visited by H.M. Crowe of the Joyhing Tea Estate in 1889, and again four years later when he escorted Captain Dun into that country. Both his visits were apparently very successful. The German explorer Herr Von Ehlers entered the valley in 1895, but he was met with an inhospitable reception, and was robbed and turned out of the country.

The Apa Tanis are gentle peace-loving people who had committed violence only once during the British days. “In 1896, a party of Ankas put up at the house of one Podu Miri near the Kadam Tea Estate, and when the family had peacefully lain down to sleep, killed Podu and his stepson, and carried away four captives. Three months later a small expeditionary force was dispatched into the hills, which reached the valley of Hong, rescued the prisoners,

<sup>1</sup> See Verrier Elwin, *India’s North-East Frontier in the Nineteenth Century*, (London, 1962), pp.183-184.

<sup>2</sup> Verrier Elwin, *India’s North-East Frontier in the Nineteenth Century* (London, 1962), pp.156-157.

and punished the Ankas by compelling them to release six persons whom they had carried off a short time previously from a friendly Nyishi village. The comparative leniency of this punishment was due to the fact that the Ankas seem to have had a genuine grievance against Podu. Since that date they have not given any trouble while in British territory.”<sup>1</sup>

R.B.McCabe, a member of the Indian Civil Service (ICS), who accompanied the expedition as Political Officer, wrote a report on the Natural grandeur of the Apa Tani valley where he saw the wonderful cultivation of rice on irrigated terraces.

The Apa Tani country was visited by the Miri Mission in 1912, Dr. Haimendorf was appointed Special Officer for the territory in 1944. He wrote the following about his duties.

“I was given the task of establishing friendly relations with the tribes of Subansiri region of preparing the ground for reconnaissance beyond the area explored by the Miri Mission. My directives were that I should first visit the Apa-Tanis and win the confidence of this large tribe, whose goodwill seemed essential for the success of such a reconnaissance. The collection of information on the general character of Apa-Tanis and the neighbouring tribes, on economic and social conditions, customs, tribal politics and routes were to be my next task, but any active interference in tribal matters was to be avoided.”<sup>2</sup>

Dr. Haimendorf first visited the Apa Tani valley in 1944. His remarkable books *The Apa Tanis and Their Neighbours*, *Himalayan Barbary* and *A Himalayan Tribe* give us a vivid and intimate description of the land the people of Subansiri, the Apa Tanis in particular, he saw and studied closely during his repeated and long visits.

### **British-Hill Miri Relations**

The Hill Miris were not familiarly known as a distinct tribal group of Subansiri before the Miri Mission surveyed their country in 1911 – 12. But the survey reports<sup>3</sup> by R.Wilcox and E.T. Dalton, who came across the Hill Miris in 1825 and 1845 respectively, and the ‘Preliminary Notes on Miris, 1897’ probably by G.W. Dun<sup>4</sup> containing a good deal of information about them give

<sup>1</sup> B.C. Allen, *Assam District Gazetteers*, Vol-VIII, Lakhimpur, (Shillong, 1905) p.75.

<sup>2</sup> See L.N. Chakravarty, *Glimpses of the Early History of Arunachal*, (Shillong, 1973), pp. 30-31.

<sup>3</sup> See Verrier Elwin, *India's North East Frontier in the Nineteenth Century*, (London, 1962). P. 133 ff.

<sup>4</sup> See Verrier Elwin, *India's North East Frontier in the Nineteenth Century*, (London, 1962). P. 159 ff.

out the fact that their relations with the Government were exceptionally friendly and cordial. "Our Political Relations", says Michell in 1883, "with the Miris (Hill Miris) have been so satisfactory that there is nothing to record about them further than that the administration reports for years past tell us that their conduct has been most satisfactory. In this respect they form a marked contrast to every other tribe on the North-Eastern Frontier. From the time of Wilcox's visit in 1825 until the present day they have not only freely traded in our territory, but gladly welcomed us to their hills. There have been a few complaints at times from the occupants of the exposed tea gardens as to misunderstandings with the Miris, but the quarrels have been easily explained away. Colonel Dalton and Captain Maxwell are the only two Political Officers who have actually been in the Miri villages of the high hills, and their reception was most satisfactory. All the *gams* of villages received them with the greatest respect, and appeared to consider them our *ryots*."

"When the Survey of the Subansiri was undertaken there was very considerable doubt as to its advisability, and it was only on the very urgent representations of Captain Maxwell as to the case with which it should be carried on that it was at least permitted. The reception of the survey party was most cordial, and Colonel Wood Thorpe considered there would be no difficulty in pushing the survey well in to the interior of the country; in fact he was only prevented doing so by the strict orders of the Government"<sup>1</sup>. The 1928 publication of the Balipara Frontier Tract Gazetteer affirms that "They are well behaved and have never given us any trouble. We have always been on most friendly terms with them. The *posa* of Rs. 2, 244-12-8 which we pay them is more perhaps of a charity than any we pay on the North-East-Frontier"<sup>2</sup>.

We do not read about the Hill Miris for quite a long lapse of time after the visit of Miri Mission until 1944 when Dr. Haimendorf explored their land and brought out his 'Ethnographic Notes on the Tribes of the Subansiri Region (1947)'.

### **British-Adi Relations**

The following observation by Col.L.W. Shakespeare in his History of the Assam Rifles (1929) gives an idea of the British-Adi relations at the initial stage.

<sup>1</sup> John F. Mitchell, the North-East Frontier of India, p.246.

<sup>2</sup> Assam District Gazetteers, (Vol.XI), The Sadiya and Balipara Frontier Tract Gazetteer, Part II (Shillong, 1928), p.15.

“Up to about 1840 fairly friendly terms seem to have existed between the Abors (Adis) and the officials of Sadiya, even to the extent of some sections of the tribe helping us against the Hkhamtis (Khamptis) and Singphos in the troubles of 1838 – 39 with whom the Mishmis at that time were in alliance. The first-recorded trouble with the Abors (Adis) arose in 1848, which originated over the gold-washing pursuits of the Miris and certain Cacharis who worked in the rivers flowing out of the hills. The tribe while on intimate terms with the Miris had for long asserted their right to a percentage of gold and fish taken from rivers flowing from their hills, and this year disputes with the gold-washers led to raid across the border in which several Miris and Cacharis were carried off.”

During the British days, the country inhabited by the Adis was first visited by Captain Bedford, Lieutenant R. Wilcox and Captain Neufville in 1925 – 27 in connection with a survey and settlement of a number of feuds existing between the Adis and the Miris. Father N.M. Crick, a French missionary and explorer visited the Padam village of Mebo in 1853. Next to visit the same Mebo village in 1855 was E.T. Dalton, the then Principal Assistant to the Governor – General Agent in Assam.

In 1825, Captain Neufville reported that the Adis were giving assistance to the Sadiyakhowa Gohain (originally an Ahom title), the Khampti ruler of Sadiya, against the Singphos. In 1841, W.Robinson wrote, “The Abors (Adis) were always looked upon as the allies of the ancient Assamese Government, and it said that a large body of them, to the amount of 20,000 or 30,000 came down to assist the Bura Gohain in repelling the Moamarias, who were devastating all the country east of Jorhat.”<sup>1</sup>

The British – Adi relations continued to be amicable till 1847 when Captain Vetch, the Political Agent, had a most friendly conference with the Adi groups of the Pasis and Padams with the result that negotiation for the establishment of trading posts on the Dihang was started. But, only a year or so later the good relation became strained over the question of restoration of the gold-washers carried off by the Adis as mentioned by Shakespeare the captives were restored as demanded by Captain Vetch, but his camp was attacked at night. The Adis fell back only after a hard fight. It was stated earlier that the Adis used to extract some conciliatory payments from the gold washers called Beeahs in assertion of their superiority over them. From the year 1851, fre-

<sup>1</sup> John F.Michell, *The North-East Frontier of India*, (Delhi, Reprint 1973), pp53,55.

quent outrages perpetrated by the Adis and remonstrance's made by the British officials were reported.

The first serious Adi outrage carried in January, 1858, when the Minyongs of Kebang in the present East Siang District raided the Beeah village of Sengajan on the north bank of the Brahmaputra not far from Dibrugarh, and killed ten or twelve villagers. It was apparently a planned act of outrage to punish the Beeahs, who deserted their village some years ago and refused recently to pay the dues which the Adis demanded of them. The troops sent immediately to follow up the raiders failed to enter the inaccessible hills owing to various mischances, and got back to Dibrugarh with difficulty.

In 1859, another expedition, a larger one this time, led by Colonel Hannay was dispatched against the Minyong Adis of Kebang. The Adis put up a stiff resistance at Pasi, which village and a neighbouring village was taken and burnt but the expeditionary force failed to reach Kebang.

Later in the same year, a strong reconnoitering party passes through the Adi country without facing any opposition by the tribes.

In July 1860, the Pasi Adis, who were eager for a rapprochement, were befriended. But the Minyongs were still irreconcilable, and towards the close of 1861 they again raided a Beeah village near Dibrugarh, killing some of its inhabitants.

A punitive force under Lt. Colonel Garston was sent against the offending Adis. But the question of taking effective steps against further raids now engaged the attention of the Government more seriously. A series of measures were taken for opening of road and fortification, besides a scheme for deployment of troops. These measures made an abiding impression on the Adis about the might of the British Government. They made overtures for a general reconciliation and the Government, though strong, could only effort to conciliate. At length, on November 5, 1862, the Deputy Commissioner of Lakhimpur met the Meyong (Minyong) Adi deputies in a conference at Lallimukh near Kobo, and after a prolonged discussion extending over seven days, an agreement was concluded between the British Government and eight *Khels* or communities of the Minyong Adis.<sup>1</sup> By the agreement the Adis who did not have an acknowledged right to *posa*, secured some kind of conciliatory payments annually from the British Government. The yearly payments to be received by

<sup>1</sup> See 'The North-East Frontier of India (Delhi, Reprint, 1979) by A. Mackenzie, Pp.43-44.

them were 100 iron hoes, 30 mounds of salt, 80 bottles of rum, 2 seers of Akbaree opium and 2 mounds of tobacco. "In lieu of money stipends to chiefs, the treaty provided for payments in kind of articles that could be distributed among the whole community. The Adis of Kebang executed an agreement of this nature in 1863. The Padams entered into agreements in 1866."<sup>1</sup>

These agreements no doubt improved the relations of the government with the Adis, at least provisionally. The annual payments to the Adis made in kind were commuted to money payment from 1877. Cash *posa* payable to the Adis was:

|                       |   |             |             |
|-----------------------|---|-------------|-------------|
| Damro                 | - | 831         | - 0         |
| Padu                  | - | 301         | - 0         |
| Silli                 | - | 100         | - 0         |
| Ayeng                 | - | 201         | - 12        |
| Mebo                  | - | 225         | - 12        |
| Silluk                | - | 301         | - 0         |
| Dambuk                | - | 194         | - 0         |
| Bomjir                | - | 75          | - 4         |
| Kebang                | - | 395         | - 0         |
| Balek Group           | - | 465         | - 0         |
| Padam Kotokis         | - | 141         | - 0         |
| Pasi-Minyongs Kotokis | - | 84          | - 0         |
| <b>Rs.</b>            |   | <b>3311</b> | <b>- 24</b> |

The thrust of the Padams to move across the Dibang river 'to obtain possession of the Mishmi path to Sadiya' caused anxieties for some time past and it led the British Government to take a forward step in 1881 for establishment of strong military posts at Bomjur and Nizamghat. The Chief Commissioner of Assam was, however, not satisfied merely with preventive measures. He suggested more positive means, whereby friendly communications with the hill tribes could be opened, and they were convinced of the advantage of maintaining good relations with the Government.

In November 1882, J.F. Needham was appointed Assistant Political Officer at Sadiya. This appointment is considered to be the first important step

<sup>1</sup> See, C.U. Aitcheson, A collection of Treaties, engagement and Sanads (Delhi, Reprint, 1983), Vol-XII pp.159-162.



towards setting up of an elementary administration, at least in the foothills, as well as for establishment of more friendly relations with the frontier tribes of what is now known as Arunachal Pradesh. Needham undertook long tours in the deep interior areas and visited a number of Adi villages including Mebo and Balek in 1884 and 1885. He was received hospitably by the villagers everywhere, and his visits helped to create an atmosphere of better understanding between the Adis and the Government. An immediate result of his friendly endeavours was that the Adis, who refused for along time to attend the Sadiya fair for trading purposes, participated in the fair held in January, 1885. It is interesting to note that in 1884 only 50 Adis attended the fair while in 1885 the number rose to about 900. This fair obviously served the purpose of certain friendliness. Meanwhile, clouds were gathered for an impending storm. In 1886, the Adis turned out to be less friendly and put forward many grievances. They objected to the order which prohibited them from coming armed to Sadiya. They complained that the allowances paid to them were inadequate and that the Mishmis were better treated than the Adis when they visited Sadiya. In 1889, 4 Miris were entrapped across the Inner Line by the Minyongs and were murdered. A blockade of the Pasi – Minyongs was imposed immediately and the consequent inconvenience caused to everyone was so great that the powerful village of Kebang forced the offenders to compensate by paying 16 Mithuns to the Government.

In November, 1893, the Padams made an attack on a police patrol in which three sepoy of the Bomjur outpost were killed. It was suspected that tribesmen of Bomjur assisted by those of Dambuk and Silluk were involved in this crime. Another police party was attacked in the following month. The outrages were too ominous to be ignored by the Government, and a decision for a punitive expedition was taken. This came to be known as the 'Abor Expedition of 1893 – 94'.

In January 1894, a large expeditionary force advanced on Dambuk. Needham claimed that the expedition was pre-eminently successful for Bomjur, Dambuk and Silluk had been punished. The Chief Commissioner made a feeble attempt to justify the expedition in this dispatch to the Government of India. 'One important result of the expedition is that we now know the way to Damroh, and the nature of opposition we may expect if any future expedition is undertaken against the village'.<sup>1</sup>

<sup>1</sup> J.N. Chowdhury, *Arunachal Pradesh Through the Ages*, (Shillong, 1982), pp. 138-139.

The Government of India did not approve the second expedition to Damroh but sanctioned the following punitive measures against the Adis:

1. 'That until all the rifles and fire-arms were recovered, a blockade should be imposed on all the tribes living North of Sadiya and on the left bank of Dibang to prevent these tribes from having any intercourse with the plains.
2. That all further payment of *Posa* to the Adi village in the above mentioned tract should cease and
3. That the Adis of Bomjur should not be permitted to rebuild their village on the old site'.<sup>1</sup>

The blockade was strictly enforced and the concerned tribes, who were in difficulty had to return all the rifles snatched away by them from the Sepoys in November and December, 1893 and during the expedition in 1894. But many other articles taken away by the Adis were still with them, and the blockade continued. In March, 1896, the blockade against the Pasis and Minyongs was raised, but that against the Padams was maintained till 1900. The payment of so called *Posa* to the Adis was, however, not revived.

In December 1905 J.F. Needham was succeeded by Noel Williamson as Assistant Political Officer, Sadiya. Williamson left an indelible mark in the history of British – Adi relations. After having assumed the charge at Sadiya he set out on extensive tour and made pioneering efforts to explore the Adi country as well as other remote areas. In 1907 he went up to the Lohit to near about Rima in Tibet. In 1908 he visited all the Pasi villages and Minyong villages at the foot-hill and some of the Gallong villages. 'He was credited with having acquired considerable knowledge of the tribal ways of life and established good relations with the Frontier Tribes.' In February, 1909, he met his way as far the Kebang village, which was supposed to have several villages under its control. The venture of Williamson's merits especially mentioned in that he was the first European to get at that far away place.

Even in the year 1908; Williamson made a brief tour of the Inder Line. Starting from Pasighat, Mr Williamson passed through Ledum and Dijmur (Dimow) to Laimekuri visiting a number of Pasi, Minyong and Galo villages. However, Williamson's tour was highly ill fated and was responsible for his

<sup>1</sup> L.N. Ckhakrabarty, *Glimpses of the Early History of Arunachal* (Shillong, 1973), p.41

murder in 1911 and the fall of Adis in 1911 – 12. Mr. Williamson on his way to Ledum halted at Yagrung village. Matmur Jamoh, the *Gam* of Yagrung received him and presented a hen. Matmur also placed a case before the visiting Assistant Political Officer for immediate decision. Williamson became angry, slapped Matmur Jamoh, kicked away the hen given by him and shouted, “Dogged *Gam*, skin disease *Gam*, get out and be out of my sight”.

Matmur who had white skinned disease felt too much for the insult meted out to him and swore to avenge the humiliation by murdering Mr. Williamson. As such, Matmur thought of accomplishing his dreaded oath when Mr. Williamson along with Colonel Lumnsden and Mr. W.L.B. Jackman, and American Missionary at Sadiya were touring Kebang in 1909. But the response shown towards the visiting British subjects by the Kebang people made Matmur to drop his sinister plan. However, taking an opportunity of hatred created by Mishing gentleman due to wrong interpretation of contents of the letter which claimed to have carried the message of Williamson, Matmur managed in garnering support of few Kebang men and killed Williamson with the help of one Lutnung Tamuk at Komsing village on 31st March, 1911. Dr. J.D.Gregorson, tea garden doctor from Tinsukia in Assam who was camping at Pangri with the sick men was also killed on the previous day. Only six persons of the party of altogether 52 members could escape the massacre.

The murder of Mr. Williamson was due to personal enmity of Matmur Jamoh while the foolish story of the Mishing letter carrier was responsible for the massacre of the rest men including Dr. Gregorson<sup>1</sup>.

The Government of India took a serious view of the murder of Williamson and Gregorson and their proposal for sending military expedition into the heart of the hills was agreed to by the Secretary of State for India. The expedition organized under the command of Major General H. Bower, was overwhelmingly strong and massive in composing.

The expedition which began on October 28, 1911, met with no serious encounter on its way. Any attempt to oppose the expeditionary force was dealt with most severely. With the fall of the powerful village of Kebang on December 9, the active opposition of the tribe broke down.

Substance of various official reports of the primary object of the expe-

---

<sup>1</sup> Dr. N. Lego: *Modern History of Arunachal Pradesh, 1825-2006* (2006), p 59-65.

dition was that it resulted in the punishment of the offending villagers. All the men who had taken a leading part in Mr. Williamson's murder were tried and punished and practically all the looted property was restored. The power of Kebang was finally broken. The village lost a large number of its fighting men.

The result of the 'Abor expedition' of 1911 was fraught with many important political and administrative consequences. General Bower, the Officer-in-Command of the expedition made a suggestion in January 1912 that the Frontier should be divided into three sections viz. the Western, Central and the Eastern Sections. The Deputy commissioner of Lakhimpour, A.H.W. Bentinck, also held a similar view that the frontier areas should be separated from the Darrang and the Lakhimpur districts of Assam, which ultimately led to an important administrative reorganization and formation of the North East Frontier Tract.

In the wake of expedition of 1911, topographical survey and exploratory tours on extensive scale in the interior of Siang was undertaken by Civil and Military Officers. In December, 1912, Bentinck with a party of officers visited Minyong area. The tour covered the important villages of Riu, Riga, Geku and Shimong. The party went up to Singging to the North. Bentinck held a meeting of *Gams* (Chiefs) at Komkar, which was attended by representatives of important villages. He made it clear to the village representatives that all people were entitled to trade where they like and Government was against in trade blockade. Different parts of Siang were also simultaneously visited by other British Officers. These tours helped to have a clear knowledge of the topography and establish a closer contact with the Adi tribes.

Soon after expedition of 1911, an Assistant Political Officer was posted at Pasighat. Trade post, one at Pasighat and another in the neighbourhood of Rotung were also established. These steps were taken to enable the tribes living in the interior areas, who were hitherto prevented by some intervening tribes from coming down to the plains for trade to have a free passage to the trading centre. Police outposts were also opened at Kobo, Pasighat and Balek. It was stated in the Annual Report for 1915 – 16 that a toll tax was levied on the Padam villages.

The Adis extended help to carry out the survey work along the foot-hills and there was an interlude of peace until it was disturbed in 1927 by a feud between the Minyongs and the Pangis. Opening of an Assam Rifles outpost at Pangins at this time had, however, helped to maintain peace in the area.

In the following years, disturbances broke out in the Gallong area due to certain inter-village rivalry and raids in which the villages of Dorge, Laliang and Torajan were involved. The Government dealt with the situation effectively and succeeded in releasing of captives. A fine of four *Mithuns* was realised for the offending village.

Meanwhile, the British Government's policy with regard to the North-East Frontier of India came under a review in relation to the current international developments. In September, 1936, the Governor General wrote the following to the Governor of Assam:

'I am sure, however, that you will agree that the time has come in view of the development in the Far East and particularly to the impending separation of Burma to pay more attention to this area (North-East Frontier of India)'.<sup>1</sup>

In the same year, R.W. Godfrey succeeded W.H. Calvert as the Political Officer, for the Sadiya Frontier Tract. Under the specific instructions of the Government of Assam agreed to by the Government of India, Godfrey performed an extensive tour deep in to the Adi country beyond Karko village in February – March, 1939. He visited a large number of villages, all of which received him most cordially. His accomplishment during the tour, which were of varied nature, pertained to hearing of cases, discussions of village matters with the *Gams* of Pangin, issue of orders to Karko, Riga and Pangkang to remove trade blocks, settlement of claims and land disputes amicably in *Kebang* (village council), settlement of cases concerning Damro and medical treatment provided to the tribal people.

Sanction was accorded by the Government of India on August 30, 1940 to the establishment of cold-weather outposts at Karko and Riga in the Upper Siang valley. Earlier, in April of the same year, Godfrey went up to the Siyom valley, exploring the Gallong area. In the course of his tour, he settled a serious land disputes between the Gallongs and the Minyongs, and thus averted a feud.

On a review of the administrative measures taken in the year 1940 – 41 in the upper reaches of the Siang, the Governor of Assam observed that 'Progress had been made towards the pacification of this area, that feuds had been checked, trade routes opened and our abhorrence of slavery impressed

<sup>1</sup> L.N. Chakravarty: *Glimpses of the Early History of Arunachal* (1973), p.47.

on the inhabitants'. The Governor paid a visit to this region in December, 1941. At Pangin he met 370 representatives of 75 villages of the Gallongs, Padams, Minyongs and Pangis in an atmosphere of friendliness. The Governor impressed upon them necessity of giving up the practice of slavery and removing trade blockades.

The history of Siang in the forties till a couple of years following the attainment of Indian Independence in 1947 is marked by Government endeavours to exercise better administrative control over the far-flung areas, maintain law and order and develop a closer relation with the tribes. With this aim in view, the Political Officer and the Assistant Political Officer undertook extensive tours in the Upper Siang and Siyom valleys, proceeding as far north as Tuting and Gelling along the northern border. The villages in the Bori area were also visited. The history of this decade also indicates that tribes shown an increasing awareness of the changing circumstances and of the necessity of co-operating with the Government for common interest and benefit as well as peace and tranquility in this region.

#### **British-Mishmi Relations**

The Mishmis were first mentioned by the British in 1825 when Lieutenant Burlton reported that the "Mishmah Hills" were inhabited by tribes "*who were very averse to receive strangers.*" In 1827, Lt. Wilcox went deep into the Mishmi Hills, but on being refused further passage he had to make a hasty retreat. The next traveler who visited the Mishmi Hills up to the village of Ghalum on the Lohit in 1836 was Dr. Griffith. He found that the Tain (Digaru) Mishmis were very anxious to come to Sadiya for trade. In 1840, Captain Hannay went up the Dibang river in search of the Khampti rebels. In 1848, Lt. Rowlatt made a trip to the Du (Dav Valley), and proceeding up that river in a northerly direction he reached the village of Tuppang. These visits and explorations paved the way for making closer contact with the Mishmis.

The Mishmis, who lived in seclusion for centuries, were suspicious of the motive of the foreigners traveling through their territories. Early in 1848, a fakir named Paramananda Acharjya met his death at the hands of the Miju Mishmis on his way from Assam to Tibet through the Mishmi Hills. One of the village involved in this incident was of the leading Mishmi Chief Jingsha, who was very inimical towards strangers. In 1851, M. Krick, a French Missionary, reached safely the Tibetan village at Qualong on the Mishmi Tibet border under the guidance of Choukong Gohain, a Khampti Chief of Sadiya. Going further

beyond that village, he found extensive cultivation and a settled population along the open valley. In 1854, he again undertook journey by a different route to Tibet together with his colleague M. Bourri. Escorted by a friendly Mishmi chief, they reached the Tibetan villages which were earlier visited by M. Krick. During the last part of their journey towards the Tibetan border, they were met by an independent Mishmi Chief called Kai-ee-sha who assisted them to pass through his territory. But as ill luck would have it, they unknowingly offended the chief by refusing to concede to his demands for awards, and by making a circuit to avoid passing through his territory. As a result the infuriated chief murdered both the missionaries, plundered all their belongings and carried off their Singpho attendant as a slave with the active help of his kinsmen of whom four were his own sons. The murder took place near Rima in Tibet where the travelers had encamped.

The British Government took a serious view of the assassination of Reverends Krick and Bourri who were French citizens. An expedition was sent into the Mishmi Hills to punish the murderers under the command of Lieutenant Eden. The murderer Kai-ee-sha was captured from his village near Hayuliang and his three sons were slain in the open fight. Kai-ee-sha was tried and hanged at a jail at Dibrugarh but not before he could kill two of his prison guards.

Among the Mishmis, the Idus were the most turbulent. They were divided into number of clans and there was no love lost between them.

Towards the end of 1855, the Apelong Idus raided a village near Sadiya, killing two persons and kidnapping a number of villagers. The Idus carried on their sporadic raids and in 1861 and again in 1866 they attacked Chauken Gohain's village and did some damage. The Government made an attempt to induce the Idus to established friendly relations, but it failed.

Meanwhile, The Khamptis received arms from the Government and proved themselves capable of self-defence. Seriously concerned at the prowling raids of the Idus, the local authorities thought of a plan for extension of Khampti colonies so that a screen could be formed round Sadiya to protect the local settlement from the raids of the Idus. The Khamptis were considered a better force against the Idus than the Police. Accordingly, additional supply of arms to the Khamptis was promised, and a monthly payment of one rupee was offered to each Khampti who receive arms and obtained a site for cultivation to the north of the Brahmaputra. These measures proved effective and suc-

cessful, and since then the Idus did not give trouble.

In 1868, 200 families of the Idu Mishmis were allowed to settle at Habba along the Kundil at the request of an Idu chief named Kalood. Apparently, there was a general improvement of the situation in the Mishmi Hills even though inter-tribal feuds were reported from time to time.

During 1877 – 78, R.G. Woodthoppe penetrated into the Dibang Valley via Nizamghat, and a Government survey party was sent into this frontier. In 1880, Kaladoi, one of the leading chiefs of the Idus, formally declared his allegiance to the Government.

In 1883, some representatives from various tribal communities including the Mishmis, Singphos, Khamptis and the Nyishis were selected for a journey to Calcutta in connection with an exhibition.

Another Mishmi raid which had important consequences, took place in May 1899 when the Idus attacked a village at Mitaigaon near the Diphu outpost, killed one person, injured two and carried off three children. The raiders also seized three guns. It was at first reported that the raid was committed by the Bebejiya Mishmis in revenge for the death of a person of their tribe at the hands of the Khamptis. Needham recommended that the Bebejiyas, who were not suitably punished for the murder of the three British sepoy in 1893, should this time be brought to terms. The recommendation was accepted and a punitive expedition was ordered by the Chief Commissioner. It also aimed at making a topographic survey of the Dibang Valley. The expedition led by Needham through Maiyu Pass, Hunli and along the left bank of the Ithun and of the Dibang resulted in the destruction of Aiyu Mimi village on February 1, 1900, and arrest of his three chiefs, rescue of two children captives and one of the missing guns. But it was not until May 9, 1900 that one Chen Chen, the ring-leader of the Mitaigaon murder was captured. He was sentenced to death.

As regards the topographic survey, the Bebejiya expedition of 1899 – 1900 was not much successful considering the huge sums of money spent. A side-effect of the expedition was that it dispelled from the prejudiced mind of the British some misconceptions about the people. Needham admitted that the Bebejiyas were a gentle and inoffensive tribe, and not as 'blood-thirsty' and 'dangerous' as was previously thought.

There was yet another case of murder in 1905 – 06 in which three British subjects were killed at the Dikrang Block-House by two Bebejiyas in



retaliation for the arrest and confinement of one of them during the last Bebejiya expedition. To punish the culprits, a blockade was again imposed on the Bebejiya and some other groups of the Idus. It was revoked in 1909 as it was abortive. But eventually one of the suspects named Tagi was apprehended and executed in January 1918.

The Idus committed their 'last' raid in November 1933 on a village in British territory near Nizamghat. Four children lost their lives, and several others were injured in the incident. The Political Officer J.H Grace made up 'promenade' into the Sessiri Valley and succeeded in restoring the normal conditions.

### **British – Khampti Relations**

The Ahoms finally lost Sadiya to the Khamptis during the Burmese (Myanmarese) incursions. The Khampti Chief of Sadiya, who arrogated himself the Ahom title of Sadiyakhwa Gohain, was now recognised as the lawful ruler of Sadiya subordinate to the British Government. He was exempted from paying any tribute on the condition that he would maintain a force of two hundred men to be armed by the Government. The internal management was left to him, but a British garrison was stationed at Sadiya to keep the unruly tribes of the adjacent hills in check. The judicial authority of the Khampti chief was restricted to the adjudication of minor cases, while the major criminal offences were dealt with by the British officials.

Although the Treaty of Yandabo (1826) formally ratified the extension of British supremacy to the whole of Assam, it was considered expedient by the British Government to restore a part of the province to Purandar Singha, the exiled king of the Ahoms. Accordingly he was installed in 1833 as a tributary ruler of Upper Assam excluding Sadiya and Matak, the two regions under tribal chiefs with whom the British Government maintained direct political relations. But Purandar Singha soon lost the confidence of the British and was deposed in 1838 on a charge of maladministration. His territories were placed directly under the British administration.

Meanwhile, the old Sadiyakhwa Gohain died in 1835, and was succeeded by his son. At this time there was a fresh influx of the Khamptis from across the border. The British authorities permitted them to enter in pursuance of a deliberate policy of setting warlike tribes along the border so that they might stand against the Burmese (Myanmarese). But, about the same time a dispute arose between the new Sadiyakhwa Gohain and the Bor Senapati, the

ruler of Matak over a tract of land called Chukowa on the south of the Brahmaputra. To avert a conflict the British officer at Sadiya attached the land and called upon both the parties to appear before him for arbitration. But the Sadiyakhwa Gohain took forcible possession of the land in clear defiance of his order. Consequently, he was removed from Sadiya and his post was abolished. The Khamptis were, however, allowed to retain their privileges, such as exemption from taxes, and management of their internal affairs under their own chiefs, as earlier conceded to them. But these concessions, from the Khampti viewpoint were largely taken away by the forfeiture of the right to rule over the area. They also resented the humiliation of their ruler, the Sadiyakhwa Gohain. The release of their slaves by the British roused more bitterness. They saw in all these measures a design to impose tax on them and to lower their status to the level of their subjects. The discontent was so deep that an attempt to appease them by permitting their chief to return from exile as a token of reward for their help in the operation against the Singphos failed to remove it. Eventually, on the night of 19th January, 1839, a band of 500 Khamptis attacked the British garrison at Sadiya, killed Colonel White, and Political Agent, and a large number of sepoy. A punitive force was immediately dispatched to Sadiya. The insurgents retreated and sought refuge amongst the Mishmis. Although they were hotly pursued, they could not be reduced to submission till December, 1843.

Sadiya and Matak tracts were brought directly under the British rule in 1842 by a proclamation.<sup>1</sup> In order to prevent further insurrection; the Khamptis were not allowed to remain together. They were removed in batches to different places. Some were settled above Sadiya and others on the Tengapani river. It was thought that the dispersion of the Khamptis would eliminate possibilities of combined uprisings and the Khampti settlement above Sadiya town would serve as a screen between the Assamese and the Mishmis. A small force of armed Khampti volunteers was raised to protect the villages near Sadiya and patrol the hill tracks.

The Khamptis reconciled themselves to these measures taken by the British authorities. They showed signs of increasing loyalty to the Government from 1844 – 45 onward. The section of the Khamptis who were around Sadiya and Saikhowa paid revenue, and those living on the Tengapani obtained from

<sup>1</sup> (a) Edward Gait. *A History of Assam*, (Calcutta, 1967) p.362.

(b) Hem Barua, *The Red River and the Blue Hill*, (Gauhati, 1962) p.18.

the Government exemption from taxation and an assurance that their internal affairs would not be interfered with.

In 1884, there were four Khampti settlements in Assam namely Sunpura above Sadiya, Saikhowa to the south of the Brahmaputra, Damadji and in the area to the west of Lakhimpur.<sup>1</sup>

As Mackenzie observed long ago, the Khamptis occupying the low lands are not strictly a hill tribe. E.T. Dalton wrote of them about a century ago that they were very advanced in knowledge, arts and civilization.

### **British – Nocte Relations**

From the middle of the 19th century, the Noctes started coming in large numbers to the nearby tea gardens of Assam as labourers, and also to the markets in the plains for purchase and sale their timber, bamboo, basket, ivory, hide, skin, bag, shawl etc. In 1841 – 42, Captain Brodie, the Principal Assistant to the Governor General's Agent visited the Nocte area to ensure security of the frontier between the Dikhu and Burhi-Dihing. He met the Nocte groups of Namsangias, Bordurias and Panidurias, he persuaded them to refrain from committing outrages in the plains, and urged them for surrender of offenders and discontinuance of intertribal clashes. He also exhorted them to refer to the Government cases of assault on them from outside and give up the practice of sending child-slaves to the British territories. The standing cases of feuds which were submitted to him were settled.

The efforts made for maintenance of peace and order was successful only for a short period. Inter-tribal feuds and outrages flared up again. In November 1853, the Namsangia Chief demanded tribute from several villages ruled over by the Chief of Borduria. In the Skirmish that followed the Namsangias killed a number of Bordurias. In 1872, the Namsangias made a massacre of another group of the Noctes called Boralanga. The British Government took various measures for maintenance of peace in the area. The long drawn feud between the Namsangias and Bordurias was reconciled by negotiation. Capt. Holroyd held a meeting of the chiefs of the two groups, and it was decided that an European Officer should be posted to Jaipur to deal with all tribal disputes as and when they might arise. But in 1884, the Namsangias, 6000 strong at that

<sup>1</sup> A. Mackenzie, *History of the North-East-Frontier of Bengal*, (Calcutta, 1884), pp. 57 ff., -Ref. Elwin's *India's North-East Frontier in the Nineteenth Century*, (London, 1962), p.360.

time, were still at feud with the Bordurias. Intertribal clashes were reported from time to time, and the Government was compelled to intervene. In 1888, a group of Namsangias carried away six persons from Dilli village and put one of them to death. The Namsangia chief was ordered to pay a fine of Rs. 1000/- for the offence. By an agreement, the chief was also required to let a plot of land in Hukunjuri at an annual rental of Rs. 450/-. By the same agreement the Chief of Borduria was allowed to hold 200 bighas of rent-free land near Jaipur. The Chief of Namsang was granted license for purchase of arms and ammunition within restricted limits. The two chiefs agreed to send annual reports to the Deputy Commissioner of Lakhimpur District, and pay tribute to the Government and receive gifts in return. They also agreed to bring to the Government all cases of feuds for settlement. But in spite of the agreement, the two Nocte groups were again engaged in a serious clash in 1900. Consequently, the Government stopped payment of the rent of Hukunjuri land for two years as a measure of punishment. The chief of Namsang was also suspected of a conspiracy. He was summoned at Dibrugarh, and detained there for two years. Tribal feuds, particularly between the Namsangias and Bordurias, did not, however, come to a stop, they broke out occasionally, and as a result, peace in this area was disturbed till the end of the British rule.

### **British-Wancho Relations**

The hard life of the tribal people living in the mountainous tracts in this area was, in the old days, marked by occasional outburst of inter-tribal feuds and internecine strife. In 1841 – 42, Captain Brodie visited the Wancho villages of Banfera, Joboka, Milung, Jaktong, Tabong and Changno. The Wanchos appeared to be less turbulent than the Noctes. It was also reported that they fell victims of Nocte raids. In April 1844, the Bor-Mithunias, a group of the Wanchos who called themselves Chopnu after their own village name, made an attack on the Banfera village. The Banfera Wanchos, on the other hand, committed a murder at a place close to the border of Sibsagar, in April, 1851, and fled to the Joboka village. In March 1853, they committed another murder at a place close to the border of Sibsagar District. The outrages continued, and in 1869, the Wanchos were again reported to have carried off three labourers from a nearby tea-garden in the plains.

In 1875, Lieutenant Holcombe, the Assistant Commissioner of Sibsagar District and Captain W.F. Badgley led a survey party to the Wancho area.

They reached Ninu (Nginu), the famous and formidable Wanchos village on the right bank of the Tisa river, on the 1st February, 1875. The Wanchos were suspicious of the outsiders. They did not know anything about the survey work, nor did they see any such party of outsiders intruding into their country. And it so happened that the villagers were then mourning the death of their chief who had just died. The body was still to be disposed. Moreover, some sepoys of the party treated the villagers contemptuously. As ill luck would have it, one of the sepoys of the party hit the corpse with his baton out of disgust at the method of disposal of the dead body. This was an offence unimaginable to the tribal people. Enraged at the crime committed, the Wanchos fell upon the survey party in the morning next day and killed eighty men of the ill-fated party including Lieutenant Holcombe. Captain Badgley escaped with injuries along with fifty other men of the party. A military expediting was immediately sent to avenge the massacre. A strong force under the command of Brigadier Nuthall worked their way to Ninu. Senua was taken and destroyed and the villages of Ninu, Nisa and Longkai were burnt. Another expedition was sent the same year to destroy Ninu, which was rebuilt. The proud Wanchos of Ninu did not give way without a fight.

The retaliation taken for the Ninu massacre made an abiding impression on the Wanchos. The Wanchos, except in Banfera and its adjacent villages, were hence forth shut out from the plains.

#### **British – Tangsa Relations**

The Tangsas of Namchik were mentioned in 1836 as a polite and courteous people. A trade route to Burma (Myanmar) passed through their land. They tried to maintain a friendly relation with both the Dapha Gum and Bisa Gum, the Singpho chiefs, although they were not happy with them. They were in need of protection, and the British Government gave them arms to defend themselves against the Singphos. But, in 1838, Captain Hannay found them still open to the depredations of the Singphos. The Dapha Gum, for instance, took away many of their properties as booty.

The Tangsas were a peace-loving friendly people. Occasionally, however, there were incidents of kidnapping of British subjects by a group of the Tangsas. To keep them in check, an outpost was opened at Tikak and the post at Ledo was reinforced in 1897. A laborer in the Makum Tea Garden was kidnapped by them in 1899. The Tangsa village responsible for it was fined Rs. 30/-. In the month of February 1900, three labourers were again

kidnapped, and only one of them was returned on demand by the Government. They even raided a *Sarkari* village in the Lungchang Hill in June, 1901 in retribution for the assistance it rendered to the Government, and carried off the village chief, who was subsequently rescued. In 1902, the Tangsa group turned their attention to the Namsang area, where they killed the Khunbao and ten other men. Their next raid was on the village of Dingsong, and they continued to raid up to 1934.

In 1902, the Tikak and Ledo out-posts were withdrawn, and a new post was opened in farther interior of the Lungchang Hill within the Naga *Sarkari* area. In 1908, Williamson led an expedition to deal with a case of murder perpetrated at Wakpong. It was also alleged that the local people were involved in thefts of railway material stocked at the railway works at Ledo and in the vicinity of nearby mines. An outpost was opened at Tirap for surveillance. It was reported that during the harvest seasons, a number of people were regularly kidnapped. The Government took serious view of this matter and decided to punish the culprits for each and every offence. Strong and effective measures were taken against the practice of kidnapping, and eventually it came to a stop. In 1926 – 27, another outpost was opened at Majum close to the Patkai.

### **British–Singpho Relations**

The Singphos were a virile and vigorous people when they came. They were “by far the most powerful tribe bordering on the valley”<sup>1</sup> wrote Robinson in 1841. “they are generally a fine athletic race above the ordinary standard in height, and capable of enduring great fatigue; but their energies are greatly impaired by the use of opium and spirits, in which they freely indulge”<sup>2</sup>, remarked Dalton in 1872. And, probably for this reason, their number was dwindling.

In 1825, a band of about 7,500 Singphos fell upon the Khamptis and the Moamarias. The Sadiyakhwa Gohain, the Khampti Chief of Sadiya, was imprisoned within his stockades and the Bor Senapati, the ruler of Matak country, south of Sadiya. Between the Brahmaputra and the Buri-Dihing was attacked in his own country. At this stage the British Government had no firm decision as to its future policy in Assam. The Government was disinclined to undertake the defense of a tract as remote as Sadiya and to interfere with the Hillman as

<sup>1</sup> W. Robinson, *A Descriptive Account of Assam*, 1841 (Delhi, reprinted 1975), p.375.

<sup>2</sup> E.T. Dalton, *Tribal History of Eastern India (Descriptive Ethnology of Bengal)* (Delhi, 1973) p.10

strange as those of the North-East Frontier.<sup>1</sup> But when the Sadiyakhwa Gohain and the Bor Senapati appealed to the British for help, it was rendered strictly for defensive purposes. The alliance proved too formidable for the Singphos to combat. They approached the British authorities for negotiation lest they were not expelled from their possession just as the Burmese were driven out. The Singphos had by this time occupied considerable tracts of land, and cultivated them by slave labour. They were anxious to retain the land and the huge army of slaves. In the course of negotiations, it was made clear to them that no settlement was possible unless they release the Assamese captives used as slaves and refrain from plundering the villages of Sadiya. The British Government was also eager to know whether they would protect the border in the event of a Burmese (Myanmarese) incursion. The Singphos were a disunited tribe under different chiefs of whom Bisa Gam, Duffa Gam, Luttora Gam and Lattao Gam were important.<sup>2</sup> It was extremely difficult to deal with them as a whole, for they were guided by their own group interests. Hence, contrary to expectations the negotiation revealed that the Singphos needed British protection for themselves against the Burmese. But British Government took an uncompromising stand in regard to the surrender of captives and booty. A reconciliation with the Singphos was, therefore, difficult. At this stage, a Burmese aggression seemed imminent, which impelled the Government to assure them of the possession of their lands with a view to winning them over as allies against the Burmese (Myanmarese).

Belying all speculations, the Singphos, who were left unprotected, made a common cause with the Burmese when they did actually appear on the Patkai in June 1825. Captain Neufville at the head of an infantry at once advance up the Noa-Dihing, and by a series of gallant attacks drove out the Burmese from the Singpho village of the Bisa and Duffa Gams which he destroyed. The Singpho chief including the Bisa Gam made their surrender and the Burmese were finally pushed back. With the assistance rendered by the Bor Senapati, the Khampis and the Miris, Captain Neufville is said to have released about 6000 captives in the course of these operations.

Of the twenty eighth Singpho chief, sixteen came to an agreement with the British Government in June 1826 when David Scott, the Governor General's Agent, visited Sadiya. The chiefs agreed to the release of captives

<sup>1</sup> A. Mackenzie, *History of the relations of the Government with the Hill Tribes of the North East Frontier of Bengal*, (Calcutta, 1884) pp. 61. ff p/5.

<sup>2</sup> The word Gam is the affix indicating the elder branch or member of a family of a Singpho clan.

and promised assistance to the British troops if called for in future. They also pledged to refer disputes to the arbitration of the local officers. Hostages were given for the due fulfillment of this engagements.<sup>1</sup>

It was also subsequently decided in 1829 Bisa Gam should have a general control over the sections of the tribe who had submitted, and that the twelve chiefs who did not submit should be warned that they would not be allowed to settle in Assam in case they failed to appear within two months. No revenue was, however, demanded from the Singphos, but according to the terms of the agreement, the Gam of Bisa was to provide, if needed, a contingent of eighty men, and to convey immediate information to the British authorities of any alarming development that might take place near the Patkai pass.

In the early part of 1830, a combined force of the Singphos and the Khamptis was reported to have marched into the plains after crossing the Buri-Dihing and proceeded towards Sadiya. Rumors were afloat that they were not to liberate Sadiya from the British rule, and the Sadiya-Khowa Gohain was in sympathy with them. The attempt failed and Captain Neufville succeeded in driving them out from the village of Luttora Gam on the Tengapani where they had established their head-quarters. They retreated across the border. The Bisa Gam remained loyal throughout these operations.

The Singpho depended on their slaves, and hence they resented vehemently when they lost them. In spite of the agreement of 1826, the Singphos continued to kidnap people from the plains and keep them as slaves. In July 1838, a European officer was posted at Sadiya permanently to prevent the Singpho chiefs from retaining their slaves.

Meanwhile the Duffa Gam, the arch rival of the Bisa Gam, began to create serious disturbances. Perhaps, the favour done to the Bisa Gam by which he raised to the position of the permanent chief of the tribe provoked the animosity of the Duffa Gam. Taking advantage of the chaotic situation along the Indo-Burma border, the Duffa Gam carried on series of raids from Burma on the village under the jurisdiction of the Bisa Gam.

By the previous engagements, the British Government committed itself to protect the Bisa Gam, and to safeguard his rights and privileges. The

---

<sup>1</sup> A. Mackenzie, *History of the relations of the Government with the Hill Tribes of the North-East-Frontier in the Nineteenth Century* (London, 1862) p. 388. Preference: V. Elwin, *India's North-East-Frontier in the Nineteenth Century* (London, 1862) p.388.



British valued highly the friendly gestures of the Bisa Gam, who showed an unflinching loyalty to the Government since the agreement of 1826 was effected. The outrages of the Duffa Gam, which endangered the safety of the Bisa Gam, therefore, concerned the British Government seriously.

In 1835, the Duffa Gam launched a sudden attack from across the border on Bisa's village, killing mercilessly some ninety persons including women and children. He drew to his side most of the *gams* who were subordinated to the Bisa Gam in 1829, and built stockades inside the Indian territory. But he was not allowed to stay, and with his expulsion all the chiefs save the Luttora Gam reaffirmed their allegiance to the Government. The Luttora Gam, who next to Duffa Gam was the most powerful of the contemptuous chiefs, submitted in 1837.

But the smoldering discontent among the Singphos as was expressed during the following years in their endemic quarrel on the one hand and their occasional flare against the British over lordship on the other showed that it was more deep-rooted than was contemplated. An attempt was made at this time to bring all the Singpho settlements under administrative surveillance. In 1841-42, the Singpho frontier appeared so quiet that its management was transferred from the Political Department to the Revenue and Judicial Departments of the Bengal Government.<sup>1</sup>

The peace was, however, short-lived. In 1843, a sudden attack on the outpost at Ningroo by a large band of the Singphos from Burma (Myanmar) sparked off a widespread rebellion in which all the Singphos of the Assam border and a large number of the Khamptis took part. The Bisa Gam was also suspected of having lent a helping hand to it. The uprising was believed to have been fomented by Tipam Raja, a scion of the Ahom royal family who was appointed Governor of Hukawng in Burma (Myanmar) by the Burmese (Myanmarese) king with, it was said, instructions to take advantage of any situation that might arise for invading Assam. Prompt measures were taken to quell the revolt. The operations which dragged on for months ended in the surrender of all rebel chiefs and accomplices, and in the complete submission of the Singphos as a whole. This was the last uprising of the Singphos against the British paramount, and since then they appear to have retired to peaceful pursuits of life.

<sup>1</sup> A. Mackenzie, History of the relations of the Government with the Hill Tribes of the North-East Frontier of Bengal (Calcutta, 1884) pp. 61 ff -reference :- V. Elwin, India's North-East Frontier in the Nineteenth Century, (London-1962, p. 392.

An enquiry commission appointed by the Government found the following three causes of the rebellion.

- i. encroachment on the lands and privileges of the Singphos.
- ii. the seizure and punishment by local officers of some members of their tribes and
- iii. the orders of the Tipam Raja.

“The Governor General in Council in reviewing the report set aside the last two grounds as it was certain that the orders of Tippum, if ever given, would have had no effect unless they had fallen on willing ears; and so to the second point it was shown that no Singpho had been punished save under the terms of their engagements, and in accordance with established usage. The real cause Government sought in the first point noticed. Although the Singpho agreements made with Mr. Scott are personal rather than local, yet it was clear they were meant to apply within certain limits, that is, within the ordinary habit of the tribe. Unfortunately no such limits were ever regularly defined, and of late the extension of tea cultivation had made this omission of serious consequence.<sup>1</sup>

The Governor General’s Agent in a further report maintained that the main cause of the Singpho insurrection was the loss of their slaves. Accepting this report, the Government made it clear to the Singphos that there must not be any revival of slavery.

### **Meyors and Zakhrings**

In 1906 – 07, a large number of immigrants came from the bordering area in order to settle in the Dri valley of Dibang Valley. Unfavorable circumstances compelled them to move northward, and in course of the journey many of them perished due to intense cold and the hostilities of the Mishmis (the Idus), who, it is said, attacked them with bow and arrow, while the immigrants defended themselves with gun. Only about ninety immigrants survived, who somehow managed to reach and settle at Mayu, and those who were captured by the Mishmis (the Idus) were enslaved and sold to the Adis. The immigrants moved further southward and ultimately settled in the Walong area in Anjaw district.

These immigrants have come to be known as Meyors. The Meyors of today do not exactly know where they came from. They merely recollect the

<sup>1</sup> A. Mackenzie, History of the relations of the Government with the Hill Tribes of the North-East frontier of Bengal (Calcutta, 1884), p.61.-reference: Verrier elwin, India’s North-East Frontier in the Nineteenth Century. (London, 1962), p.339.

bare fact of their arrival and settlement in the Walong-Kibithoo areas.

At the time of migration into the Lohit District, the Meyors faced the bitter opposition from the Mishmis, who were then at war with the people of the Zayul District of Tibet. The Mishmis raided the settlement of the Walong Meyors repeatedly and forced most of them to retreat from the Walong area. A few Meyor villages, now known as Walong, Dong, Tinai, Musai, Champrang and Kahao, withstood the Mishmi raids. Eventually the Mishmis and the Meyors came to an agreement by which the Mishmis bound themselves to allow the Meyors to settle in the Walong area and to give them protection, and the Meyors, in return, agreed to pay annual tributes to the Mishmis. According to the terms of the agreement, the new settlers were also required to serve as herdsmen of the Mishmis.

### **Khambas**

The immigration of the Meyors and Zakhrings was followed by or probably coincided with the intrusion of about 1,000 Khambas in the Mathun Valley some five to seven years before the survey operations of 1912 – 13. It was stated that they came in quest of the Promised Land known as Pemako, but they entered by a wrong way and settled in Nyigong (Yang-sangchu) valley in the Siang District.

On their way to Mathun a large number of the Khambas perished in the inhospitable mountains and snow-storm.

The Idus did not like that the aliens should settle in their territory. They attacked the Khambas whenever they found an opportunity. In 1907 – 08, the Idus of the Emra and Mathun valleys killed some Khambas. In retaliation, the enraged Khambas burnt all the Mishmi villages in the Dri and Mathun Valleys and took away all their domestic animals and foodstuff. The Idus fled southward and settled on the tributaries of Dibang. According to a report, a fierce encounter took place between the Khambas and the Idus in which both the parties suffered heavy loss of lives, 170 Idus against 400 Khambas. Another report stated that 23 villages in the Dri Valley and 12 villages in the Mathun valley were devastated by the Khambas. Some of these villages remained deserted since then. In 1912 – 13, the surveyors fixed the Imu river as the boundary between the Idus and the Khambas. About five years later, the Khambas descended upon the Idu village, set it on fire and killed three Idus. The outrage was allegedly an act of retaliation against continued Idu depreda-

tions. The Idus, in revenge, raided the Khamba stronghold at Mipi, killing some Khamba villagers and forcing the rest of them to go back. And this was the end of the Khambas in the Mathun Valley.

### **Administrative Policy and Developments**

The Administration of India's North-East-Frontier now known as Arunachal Pradesh has been established and consolidated all over the territory through many decades of administrative jurisdiction and control exercised effectively by the Indian Government up to the International Boundary and the constructive activities undertaken by them for development of this tribal area. The history of the Government jurisdiction over Arunachal Pradesh dated long before 1914. As already stated, the traditional and the customary boundary of India in the Eastern Sector obtained added sanction under Indo-Tibetan Agreement of 24/25 March, 1914.

The policy of the British Government in the North-East Frontier Tracts till the first decade of the twentieth century was generally intended to leave the tribes more or less to look after themselves, and not seek to establish any detailed administration such as was to be found in the rest of British Indian territory. The situation was precisely described by Mackenzie writing in 1884 as follows:

"....So much as has been stated it was desirable to bring into prominence, that there might be a clear understanding of the circumstances under which a frontier policy first became necessary for us in the north-east. These will be made more apparent as we deal with the history of each tribe. But I may here remark, by way of general preface, that we found the Assam Valley surrounded north, east, and south by numerous warlike tribes whom the decaying authority of the Assam dynasty had failed of late years to control, and whom the disturbed condition of the province had incited to encroachment. Many of them advanced claims to right more or less definite over lands lying in the plains; others claimed tributary payments from the villages below their hills, or the services of *Paiks* said to have been assigned them by the Assam authorities. It mattered of course little to us whether these claims had their basis in primeval rights from which the Shan invaders had partially ousted the hill men, or whether they were merely the definite expression of cupidity. Certain it was that such claims existed and they had been, to some extent and in some places, formally recognized by our predecessors. The engagements under which the Native Governments lay were transferred to us with the peculiar revenue

system above described; and it was one of our earliest tasks to endeavour to reconcile such arrangements, where we could discover them, with the requirements of enlightened policy..... When we did arrive in any case at a divinity understanding as to the rights of any tribe, we were ready, as a rule, to treat them fairly and liberally; and, on the whole, we have no reason in this respect to be ashamed of the general bearings of our policy upon the North-East Frontier. But we are met to this day by difficulties arising from the indefinite nature of the connexion subsisting between the Assam sovereigns and their neighbour. These difficulties, as they arise, have not been lessened by the fact that here, as elsewhere in British India, the Government has had an active policy forced upon it uniformly against its will; and while anxious in the extreme to leave the tribes alone, if they would but consent to be let alone, it has been compelled from time to time by the mere force of events to take up questions it would have gladly overlooked, and to govern actively where it would have been content to be at peace.<sup>1</sup>

Obviously, this was not a policy aiming at a regular administration; of the frontier region, and in effect it sought to isolate the tribes. But, it needs to be stressed that the British authorities never failed to exercise the sovereign jurisdiction of the Indian Government where questions of law and order were involved. They regulated inter-tribal relations and the relations between the tribal people of the hills and the inhabitants of the plains in an effort to provide security to different ethnic groups and maintain peace and tranquility in this frontier region. They were generally inclined to 'leave the tribes alone' and 'conciliate them' probably because of the historical predicaments and the task of administering the remote mountainous area which seemed to be too heavy and closely for them to accomplish effectively at the formative stage of the British Indian Administration. The result was, therefore, what Neville later wrote in March 1914 in his report on The 'Aka Promonade' that, '.....we should get the loose political control which it is our policy to exercise over the frontier tribes.....'<sup>2</sup>

The conciliatory policy of the Ahoms was pursued as we have seen, by the British as a legacy in their relations with the frontier tribes throughout the nineteenth century. It was in practice a policy of expediency devised to meet emergent situations. Following the foot-steps of the Ahoms, the British tried to contain the tribes in their own hills and protect the people of the plains. They also,

<sup>1</sup> Alexander Mackenzie *op.cit.* pp.7-8.

<sup>2</sup> Sir Robert Reid, *Op.cit.* p.285.

like the Ahoms, endeavored to befriend them and avoid friction save on the occasions of serious tribal raids and outrages calling for punitive expeditions and imposition of blockades. For administrative and political control, they established base camps and outposts in the foothill areas, while the Political Officer of this frontier tract was stationed at Charduar in the Darrang District of Assam.

The Inner Line Restrictions enforced under the Bengal Eastern Frontier Regulation I of 1873 were an important administrative measure taken by the British Government to regulate the commercial relations between the frontier tribes and the plains people. The Regulation of 1873 empowered the British authorities to prescribe a line to be called the Inner Line and to prohibit any British subject living outside the area from going beyond that line without a license. No rubber, wax, ivory or other jungle products was to be obtained from the hill areas by people from outside. They were also not to hunt wild elephants beyond Inner Line without special permission of the Government.

Under this Regulation of 1873 a detailed description of the Inner Line dividing the tribal areas from the plains districts of Assam was issued. This line has been laid down along the northern, eastern and south-eastern borders of the Brahmaputra valley. Notifications describing the Inner Line in the Lakhimpur District and the Inner Line in the Darrang District were issued in 1875 and 1876 respectively. In 1884, a revised notification regarding the Inner Line in Lakhimpur was issued. Under the Regulation of 1873 passage to the hill areas now known as Arunachal Pradesh was not permitted without permit or license. This Regulation was enacted not with the intension (as is so often thought) of isolating the hill people from the plains, but to be under more stringent control the unrestricted commercial intercourse which formerly existed between the traders from the plains of Assam and frontier tribes, and prevent the traders from exploiting rubber and other hill product. In Lakhimpur the operations of speculators in rubber had led to serious complications, and the spread of tea gardens beyond fiscal limits of the settled territories of the day had involved the Government in considerable difficulties. In Order to prevent the recurrence of these difficulties power was conferred on the local authorities of 1873 to prohibit people from going beyond a certain line, laid down for the purpose, without a pass or license. The Regulation also laid down rules concerning trade and possession of land and property beyond the line.

The Inner Line marked merely an administrative limit and the area north of it was also controlled by the Government of India. The Inner Line, revised by notifications from time to time, e.g., in 1928, 1929, 1934 and 1958

still remains in force.

The political and administrative developments that took place in the second decade of the twentieth century are of great historical significance. In this decade, extensive topographical survey and exploration of the deep interior areas were undertaken by civil and military officers in different parts of the north-east frontier. In this context, the Miri Mission (1911 – 12)<sup>1</sup>, the 'Abor Expedition of 1911' followed by considerable activities for topographical survey<sup>2</sup> and the 'Aka Promenade' (1913 – 14) as already described in this chapter merit particular mention. As a result of these activities, the government came into much closer contact with various tribes and succeeded in winning their friendship. The British records dating from 1911 are replete with reports and statements which are indicative of a better understanding and appreciation of the tribal problems and even the need for development and social welfare. Indeed, this decade marked the beginning of a positive change in the government policy – a change from exercising the so-called 'loose political control' to establishment of a more effective and functioning administration by gradual extension of government activities.

In 1912, General Bower, the Officer in Command of the 'Abor Expedition of 1911' and A.H.W. Bentinck, the Deputy Commissioner of Lakhimpur made a suggestion for a division of the north-east frontier into three sections and separation of the frontier from the control of the Deputy Commissioner of Darrang and Lakhimpur. These suggestions came into effect under the Government of India, Foreign and Political Department, Notification 1914, which promulgated that the Assam Frontier Tracts Regulation of 1880 would extended to the hills inhabited or frequented by Abors (Adis), Mishmis, Miris, Singphos, Nagas, Khaptis, Akas, Daflas (Nishis) and Bhutias.<sup>3</sup> these hill areas were separated from the then Darrang and Lakhimpur Districts of Assam, and as a

<sup>1</sup> See Subansiri District Gazetteer (Shillong 1981), pp.90, 91, 93.

<sup>2</sup> See East Siang and West District Gazetteers (Shillong, 1994), pp.84-86, 92-93 of M.S'

<sup>3</sup> "Abor is the old name for Adis. Miris are a section of the Adis mostly settled along the foothills and the adjoining plains. Mishmi includes the Idus, Digarus and Mijus of the Lohit District. Bhutia is a general name for Bodic groups and here refers to the Monpas and Sherdukpens of the Kameng and the Membas, Khambas of the Upper Siang and the Meyors of the Anjaw District. The Daflas are a large groups spread over a wide tract stretching from the Eastern half of the Kameng in the west to the eastern boundary of the Subansiri region in the east, under various local names such as Bangni, Nishi, Nishang Etc. Akas are a small but prominent tribe – akin to Khoas and Mijis. Naga is a 'general' name for tribal groups south and east of the Brahmaputra valley – and include the Tangsas, Noctes and Wanchos of the Tirap District. Singphos belong to Changlang and the Khaptis to the Lohit District." – See P.N. Luthra, Constitutional and Administrative Growth of the North-East Frontier Agency, (Shillong, 1971), pp.9-10. Footnote.

result the North-East Frontier Tract consisting of the following three administrative units came into existence.

- (i) The Central and Eastern Sections, North-East Frontier Tract,
- (ii) The Lakhimpur Frontier Tract,
- (iii) The Western Section.

In 1914, the first and third units were each placed under the charge of a Political Officer and the second unit under the Deputy Commissioner, Lakhimpur District, in addition to his own charge. The Political Officer of the Central and Eastern Sections had his headquarters at Sadiya, while the Political Officer of the Western Section was stationed at Charduar.

In 1919, on the recommendation of Beatson Bell, the then Chief Commissioner of Assam, the Central and Eastern Sections was renamed as the Sadiya Frontier Tract and the Western Section as the Balipara Frontier Tract. The Lakhimpur Frontier Tract, however, continued to be known as such. This position held well till 1937 during which period certain areas were either excluded from or included in the so-called North-East Frontier Tract.

In 1921, all the frontier tracts of Assam were declared 'backward tracts' in which, under the new Government of India Act of 1919, only such laws would operate as the Governor in Council might direct. The Government of India Act of 1935 made special provisions for the administration of these hill areas up to the international boundary whereby the erstwhile 'backward tracts' were reclassified as 'excluded' or partially excluded areas. In 1937, the Balipara, Sadiya and Lakhimpur Frontier Tracts came to be known collectively as the excluded areas of the province of Assam under the provision of Section 91 (1) of the Government of India Act of 1935, which was given effect to by the Government of India (Excluded and Partially excluded Areas) Order of 1936. Under the Section 02 of the 1935 Act these excluded areas came under the charge of the Governor of Assam who administered them in his discretion under the General control of the Governor-General.

"In the year 1943, a new administrative charge was created with certain areas from the Lakhimpur Frontier Tract and the Sadiya Frontier Tract and was named as the Tirap Frontier Tract. The Tirap Frontier Tract was placed under a separate Political Officer with headquarters at Margerita. In 1946, the Balipara Frontier Tract was divided for administrative convenience, in to the Se La Sub-Agency and the Subansiri Area. In 1948, the remaining portion of



the Sadiya Frontier Tract was bifurcated into two separate administrative charges, namely, the Abor Hills District and the Mishmi Hills District."

In the year 1943, it was felt that these areas should be brought under normal administration and developed through the policy of gradual penetration of the administrative machinery. Consequently, it was considered essential that above the Governor's Secretary, there should be an Adviser to the Governor of Assam which post was accordingly created in that year directly by the Government of India. The office of the Adviser was first established in 1943 and it was concerned with the administration of North-East Frontier Tract"<sup>1</sup>.

Since, 1937, the excluded areas as already stated, were administered by the Governor of Assam, through the Political Officers and the Deputy Commissioner of Lakhimpur.

### **Freedom Movement**

The national upsurge for freedom had its ripples in Arunachal Pradesh particularly in undivided Siang District. It is important to note that several leading personalities of the Adi community had participated in the freedom movement.

Late Moji Riba and his younger brother late Moje Riba of the Daring village in the Basar Sub-Division of the present West Siang District were the torch-bearers of the Indian freedom struggle in Arunachal Pradesh. The Ribas and a score of Congress members were arrested and kept by the British under custody as a punishment for their active participation in the freedom movement and hoisting of the Congress Flag in a number of villages. Both Shri Moji Riba and Moje Riba were awarded *Tamra Patra* for their important participations as freedom fighter.<sup>2</sup>

### **Indian Independence Act, 1947**

Immediately after the transfer of power in 1947, the Governor of Assam was divested his discretionary power in respect of the North-East-Frontier Tracts and the Government of Assam assumed administrative jurisdiction over the area by virtue of the provisions of the Indian Independence Act, 1947. The administration, however, continued to be carried out by the Governor on the advice of the Chief Minister, who was then called the Prime Minister of Assam.

<sup>1</sup> P.N. Luthra, Constitutional and Administrative Growth of the North-East Frontier Agency (Shillong, 1971)pp.11,14.

<sup>2</sup> For details see "The Freedom Fighter Speaks", by C.R Barpatra Gohain: Published in Arunachal News, September, 1978,pp 24-28.

### ***Main Events of National Importance After 1947***

#### **The Bordoloi Sub-Committee**

As suggested by the Cabinet Mission, the Constituent Assembly set up a Advisory Committee to deal with the rights of minorities, the rights of citizens, and questions relating to the administration to the Tribal Areas, Excluded Areas and Partially Excluded Areas.<sup>1</sup>

The Advisory Committee further constituted a Sub-Committee under the chairmanship of Shri Gopinath Bordoloi, the then Chief Minister of Assam, with a view to study the various problems and demands of the tribal people of Assam including North-East-Frontier Tracts. The Committee met with a number of tribal leaders, representing different tribal communities including the leaders of present Arunachal Pradesh. The Committee submitted its report with recommendations in 1947.

The Constitution of India, which came into force on the 26th January, 1950, made detailed provisions under the Sixth Schedule for the administration of the whole area now known as Arunachal Pradesh. The Constitution brought about a change in the administrative set-up of the 'excluded areas', and accordingly the North-East Frontier Tract comprising the Balipara Frontier Tract, Tirap Frontier Tract, Abor Hill District and Mishmi Hills District was administered by the Governor of Assam acting as the agent of the President of India under the provisions of paragraph 1 of the Sixth Schedule to the Constitution and Part B of that Schedule.

"In the year 1951, the plains portion of the Balipara Frontier Tract, Tirap Frontier Tract, Abor Hills District and Mishmi Hills District was transferred to the administrative jurisdiction of the Government of Assam. The afore-said areas minus the transferred plains portions of the Frontier Tracts together with the Naga Tribal Area was thereafter renamed collectively as the North-East Frontier Agency".<sup>2</sup>

Under the North-East Frontier Areas (Administration) Regulation of 1954 the north-East Frontier Tract came to be known as the North-East Frontier Agency, and according to this Regulation the administrative units were also reconstituted and renamed with redefined boundaries. The administration of

---

<sup>1</sup> Constitutional History of India, Vol.III.A.C. Banerjee, page, 361.

<sup>2</sup> P.N. Luthra, Op.cit.pp.11-12.

the North-East Frontier Agency was carried on by the Governor of Assam as the agent of the President of India.

The North-East Frontier Agency was divided into six administrative divisions namely, Kameng Frontier Division, Subansiri Frontier Division, Siang Frontier Division, Lohit Frontier Division, Tirap Frontier Division and the Tuensang Frontier Division. In 1957, the Tuensang Frontier Division which was the integral part of the North-East Frontier Agency was added to Naga Hills when it was granted a new administrative unit known as the NHTA on December, 1st 1957.

### **Chinese Aggression of 1962**

In October, 1962 the Chinese forces suddenly attacked Indian territory along the North-East Frontier Agency, crossing the Mc Mahon Line. This incident created a great sensation all over the country. However, the Government of China declared unilateral ceasefire and retreated.

As a result of Chinese aggression, the Government of India adopted several measures in the field of administration and accelerated pace of all round economic development of Arunachal Pradesh (the then NEFA).

The North East Frontier (Administration Regulation), 1965 brought some changes in the existing administrative pattern of NEFA. Hitherto known divisions of the North-East Frontier Agency were designated as districts, namely Kameng District, Subansiri District, Siang District, Lohit District and Tirap District. The designations of the Administrative Officer were also changed as Deputy Commissioners, Additional Deputy Commissioners and Assistant Commissioners. Thus all the Divisions of the NEFA were renamed as Districts and put under the control of the Deputy Commissioners.

Prior to 1965, the administrative control of NEFA was vested with the Ministry of External Affairs, Government of India, but after the enforcement of North-East Frontier (Administrative Regulation) of 1965. The control of the territory was vested with the Ministry of Home Affairs.

### **Panchayati Raj**

India is a country of villages where over two-third of its population lives in the rural areas. So, the progress and development of the country cannot be achieved unless the rural masses are buoyed in all fields and their participation is ensured. Arunachal Pradesh being purely tribal State needed more at-

tention as regards to decentralization of powers. As such in harmony with the democratic self-governing traditions of the people as manifested in their tribal councils, a panchayat system of local self-government has been introduced in the district under the provision of the North-East Frontier Agency Panchayat Raj Regulation, 1967 (Regulation 3 of 1967) as amended by the North-East Frontier Agency (Administration) Supplementary Regulation, 1971. The Regulation 3 of 1967 aims at establishing the panchayat system by investing the various bodies constituted under the provisions of the Regulation with such powers and authorities as may be necessary to enable them to function as units of self-government. It offers opportunities to the people to take effective parts in the administration and development. The Regulation provides for the districts a three-tier structure of self-governing bodies, namely Gram Panchayat, Anchal Samiti and Zila Parishad. The Gram Panchayat is the unit of the panchayat system of self-government at the village level, the Anchal Samiti at the block level and the Zilla Parishad at the district level. It has been defined in the Supplementary Regulation of 1971 that "*Gram Panchayat means a body of persons elected according to the tribal customary methods by the residents of any village or a group of village*". The 1967 Regulation also provided for constitution of an Agency Council in the erstwhile North-East Frontier Agency.

A Four Member Committee was set up in April, 1964 under the chairmanship of Late Daying Ering -formerly Union Deputy Minister--to study the system under which authority was being exercised by different indigenous tribal institutions and make its recommendations for adoption of Panchayati Raj system in Arunachal Pradesh (the then NEFA) through legislation. The Committee recommended for establishment of three- tier Panchayati Raj Institution viz Gram Panchayats, Anchal Samitis and Zilla Parishads. On acceptance of recommendations, the President of India promulgated the NEFA Panchayati Raj Regulation, 1967 w.e.f. 2nd October, 1968, under Article 243, Part IX of the Constitution of India, making provision for constitution of three- tier Panchayati Raj Institutions. During last three decades of existence of Panchayati Raj Institutions, elections were held regularly for seven times since 1968 to 1992 under the said Regulation. But consequent upon 73rd Constitution Amendment Act, 1992, the new State Act was to be introduced, as the Panchayati Raj Institutions constituted under NEFA Panchayati Raj Regulation 1967 was dissolved from 14th September 1997. The Panchayati Raj election in the State (except Tirap District) under the new constitutional provision was held for the first time on 2nd April, 2003, after the gap of over five years from its dissolu-

tion. And again on 26th May, 2008, over 5.40 lakhs electorates have exercised their franchise throughout the State in 1852 polling stations to elect 161 Zilla Parishad Members (ZPMs), 1779 Anchal Samiti Members (ASMs) and 7425 Gram Panchayat Members (GPMs). It is worth mentioning that 33 percent of seats in all three-tier are reserved for women.

The Constitution (73rd Amendment) Act, 1992 marks a new era in the federal democratic set-up of the country and provides constitutional status to the Panchayati Raj Institutions. Gandhiji's dream for "Gram Swaraj" has been translated into reality with the introduction of three-tier Panchayati Raj system to ensure people's participation in the great task of rural reconstruction.

The Arunachal Pradesh Panchayati Raj Act, 1997 has come into effect from 14th November, 2001. Consequently, the State Election Commission (SEC) was also been constituted for supervising and smooth conduct of Panchayati Raj elections from time to time.

The Arunachal Pradesh Panchayati Raj Act, 1997 mandated provisions for establishment of Gram Sabha / Gram Panchayat, Anchal Samiti and Zilla Parishad with five years tenure. There is also provision for setting up of the State Finance Commission (SFC) to recommend measures for allocation of funds to Panchayati Raj Institutions. The Act also envisages empowering the local bodies in determination of taxes, duties, tolls and receiving grants-in-aid. All aspects of devolution of financial powers to the Panchayati Raj Bodies shall be under the purview of the State Finance Commission. Sufficient power and authority has been enshrined for the Panchayati Raj Institutions to enable them to function as institution of self-government. The programmes of poverty alleviation shall have to be under direct control of such institutions. Works like preparation of plans, selection of beneficiaries, implementation and monitoring of schemes are to be vested with Panchayati Raj Institutions.

Panchayati Raj Institutions in Arunachal Pradesh has achieved another milestone with a pronouncement of decision by the State Government to give financial autonomy as per the Arunachal Pradesh Panchayat Raj Act, 1997. The Chairpersons of Gram Panchayat (GP), Anchal Samiti (AS) and Zilla Parishad (ZP) have been authorized to issue sanction orders to the tune of Rs. 50,000, Rs. 1,00,000 and Rs. 3,00,000 respectively on the strength of government approval and estimate sanctions. The categories of officers like Circle Officers, Extra Assistant Commissioners, Sub-Divisional Officers and Additional Deputy Commissioners have been designated as Member Secretary of

Gram Panchayats, Anchal Samitis and Zilla Parishads respectively. The available staffs in the office of Member Secretaries shall have to work as functionaries for the Panchayati Raj Institutions. These Member Secretaries would be responsible for maintaining account of payment and submit certificates as per District Rural Development Agency (DRDA) norms to the various agencies.

Meanwhile, the State Government have handed over 29 items to Panchayati Raj Institution as per activity mapping, which as per Article No. 243 G of the Constitution are as under:

| Sl. No. | Item                                                                                        | Sl. No. | Item                                                                                 |
|---------|---------------------------------------------------------------------------------------------|---------|--------------------------------------------------------------------------------------|
| 1.      | Agriculture (including agricultural extension).                                             | 16.     | Poverty alleviation programme.                                                       |
| 2.      | Land improvement, implementation of land reforms, land consolidation and soil conservation. | 17.     | Education (including primary and secondary schools).                                 |
| 3.      | Minor irrigation, water management and watershed development.                               | 18.     | Technical training and vocational education.                                         |
| 4.      | Animal husbandry, dairy and poultry.                                                        | 19.     | Adult and non-formal education.                                                      |
| 5.      | Fisheries.                                                                                  | 20.     | Libraries.                                                                           |
| 6.      | Social forestry and farm forestry.                                                          | 21.     | Cultural activities.                                                                 |
| 7.      | Minor forest produce.                                                                       | 22.     | Market and fairs.                                                                    |
| 8.      | Small scale industries (including food processing industries).                              | 23.     | Health and sanitation (including hospital, primary health centres and dispensaries). |
| 9.      | Khadi, village and cottage industries.                                                      | 24.     | Family welfare.                                                                      |
| 10.     | Rural housing.                                                                              | 25.     | Women and child development.                                                         |
| 11.     | Drinking water.                                                                             | 26.     | Social welfare (including welfare of the handicapped and mentally retarded).         |
| 12.     | Fuel and fodder.                                                                            | 27.     | Welfare of the weaker sections (particularly Scheduled Castes and Scheduled Tribes). |
| 13.     | Roads, culverts, bridges, ferries, waterways and other means of communication.              | 28.     | Public Distribution System (PDS).                                                    |
| 14.     | Rural electrification (including distribution of electricity).                              | 29.     | Maintenance of community assets.                                                     |
| 15.     | Non-conventional energy resources.                                                          |         |                                                                                      |

Under the provisions of the North-Eastern Areas (Regulation) Act of 1971, the North-East Frontier Agency was separated from Assam and formed as an Union Territory on January 20, 1972, the date from which the territory came to be known as Arunachal Pradesh. Subsequently, under the provisions of the North-East Frontier Agency (Administration) Supplementary Regulation, 1971, a Pradesh Council was constituted in place of the Agency Council which was functioning immediately before the commencement of this Regulation. But with the enforcement of the Constitution – 37th Amendment Act, 1975, the Pradesh Council has been replaced by the Legislative Assembly functioning in the Union Territory of Arunachal Pradesh from August 15, 1975. Thus the Pradesh Council was dissolved and replaced by the Legislative Assembly with the existing members of the Pradesh Council.

The Government of Union Territories Act, 1963 (20 of 1963) as amended by the Government of Union Territories (Amendment) Act, 1975 (29 of 1975) both coming into force in Arunachal Pradesh also from the 15th August, 1975 provides two parliamentary seats in the House of the People, i.e. Lok Sabha and one in Rajya Sabha for Arunachal Pradesh.

The two territorial Parliamentary Constituencies into which the Union Territory of Arunachal Pradesh has been divided for the purpose of elections to the House of the People or Lok Sabha are (1) Arunachal East and (2) Arunachal West.

The first ever General Election in Arunachal Pradesh for constituting the sixth Lok Sabha was held in the month of March, 1977. On the other hand, the maiden General Election to the Arunachal Pradesh Legislative Assembly was held in the month of February, 1978. There is now an elected Government in Arunachal Pradesh with sixty members in Legislative Assembly formed by the representatives of the people, which is a fact of great historical importance and a proof in itself of the progress achieved by them since Independence.

Arunachal Pradesh stands bravely as sentinel to the North-East border of the country facing Burma (Myanmar), China and Bhutan. To fulfill the political aspirations and long desire of the people of the territory and also to draw them further into the mainstream of national life which would offer them opportunity to work with the rest of the country under prescribed constitutional line, the Government of India decided to grant Statehood to Arunachal Pradesh. Accordingly, on February 20, 1987, the Union Territory of Arunachal Pradesh has attained the Statehood as twenty fourth State of Indian Union.

~~~~~

## CHAPTER – III

# AGRICULTURE

### INTRODUCTION

The mountainous terrain of Arunachal Pradesh is inhabited by different tribes. Barring only 17 towns, the entire area is rural. An overwhelming 79.24% of the population lives scattered in villages, the total number of villages being 3,863 (Census 2001) which are grouped under 85 Integrated Rural Development Blocks. Agriculture is the primary occupations of the people. The cultivators constitute 60.36 per cent of the total main workers population. According to the census of 1991 and 2001, the number of cultivators to the main worker's engaged in different economically productive activities are as follows in table A-1:

**Table A-1**

Total population		Total number of workers		Cultivators		Percentage of cultivators to total workers	
1991	2001	1991	2001	1991	2001	1991	2001
8,64,558	10,96,702	3,99,782	4,82,206	2,41,308	2,81,882	60.3	58.44

The above table-A-1 clearly indicates that a high percentage of the working people are engaged in cultivation. Obviously, agriculture is the mainstay of the people, and it determines their socio-economic relations and socio-cultural life, customs, rituals, festivals and land tenure system.



## MODE OF AGRICULTURE

### Shifting cultivation

The people of Arunachal Pradesh by and large practice a 'slash and burn' method of agriculture known as shifting cultivation or Jhum as it is termed in this part of India. The tribes of this region have different terms for it. Jhum is practiced on the rainfed slopes of forested hills and dales. Jhumming is not merely a tribal mode of food production in the hills; it is in fact vitally linked to their socio-cultural life, customs and rituals, festivals and land tenure system. In short, the tribal life and culture in this region is in a way an expression of shifting cultivation, which is the prevalent mode of their agriculture and by which they make their living. The difference between shifting and sedentary or permanent cultivation lies precisely in the relations of production, ownership of cultivable land and the type of tools used.

The shifting cultivation is practiced not only in Arunachal Pradesh but also practiced in the entire hill areas of Assam, Manipur, Meghalaya, Mizoram, Nagaland and Tripura in the North Eastern Region shown in table B-1 and in some parts of Andhra Pradesh, Madhya Pradesh, Bihar, Orissa etc of the Indian sub-continent. In other parts of the world, most of such cultivation areas are within the tropics, notably in the Amazon basin and adjacent areas of South America, in most regions of inter-tropical Africa, in most of the less populated parts of South East of Asia, in the highland areas of Manchuria and Korea and in South West China. (Ganguly, 1969)

#### Scenario of Jhum cultivation in North Eastern Region

Table B-1

State	Annual area under jhum cultivation (sq.km.)	Fallow period (In year)	Minimum area under jhum cultivation one or other (sq.km.)	No. of families practicing jhum cultivation
Arunachal Pradesh	700	3-10	2,100	54,000
Assam	696	2-10	1,392	58,000
Manipur	900	4-7	3,600	70,000
Meghalaya	530	5-7	2,650	52,290

Mizoram	1,630	3-4	1,890	50,000
Nagaland	190	5-8	1,913	1,61,046
Tripura	223	5-9	1,115	43,000
Total	3,869 (1.5%)		14,660 (5.7%)	4,43,336

Source: Arunachal review Vol-VIII, March-May 2007 No. 211 p-1

Shifting cultivation in the north eastern regions has been termed as primitive agriculture, slash and burn agriculture, bush-fallow cultivation, fire farming, nomadic agriculture and so on. Despite the variations in the selection of crops, land, soil etc., the shifting cultivation has three widely shared characteristics over the world- (1) the felled trees or slashed bushes are burnt, (2) the ash are utilized in the cultivations, and (3) the following of the clearing. Conklin (1957) defines shifting cultivation as 'any agricultural system in which fields are cleared by firing and are cropped discontinuously'. The shifting cultivation widely practiced in the hills of Arunachal Pradesh is in fact more labour intensive than the 'plough agriculture' in the plains. The strenuous job of felling trees on the patch selected for tillage, cutting and clearing jungles, burning the debris when dry, clearing the burnt patch of the charred logs and constructing a strong jungle-wood fence all these act are generally done by the men-folk. The women take part when the plots are ready for sowing. The day to day care of the plots is the responsibility of the women in which most of their time is spent on weeding. The women also do hard work together with men at the time of harvest and bringing the crop home on their back over the hilly terrain involving back-breaking climb. In Arunachal Pradesh, women share almost equal responsibility with men in producing food by way of their participation in the labour force. This is evident from the fact that according to the 1991 census, 45.62 per cent of the cultivators and agricultural labourers in Arunachal Pradesh is represented by women. Whereas, in 2001 census, 76.60 per cent of female workers were working as cultivators and 4.49 percent worked as agricultural laborers in Arunachal Pradesh. Thus only 18.91 percent were engaged in non-agricultural activities. The percentage of female agricultural labour to total female workers is highest in Dibang Valley, closely followed by neighbouring Lohit and is lowest in Tirap.

Site selection for shifting cultivation is a serious job, and is traditionally done by the village elders. In the words of Amalendu Guha (1973), the shifting

cultivator has an understanding of his environment. He knows how many successive crops he can raise from a given plot, and how many years of rest it requires thereafter. Sites are not selected in any given order or sequence. The village elders invariably have choice of sites before them.

In Arunachal Pradesh shifting cultivation is largely done on hill slopes, even on precipitous ones. A day is fixed by the village community for clearing land when all able bodied men turn out for work. Jungle felling being a hard work is undertaken by men-folk. The trees, plants, bushes, shrubs, twigs all are cut in dry winter months and left to dry. The cutting is extremely thorough, no trees are left standing beyond the mere stumps. Fire is set to the debris when dried and it keeps on burning for few days. In case the burning is not thorough, fire is set again in the left out patches. Thereafter, the land is cleared of charred logs and branches, and the wood ash is spread all over for manure. Big logs and even stones are used for demarcating the boundaries of the individual holdings. The forest ensures them of a good supply of firewood. This way the land is ready for cultivation. Depending upon the elevation, sowing starts by the middle of February and continues upto April.

A variety of crops is grown in the shifting cultivation. The choice of crops varies with the agro-climatic conditions, the food habit and the need of the people. The crops include upland paddy, maize, finger millet (*Elusine Coracana*), foxtail millet (*setaria-italica*), job's tear (*coix lachrymal-jobi*), kinds of beans, tapioca (*Manihot U utlissima*), colocasia, yam, sweet potato, pumpkin, papaya, ginger, mustard for leaves, cotton, tobacco, chillies and sesame. In some areas sugarcane also finds a place in the shifting cultivation in Arunachal Pradesh. The people of Arunachal Pradesh do not use edible oils, pulses, sugarcane of the kind as taken by the plain peoples. These crops, therefore, have no place in the shifting cultivations. In a freshly cleaned patch, around the big stumps of trees there is an extra deposit of humus. Such spots are preferred for ginger, tobacco or colocasia. In one corner of the plot other cultivation like papayas are grown, the green fruits of which are boiled and feed to pigs. Thus, the cultivator aims at growing in his shifting cultivation everything that he needs for his consumption, use and at times even for bartering with the neighbouring village. The choice of crops is therefore consumption of need oriented and not market oriented, for generally there are no markets or buyers for their produce in the interior of the hills. Shifting cultivation in some parts of Manipur have started growing maize, cabbages and potatoes as cash crops, and cotton,

sesamum and lately even jute in Tripura. Such a change has, however, not adopted Arunachal Pradesh yet. A patch of shifting cultivation may be cropped for one to three years, and then abandoned. The period of consecutive cropping and fallowing varies from tribe to tribe. In Arunachal Pradesh, generally, a cleared field is cultivated consecutively for two years. In the first year, according to the general pattern, a mixture of crops is taken like maize, millet, beans, chilies, etc. all put together, while in the second year a clean crop of paddy is taken. Thereafter, the patch is abandoned for natural recuperation. As one patch is abandoned every year, another new one is cleared. Thus, two patches are simultaneously cultivated every year, one new while the other one year old. And these two patches are generally quite at a distance from each other, and even from the village itself. This involves long arduous journeys, up and down the hills, to and fro from the cultivation fields and it naturally takes times. Chutia (1977) conducted a detailed study of the socio-economic aspects of shifting cultivation in Shimong and Gette village under Yingkiong Circle in the Upper Siang district. He reports that the nearest patch of the shifting cultivation was at a distance of about 2 km to 10 km away from the village.

The period of fallowing of the shifting cultivation patches varies from village to village. It depends on two important factors: one is the cultivable land area held by the village and the other is the pressure of population. There is no denying the fact that population in Arunachal Pradesh is on the increase. The 2001 census puts the growth rate of population in Arunachal Pradesh between 1991 and 2001 to 26.21 percent which is high. Due to increasing population, the period of fallowing tends to shorten, and obviously, shorter the period of fallowing, lesser is the natural recuperation of the soil, and finally less is the productivity. In some villages the period of fallowing has come down to only about five years, for instances, at Kaimai, a Nocte village in the Tirap District, and while in some other it may extend to 20 years as at Shimong in the Upper Siang District. Even otherwise, the yields of crops in the shifting cultivations are relatively low.

A casual visitor to the hills of Arunachal Pradesh, particularly when one is flying over the hills ranges, looking at taking a fleeting view of the shifting cultivations on the hill slopes without any visible signs of soil conservation measures, will most naturally conclude that the hill tribal cultivators of Arunachal Pradesh are completely oblivious of the soil erosion factors and it is not true. The indigenous agricultural tools used by the cultivators in shifting cultivation are, however, of handy simple types, that they do not upset the soil. They make

a hole in the soil by a pointed stick and dibble the seeds therein. This method hardly disturbs the soil. For weeding they use an indigenous haed hoe of flat iron of nearly 7 to 8 cm, curbed inwardly. The soil is scratched with it to remove the weeds at their tender stage. In some cases, they take a split bamboo nearly 5 cm wide, and make a loop of it. The two ends of it are tied together to make a sort of a handle. This they use in removing the weeds by scratching it over the soil. Scratching does not loosen the soil. Theoretically, unburned logs placed across the slopes help in checking soil erosion, but then such logs can become the handy-holes of rats.

The shifting cultivation fields are rather far from the villages involving long-walk on difficult terrain. The harvests have naturally to be carried back to the village. Most of the tribes in Arunachal Pradesh do not domesticate their cattle, not to speak of stall-feeding them. The cattle are left at large, and forage around in the nearby forests. The people, therefore, do not need paddy straw or any crop residue for that matter. This explains why they do not use sickle for harvesting paddy. All that they need to carry to their village are the paddy or other grains. It is not necessary for them to harvest paddy crop with stalks as close to the ground level as is done in 'settled agriculture'. Therefore, they both strip the grains off the panicles by hand or cut the grain-laded panicles by a sharp pen-knife and put those in a conical basket slung on their back. The panicles are threshed under feet, winnowed and cleaned in the fields before they carry the grains on their back to the village granaries involving back-breaking climbs.

Big hatchets are generally used for falling trees for clearing a patch for cultivation. Its shape and size varies from tribe to tribe. Heavy felling axes, introduced by the agriculture department, are also being used for felling trees. Tree stumps are never uprooted and removed from the site. Instead of deep cutting which would cause severe soil erosion, the stumps are allowed to dry and decay. Tools, like 'khurpi' (a hand hoe), spade, pack-axe and crow-bar are not used in the shifting cultivation as soil of them make deep cuts in the soil and erode it.

No studies in the relationship between family size and crop yields have been conducted in Arunachal Pradesh. Goswami (1970), however, conducted such a study near Aizwal, in Mizoram. He concludes that the average yield of paddy in shifting cultivation increases with the increase in the size of the family working on it. According to him, large families are considered as an asset than

liability and as the distribution of land and production are requirement-oriented, the division of a family does not create situation of economic instability.

Out of total population (2001 census) of 10,96,702 cultivators, agricultural labourers and those engaged in livestock, forestry, fishing, hunting and plantation, orchards and allied activities total up to 4,82,206. The density of cultivators and allied workers in Arunachal Pradesh, thus work out only to about 5.6 per sq.km with a small working force in a very difficult terrain, where quite long time is spent daily on marching to the cultivation patches and back to the village.

Elwin (1960) felt that shifting cultivation is the 'only practical method of cultivation on the steep slopes of the hills, which is closely linked with social, custom, mythology and religion'. He contented that the floods which frequently devastate the plains of Assam are not due to the practice of shifting cultivation in Arunachal Pradesh. The conditions of rainfall, humidity and temperature in the shifting cultivation areas of Arunachal Pradesh are so favourable that no clearing remains without a vegetal cover for any length of time. Immediately any area goes fallow, it is covered with some kind of vegetation which checks erosion and the rain water run-off. However, the area under cropping at any one time is estimated at only 3 to 4 percent of the total area of the territory. It is the loss of soil fertility, rather than the danger of soil erosion and leading, which is the real problem.

The Dhebar Commission (1961) felt that the total replacement of this system, if it comes at all, will be long term processes. The National Council of Economic Research in its report on the Techno-Economic Survey of NEFA, 1967, observed that shifting cultivation is likely to stay in this region for a long time to come. It suggested recognizing this and planning the development programmes accordingly. Cultivation practice, though technical in nature, are molded by the social and cultural factors. The council suggested two main approaches: preventing the shifting cultivation cycle from shortening any further and replacing it by permanent cultivation.

#### **Permanent and terrace cultivation**

The plan for agricultural development in Arunachal Pradesh aims at bringing increasingly more areas under permanent cultivation by encouraging the farmers to undertake terrace-rice and wet-rice cropping in areas where it may prove to be more productive than Jhumming. The transition is to take

**Classification of area & land use statistics in respect of Arunachal Pradesh  
as per 1995-96 agriculture census**

**Table C(1)**

District	Geographical Area in sq.km	Total area under operation	Forest area	Land not available for cultivation			Other uncultivated land excluding fallow				Fallow land			Net area sown			Total cropped area			Area sown more than once
				Area under agricultural use	Barren & uncultivable	Total (5+6)	Permanent pastures and other grazing lands	Land under misc. crops & groves	Cultivable wastes land	Total (8+9+10)	Other than current fallow	Current fallows	Total (12+13)	Irrigated	Unirrigated	Total	Irrigated	Unirrigated	Total	
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
Tawang	2172	6314	-	474	262	736	428	114	134	676	609	280	889	547	3446	4013	547	6220	6767	2745
W/Kameng	7422	9383	-	246	246	492	425	424	320	1169	578	377	955	396	6371	6767	396	7531	7927	1160
E/Kameng	4134	24667	-	510	509	1019	1100	1100	1566	3766	4857	3270	8127	1500	10255	11755	1500	11460	12960	1205
L/Subansiri	10135	29237	-	948	244	1192	NA	744	1678	2422	1843	1684	3491	4598	17534	22132	4598	23067	27663	5533
K/Kumey	7032	32841	-	4026	4026	8052	2421	2421	3394	8236	5536	3261	8799	1468	6286	7754	1468	8186	9629	1875
Papum pare	2875	18748	-	NA	3135	3135	NA	NA	885	885	1415	930	2345	1460	10923	12383	1460	13352	14785	2402
West siang	7643	59043	-	2720	1730	4450	5509	1385	7625	14519	6675	7000	13675	6800	19599	26399	6800	21808	28608	2209
East Siang	4687	55116	-	4513	2262	6775	7096	2220	5422	14738	9997	3443	13440	4585	15578	20163	4585	21442	26027	5864
Upper Siang	6188	14460	-	330	455	785	NA	750	1520	2270	2335	805	2140	3160	5105	8265	3160	5650	8810	345
Lohit/Anjaw	11402	35444	-	1021	774	1795	1608	825	390	2823	995	632	1827	2751	26248	28999	2751	35919	38670	9671
Dibang Valley/L.D. valley	13029	27318	-	291	291	582	240	240	97	577	1376	1862	3238	1157	21764	22921	1157	25691	26848	3927
Tirap	2362	54833	-	1508	1136	2644	4879	1042	15306	21227	14335	2375	16710	480	13772	14252	480	16173	16653	2401
Changlang	4662	38474	-	435	1050	1485	NA	3079	4671	7768	9370	2024	11394	9454	8273	17827	9454	13261	22715	4888
Total	83743	405878	-	17022	16120	33142	23706	14362	43008	81076	59921	28109	88030	38356	165274	20630	38356	109708	248064	44434

*Sources: Statistical Abstract of Arunachal Pradesh 2004, publish by Directorate of economics & statistics, p-22*

**Classification of area & land use statistics in respect of Arunachal Pradesh as per  
2000-01 agriculture census      Social group: ST, Area (Hect.)  
Table C(2)**

Sl No.	Size Class	Total Holdings		Net Area sown	Area under current fallows	Net area cultivated	Uncultivated land exceed fallow land	Fallow other than current fallows	Cultivable waste land	Total uncultivated land	Land not available for cultivated
		No.	Area								
1	2	3	4	5	6	7	8	9	10	11	12
1	Below 0.5	5134	1396	1139	19	1158	7	8	19	34	204
2	(0.5-1.0)	8646	5679	4649	187	4836	68	134	93	295	547
	Marginal	13780	7075	5788	206	5994	75	142	112	329	751
3	(1.0-2.0)	19596	25921	19709	1378	21087	1112	1525	744	3381	1453
	Small	19596	25921	19709	1378	21087	1112	1525	744	3381	1453
4	2.0-3.0	21517	49245	30867	3012	33879	3477	6304	2413	12194	3173
5	3.0-4.0	14454	46471	26767	3065	29832	3807	6873	2676	13356	3283
	Semi medium	35971	95716	57634	6077	63711	7284	13177	5089	25550	6456
6	4.0-5.0	10593	45091	22765	2874	25639	3803	8591	3872	16266	3186
7	5.0-7.5	13977	83057	35082	5399	40431	10558	17879	7922	36359	6218
8	7.5-10.0	4959	42273	17433	2047	19480	8432	6994	3294	18720	4072
	Medium	29529	170421	75280	10320	85550	22793	33484	15088	71345	13476
9	10.0-20.0	4851	59805	22174	2813	24987	9756	12407	5318	27481	7337
10	20 & above	770	25600	12666	966	13632	5143	2844	1381	9368	2600
	Large	5621	85405	34840	3779	38619	14899	15251	6699	36849	9937
11	All classes	104497	384538	193251	21760	214961	46163	63559	27732	137454	32073

Source: Agricultural census (2000-01)



**Classification of area and land use statistics in respect of Arunachal Pradesh  
as per 2000-2001 agriculture census.  
Table-C(3)**

**Social group: All social group, Area (in Hect.)**

Sl No.	Size Class	Total Holdings		Net Area sown	Area under current fallows	Net area cultivated	Uncultivated land exceed fallow land	Fallow other than current fallows	Cultivable waste land	Total uncultivated land	Land not available for cultivated
		No.	Area								
1.	2	3	4	5	6	7	8	9	10	11	12
1	Below 0.5	5968	1547	1234	24	1258	10	8	21	39	250
2	(0.5-1.0)	9026	5932	4835	193	5028	68	135	100	303	599
	Marginal	14994	7479	6069	217	6286	78	143	121	342	849
3	(1.0-2.0)	20059	26507	20161	1401	21562	1123	1540	762	3425	1522
	Small	20059	26507	20161	1401	21562	1123	1540	762	3425	1522
4	2.0-3.0	21791	49881	31337	3041	34378	3491	6333	2449	12273	3231
5	3.0-4.0	14566	46844	27060	3091	30151	3816	6887	2679	13382	3311
	Semi medium	36357	96725	58397	6132	64529	7307	13220	5128	25655	6542
6	4.0-5.0	10685	45487	23083	2894	25977	3809	8614	3876	16299	3211
7	5.0-7.5	14036	83408	35375	5413	49788	10564	17894	7925	36383	6238
8	7.5-10.0	4964	42312	17464	2048	19512	8436	6997	3294	18727	4072
	Medium	29685	171207	75922	10355	86277	22809	33505	15095	71409	13521
9	10.0-20.0	4874	60074	22344	2827	25171	9761	12463	5335	27559	7345
10	20 & above	814	31646	17317	2031	19348	5143	3166	1381	9690	2607
	Large	5688	91720	39661	4858	44519	14904	15629	6716	37249	9952
11	All classes	10783	393638	200210	22963	223173	46221	64037	27822	138080	32386

**Sources: : Agricultural census (2000-01)**

**District-wise/crops-wise area and production of important crops in Arunachal Pradesh,  
during the year 2005-2006**

**Table C(4)**

**Prod. In MT**

**Area in Hect.**

Sl. No	Districts	Rice		Maize		Millet		Wheat		Pulses		Total	
		Area	Prod. n	Area	Prod. n	Area	Prod. n	Area	Prod. n	Area	Prod. n	Area	Prod. n
1	2	3	4	5	6	7	8	9	10	11	12	13	14
1	W/Kameng	860	760	2832	4377	977	948	676	764	342	312	5687	7161
2	U/Siang	6200	7667	1300	2600	1100	1100	-	-	275	220	8875	11587
3	U.D. Valley	1000	691	1515	1697	300	240	-	-	86	71	2901	2699
4	Lohit	8500	11759	7440	8481	95	85	392	666	1478	1478	17905	22469
5	U/Subansiri	4800	6708	977	981	1669	1575	37	43	323	248	7806	9555
6	K. Kumey	6375	7530	1470	1870	525	630	-	-	150	200	8520	10230
7	West Siang	24000	22900	3457	4384	2622	2284	56	62	410	395	30545	30025
8	L/Subansiri	9500	11600	1672	2189	2504	3602	-	-	880	1296	14556	18686
9	P/Pare	9300	11615	2500	3497	695	861	160	280	410	423	13065	16676
10	L.D. Valley	9700	15035	5600	9520	1340	1005	195	302	480	394	17315	26256
11	Changlang	11905	18667	1460	2090	2060	1668	160	240	579	637	16164	23302
12	East Kameng	8538	3158	2318	3220	495	481	23	46	826	867	12200	7772
13	East Siang	12800	19535	2845	5570	2220	2740	527	1045	937	957	19329	29847
14	Anjaw	3400	5000	3000	2700	585	525	32	65	55	50	7072	8340
15	Tawang	777	1057	722	1408	835	1002	1702	2601	124	133	4160	6201
16	Tirap	4612	2509	2745	3314	4780	3630	16	26	365	605	12518	10084
	Total	122267	146191	41853	57898	22802	22376	3976	6140	7720	8285	198618	240890

*Sources : Annual Operating Plan 2006-2007 , Agriculture, Department of Agriculture, p 11*

**District-wise/crops-wise area and production of cash crops in Arunachal, during 2005-2006**  
**Table D(1)**

**Area in Hect.**

**Prodn in MT**

Sl.No	Districts	Oilseeds		Potato		Vegetables		Chilli		Ginger		Sugarcane		Turmeric		Total	
		Area	Prod.	Area	Prod	area	prod	area	prod	area	prod	area	prod	area	prod	area	Prod.
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
1	W/Kameng	163	173	341	2899	505	4502	43	146	45	68	-	-	-	-	1097	7788
2	U/Siang	85	51	75	375	275	550	225	112	220	1100	85	400	-	-	965	2588
3	U.D. Valley	96	83	40	280	60	123	18	28	12	86	-	-	-	-	226	600
4	Lohit	8500	8160	795	6598	1950	4680	102	142	555	4551	16	176	-	-	11918	24307
5	U/Subansiri	237	142	190	1240	1038	5423	306	168	202	810	-	-	42	165	2015	7948
6	K. Kurney	75	150	-	-	600	1200	6	13	20	140	-	-	-	-	701	1503
7	West Siang	1751	1667	259	1543	291	1546	162	232	66	449	92	2621	-	-	2617	8058
8	L/Subansiri	1180	973	347	3517	2953	5105	152	239	76	484	92	1336	-	-	4800	11654
9	P/Pare	1775	1850	200	1840	1400	3360	65	95	100	726	200	3340	25	175	3765	11386
10	L.D. Valley	3750	1575	140	1120	320	640	33	33	2240	15680	12	240	65	445	6560	19733
11	Changlang	3577	2647	60	390	3222	10842	719	982	475	2707	214	1498	80	408	8347	19474
12	East Kameng	943	1051	95	556	380	1552	79	112	55	227	-	-	-	-	1552	3498
13	East Siang	4456	4173	676	4833	1782	6038	173	186	657	5778	160	6500	193	386	8097	27894
14	Anjaw	-	-	90	720	300	672	20	28	65	455	7	700	10	25	492	2600
15	Tawang	185	233	600	3600	330	1485	65	130	26	65	-	-	12	27	1218	5540
16	Tirap	793767	55	327	1586	9840	-	-	-	-	-	-	-	-	-	2434	10934
	Total	27566	23695	3963	29838	16992	57588	2168	2848	4818	33326	878	16811	427	1631	56904	165505

**Sources: : Annual Operating Plan 2006-2007 , Agriculture, Department of Agriculture, p 12**

## FOOD HABITS

Rice is the staple food of the tribes staying in the lower hills, foothills and the plains. For those in the high hills and living not far from the northern border, wheat is the staple food, and yet for some tribe is maize. Finger millet is grown almost everywhere in Arunachal Pradesh, except in the high hills. Other crops grown by the people are job's tear, sweet potatoes, tapioca very largely grown by the Noctes and Wanchos of Tirap district, yam, chilies, ginger, mustard for leaf only, some kinds of country beans, tobacco, sesame etc. pumpkins and brinjals are two favourite vegetables. Apart from the cultivated crops the nature provides them with some food. They collect flowers of wild bananas, mushrooms, some kinds of tubers including *Dioscorea* species, and roots from the forests. Tender bamboo shoot is their favourite dish.

Elwin (1960) has given a vivid description of the food habits of the people of Arunachal Pradesh. In his words, they have little in the way of sweets. They collect honey, though they have shown curious lack of interest in bee-keeping. Although milk is popular among the Buddhist tribes, who make it into butter and ghee, it is tabooed by the majority of the people who in this resemble their tribal brethren in Africa and other parts of the world. If a mother cannot feed her baby, she will give him rice softened in beer.

The people in NEFA are almost omnivorous in meat and fish. They enjoy the flesh of deer, squirrels, the wild boar, and the birds and rats which they catch in their traps. Some tribes regard dog's flesh and elephant or monkey meat as special delicacies. They usually reserve their domestic animals, such as Mithun (*Bos frontalis*), pigs, cattle, goats and chickens for special occasions of sacrifice or feasting, and put egg also to an important ritual use. They eat certain kinds of snake, frogs and even beetles and bugs.

Both meat and fish are often dried and there are special racks for the purpose above the hearths in every home. One reason for this is that the meat or fish supply commonly comes all at once in large quantities. Hunting and fishing is often a ceremonial enterprise undertaken by the whole village and it is impossible to eat the whole of the catch at one time. So too when a Mithun is killed, even though many people share in the feast, there is sufficient left over to be dehydrated and kept against a period of scarcity.

Most food is boiled, though meat may also be roasted and maize parched in the pan-rice or millet is boiled with vegetables and flavoured with

chilies and salt. The grains are not washed beforehand, the water is not thrown away and the bamboo tube or pot is carefully closed with leaves, a method of cooking which helps to retain Vitamin B in the food. Porridge of rice or millet flour and a kind of rice bread is popular. Rice or millet are pounded into powder, mixed with hot water into a paste, spread on one leaf and covered with another and then baked on fire. It is eaten with salt and chilies, simple chutneys, vegetables, meat or fish.

A dietary survey made by the department of Anthropology in Siang district showed that the Adi's food is richer than that of average Indian peasant. According to Sen Gupta (1960) it contains 16 percent more calories, 17 percent more protein, 70 percent more calcium and 33 percent vitamin A. These additional intakes are reported to be due to the drinking of the rice beer which is rich in protein and minerals'. In spite of this, Sen Gupta pointed out that the diet has a number of defects. The calorie intake is not in accordance with the climate, body size and work, animal protein of high biological value is inadequate: because of the practice of smoking and drying meat, a considerable amount of protein is lost, and calcium is mainly supplied by the green leafy vegetables, the maximum value of which may not be derived by the system' the wild game which was such an important supplement to the diet in the good old days has become scarce now.

### LAND OWNERSHIP PATTERN

The village is a unit of administration in Arunachal Pradesh in its own traditional way. The village community manages and controls all kinds of land within the village, takes care of its boundaries, decides the disputes arising in between the inhabitants of the village, sits on judgement over minor crimes and awards punishment taking precautions, even by disallowing exit from the village and entry to the village when epidemics and epizootics break out, takes precaution against village fires, decides the dates of clearing forest for shifting cultivation and different agri-oriented festivals, erections or maintenance of community fence around the shifting cultivation or permanently cultivated plots. The list of items on which the village community has jurisdiction is exhaustive. To be precise, the village community, of which every household is a member, has a profound influence on the lives of the villagers. They look to their community for social approval, for protection, help, and the decision of the community are invariably honoured.

Every village in Arunachal Pradesh has a well demarcated boundary

marked by natural features like streams, rivers, big trees, hills or even unusually big stones. The boundaries established by mutual agreement with the neighbouring villages are honoured. Pillars or anything of the kind are not constructed to demarcate the boundaries, nor are there the survey maps locating the position of the village and its boundary.

There are different classes of land within the village boundary, and these are determined by the use for which the particular land is put to. One is the homestead land where dwelling houses are built. The village community allots such land. Normally, the dwelling houses are all constructed on a high ground in one place as close to the water points as possible. Depending upon the number of tribal clans residing in the village, the village may or may not be divided into hamlets. If there is more than one clan in the village, the homestead land is divided according to the number of clans. This would, however, not be apparent to a casual visitor. Apart from the dwelling houses, the homestead land may even have small fenced-in kitchen garden plots close to the houses. The villages are normally located on the hill slopes and this gives them the natural advantage of drainage. In the Tirap district the Noctes and Wanchos invariably have their villages located on the hill tops, and this they did long ago as a precautionary measure against inter-village feuds and head-hunting. With the advent of the developmental and welfare administration in the territory, inter-village raids and head-hunting have completely gone. The Noctes and Wanchos have no fear now and they move about freely and carry on their avocation undisturbed.

The other class of land is what the community sets apart for building granaries, a little away from the dwelling houses precisely as precaution against the village fires. Here again the land may be divided between the different clans inhabiting the village. Family or household on homestead land and the land on which granary is built is recognized by the community.

A site or two are set apart within the village at convenient places, for the house that serve the purposes of the community in different ways, such as for holding meetings or village courts, for boys and girls dormitories. The community halls, wherever they exist, are used by touring officials either for night halt or for temporary stay. The government encourages construction of such community halls in the villages where they do not exist by subsidizing the cost of construction or by providing cement for the construction of the piles of the houses with bamboo walls and bamboo or plank flooring. The land and the structure of it are owned by the community. This is by way of encouraging and

supporting community activities.

Then, there are village reserved forests, set apart by the village community either for the entire village or divided amongst the clans in the village. The villagers have the right to appropriate the produce of such reserved forests like cane, edible roots, the tree trunks to serve as piles and posts for their pile-dwellings, so also bamboo if there by a reserve of bamboos, wild fruits, thatch grass and the like. Such village reserved forests also serve as hunting grounds for small or big games as there may be. Rights of the village community on such reserves are absolute. In areas where bamboos are not easily available, individual households raise bamboos in plots away from the village in the forests. Land is cleared and trees are felled for this purpose and fenced after planting bamboo clumps. Individual ownership of such graves is also recognized by the community. Likewise, in some districts individual Palmyra groves also exist. Palmyra leaves are used for roofing the houses. In local parlance, Palmyra is called toko-pat.

Some communities set apart a plot of land, common for the entire village, for the disposal of the dead. The custom for the disposal of the dead varies a great deal from tribe to tribe. In some tribes, the dead body is buried below the pile-dwelling, while in other, they are buried or cremated outside the village and some are hacked into 108 pieces and thrown into a river. Yet in some cases it is burnt and some tribes the dead body place in the platform for exposure and then skeleton are buried.

Communities practicing shifting cultivation have no land set apart for pasture. The abandoned shifting cultivation patches and the forest area within the village boundary serve as pasture for the village cattle's. And those who have taken to cultivation in permanent plots, throw open their cultivation for the cattle to graze on the straw left in the field in January. The fencing gates of the permanent plots remain open till May and June.

The streams and rivers, like the land, are divided amongst the villages and clans, and thus, fishing rights are vested in the village communities. Barring the Buddhist tribes mostly in the east of Arunachal Pradesh others are fond of fishing. Community fishing is an annual ritual of most of the tribes, when almost the entire village goes down to their portion of the river or stream, and catches fish. Preparations for this are made days in advance when barricades are put across the river for diverting water through a narrow channel without letting the fishes to pass through. Fishes are then killed by adding poison to the im-

pounded water, which is made out of certain locally available bark of trees and by spearing the big ones. The catch is then scrupulously divided amongst the households in the village. The community has no objection to the individuals of the village in catching fish for personal consumption by setting indigenous traps in water or even by angling, but the use of explosives for killing fish is banned. Violating of this ban is a serious offence. In some places, particularly in the Padam-Minyong areas around Pasighat, fishing rights held by the community are even sold to individuals on year to year lease. The sums thus collected go to the funds of the community.

In areas where shifting cultivation<sup>1</sup> is practiced, land rights of the cultivable land are vested in the village community or in the Chief wherever the institution of Chieftainship exists. The community divides the land between the clans wherever there is more than one clan in a village. The clan, in its turn, sub-divides the cultivable land amongst the members of the clan. Each household in a village cultivates a plot to which it acquires a heritable right which passes on from father to sons. The same household cultivates the very same plot whenever that particular clearing is cultivated again after years of fallowing. Thus, a household has a fixed plot in each clearing of the hills, which is put to shifting cultivation within the framework of community ownership of land. Every household has a right to appropriate the produce of its own plots. Should however a household migrate to any other village, it cannot possibly give its share of land on rent to anybody in the village. This is not permissible under the customary land laws. Transfer of the left over land to relatives within the clan and the village is subject to approval of the community. Only in the Tirap District in Arunachal Pradesh, and that too in Khonsa Sadar and the Longding Sub-Division, the institution of village Chieftains exists. The Chiefs normally held the land, and they distribute it to their villagers. Even in this case also the households hold the right of cultivating the same plots in all the shifting cultivation patches of the village. In both the cases whether the land rights are held by the village community or by the Chief, the individual rights remain suspended during the fallow periods of the shifting cultivations.

Individual ownership of permanently cultivated plots is recognized by the village community. Such plots belong to the persons who have cleared them by felling forests and developed them. Alienation of such plots is severely restricted as per the local customary land laws. Transfer and sale is permitted but

---

<sup>1</sup> The Jhum Land Regulation 1949 gives a customary right to members of a village or a community to cultivate jhum land by shifting cultivation.



within the village and the clan, and ordinarily not to unrelated clans from different villages or to different tribal groups. Transfer or sale of the permanently cultivated plots to non-tribal people is not permitted under any circumstances.

In all the districts of Arunachal Pradesh one would now find areas, big or small, where the traditional shifting cultivation and the 'plough agriculture' are being simultaneously practiced by the same set of farmers. This is precisely the result of the benefits of 'Plough agriculture' over shifting cultivation which the farmers have realized, but they cannot possibly shift over to the 'plough agriculture' completely because of the lack of physical facilities, the Monpas and the Sherdukpen of the Tawang and West Kameng district, the Galo and the Hill Miris of the Daporijo area and the Nyishi of the Subansiri district, the Galos, the Minyongs, the Pasis and the Padams of the East, West and Upper Siang districts, the Khamtis, the Singphos and the Padams of the Lohit and Lower Dibang Valley districts, the Lungchungs and the Noctes of the Tirap district are the important examples of the tribes who have come to practice two widely different systems of production. But then this has presented no problems of adjustment, for the land ownership in case of shifting cultivation still remains traditionally communal while that of permanently cultivated plots individual. Both are, however, subject to the customary land laws in regard to the matters of transfer of land.

There are, however, exceptions to the land ownership pattern described above, Among the Nyishis and Idu Mishmis, who have extended families consisting of married sons and other relatives, the land is cultivated jointly. An Aka can lay claim to a piece of land by the mere fact of having wrested it from the forest. Among the Khamptis, the whole community tills the land on cooperation basis. The Chief, who in principle owns the entire land around, however, has a portion allotted to him. A Nyishis household may have as many as 150 members. 'In areas, where land is held in communal ownership, clearing of land is done everywhere on communal basis. Selection of land for clearance operation is a matter of great concern and serious thought. Amongst the Padam-Minyongs (of East Siang district), who are mainly agriculturists, patches of land are clearly marked out, and taken up in proper rotation. The Nyishis take up several plots scattered over different locations simultaneously so do the Tangsa of the Changlang district.

Cadastral survey of land has not yet been undertaken in Arunachal Pradesh. Hence, recorded land rights do not exist.

## LAND RECLAMATION AND UTILIZATION

Arunachal Pradesh is one of the world's most rugged mountainous regions. It is a wild tangle of high hills and dense forest, deep and narrow valleys, directed by countless streams and rivers. Here, shifting cultivation on the slopes of hills is practiced extensively. Land reclamation and utilization in this region is comparatively much more restricted and conditioned by geographical and ecological factors than in the level areas. In 1987, only about four percent of the total geographical area was brought under agriculture, while forests covered about 62 percent of the area. In 1987, 31 percent of the gross cropped area was under permanent cultivation, and the rest of the area was mostly under shifting cultivation. In 1999-2000 of the total geographical area of 8.37 million hectares, the cultivated area is about 2,00,000 hectares. Of this Jhum/shifting cultivation is practiced in 110,000 hectares, and 90,000 hectares is under settled cultivation) and in 2005-06, the area under permanent cultivation was 98,500 hectares and 10,77,000 hectares under shifting cultivation.

A glittering example of reclamation and successful utilization of land in Arunachal Pradesh is the irrigated terraces cultivation in the Apatani Valley. The Apatanis cultivate rice in beautifully laid out irrigated terraces. They tap the stream and bring water to their terraces by diverting channels and at places by adequate carved out of the trunks of a particular variety of palm tree which, it is said, need replacement only after 20 years or so. This is indicative of the indigeneness of the Apatanis. They prepare their fields meticulously and possess expert knowledge of manuring in marked contrast to other tribes in the region. They make extensive use of irrigation channels to keep their lands under different states of submersion. According to the location of the land and their separate states of submersion under water, they raise different varieties of rice crop: the early ripening varieties known as *plare*, and *plaping* and the late ripening varieties, *Empu*, *Elang* and *Rado* collectively called Emo. Emo forms the bulk of the harvest and constitute their chief food reserve.

To the inquisitive mind a question arises as to how the Apatanis deviated so much from the mode of cultivation followed by the neighboring tribes, and come to cultivate rice in the irrigated terraces. There is yet no scientific explanation for this. Writing about his travel to Apatani country in 1897, McCabe said; 'The sight is one I shall never forget as we suddenly emerged on a magnificent plateau some ten miles in length, laid out in highly cultivated and artificially irrigated terraces well watered by the Kali river, a sluggish stream some 45 to 60 feet in breadth, with low alluvial banks. The valley was dotted with

isolated hillocks, and pine-clad spurs ran here and there into the valley from the eastern ranges. No crops were on the ground, but the stalks gave ample evidence of the beautiful character of the recent paddy harvest'.

Considerable changes have taken place in the Apatani valley since McCabe visited in 1897. Smaller ones of the isolated hillocks that dotted the valley have been razed to the ground to bring in more land under cultivation. Haimendrof in 1946 had in his study of Apatani agriculture noted, 'the field work is done entirely with iron hoes, digging sticks and wooden batons'. Use of ploughs in the field was unknown. Enterprising Apatanis use tractors for ploughing their fields which they hire from the custom service provided by the government. But then use of ploughs has still not found favour with them. Some of them have however, taken to seasonal fish culture in their paddy plots, known better as paddy-cum-fish culture. This was introduced in the valley in 1964 amidst serious skepticism. By 1977 about 110 hectares were under paddy-cum-fish culture, which reportedly yielded 13 tonnes of fish. There is always a ready market for fish at Hapoli, the township area of the district headquarter of Lower Subansiri, available at rates around Rs. 100.00 Per kg. The varieties of fish thus cultured are all exotic ones, namely, golden carp, mirror carp and common carp. This has helped the Apatani to augment their cash income. Some enterprising Apatanis farmers produced 10 to 15 thousand of fingerlings of exotic carps in their ponds, and they supply them to the Government for extension of paddy-cum-fish culture. The annual requirement was assessed at one lakh fingerlings. In 2005-2006, the area under paddy-cum-fish culture is 1171 hectares and the production of fish inland is 2730 metric tones. (see table E-1)

### FISH PRODUCTION IN ARUNACHAL PRADESH

Table E-I

Items	Unit	Year								
		1997-98	1998-99	1999-2000	2000-01	2000-02	2000-03	2000-04	2000-05	2000-06
1	2	3	4	5	6	7	8	9	10	11
FISH PRODUCTION	Tonnes	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
a) Marine										
b) Inland	Tonnes	21.30	23.01	23.95	25.00	26.00	26.00	26.52	2703.77	2730.00

Source: statistical abstract of Arunachal Pradesh, 2006, page- 58

## COMMUNITY-FENCING

The shifting cultivation is protected against the depredations of stray cattle, wild boars and the deer by strong jungle wood fence. The perimeter of such a fence, depending upon the incline of the slopes, natural barriers, may well be from 5 to 7 km. step ladders are provided at convenient intervals for the cultivators to cross over the fence. In Arunachal Pradesh, barring the Mishmis of Lohit and Noctes and Wanchos of Tirap district, shifting cultivation is done on a contiguous block of hill slope invariably selected by the village community within its boundary. Traditionally, one able-bodied person from each household in the village turns up to construct the fence, the construction of which starts on an appointed day. This is a very difficult job involving a lot of hard labour to make it really strong toward off the ravaging stray cattle. Its maintenance is likewise done on a community basis. Every household is allotted the duty of maintenance of the fence and they do it by turns.

This system of erecting a community-fence has been equally applied to their permanent rice fields in the low-lying valleys and foothills where cultivation of rice is done in big contiguous blocks of land as a result of a long process of agricultural development work. Groups of people having permanent plots for rice cultivation join hands to put up a strong fence on the same principles as they do or did in case of their shifting cultivation. All the stray cattle from the permanent cultivation fields are driven out in the months of May and June, and the fence is well secured. The bullocks are then rounded up from the herd and brought for ploughing. Rice seedlings are transplanted from July to about mid-august, and the crop is harvested by the end of December. By January the produce is taken to the granaries. Thereafter, the gates of the community fence are thrown open for the village cattle to feed on the paddy straw left in the field. Usually farmers harvesting is not done by the sickles but by cutting the stalks from their bases, along with the straw but in Arunachal Pradesh farmers have no need for straw and so they harvest only the grain-laden panicles with pen knives leaving the entire straw standing in the fields. That is why the gates of the fence are opened, after the produce is taken from the field, for the stray cattle to graze freely on it. Thus, for about five months in a year the permanent rice fields remain open for the stray cattle. This is, however, not the case in shifting cultivation which remains completely blocked for the two years of cropping. Rice is the only crop grown in the permanent fields. No winter crops in the rice fields are grown.

This explains the traditional background of the community-fence. To put it in other words, cultivation of rice has the support of the community which takes full responsibility for making all arrangements of its protection from the ravages of stray cattle. Winter cropping is not done, and therefore, continued effort of the community has not so far arisen in this matter. Despite convincing demonstrations in the field, response towards the cultivation of wheat after paddy in the paddy plots has rather been poor even from the enlightened farmers. The reason is not far to seek out. Farmers willing to grow wheat in winter will have to make their own individual arrangement for constructing their own fence round the plots.

## SOIL

The soil in Arunachal Pradesh generally varies from sandy loom to clayey mixed with heterogeneous matrix soil under thick cover of forests containing a high proportion of humus and nitrogen. It is mixed with acidic in certain areas.

"In Arunachal Pradesh the arable land is mostly available on the slopes of the hills. The layer of top soil is thin. Somehow the soil is mixed with stones and sands. Somewhere it is clay comprising black and reddish. In the valleys the soil is alluvial. In the foothill it is sedimentary in character. On the whole there is dearth of sunny, flat and fertile land for cultivation of field crops.

It is known that the red soil on the hill slopes is quite suitable for the cultivation of maize, fruits, vegetable, pulses etc. similarly the soil mixed with sand is suitable for the cultivation of oil seeds and other Rabi crops. The alluvial soil is good and suitable for the cultivation of paddy. It may also be mentioned that the alluvial soil requires heavy irrigation at a comparatively longer intervals. The red soil mixed with stones requires light irrigation at shorter intervals. This holds good with respect to soil mixed with sand. The sedimentary soil also requires heavy irrigation at short intervals in the foothills"<sup>1</sup>

The soil in the Subansiri region extending from the foothills up to approximately an altitude of 762 metres varies from sandy to loamy, and the land is suitable for cultivation of irrigated paddy, maize, millet, vegetables, mustard, ground-nut and tropical and sub-tropical fruits. Rabi cereals can also be cultivated in this area. In the area above the altitude of 762 metres, the soil varies

---

<sup>1</sup> State report on agricultural census, 1976-77 by the directorate of agriculture and rural development, Govt. of A.P. part-I, pp 17-18.

from loamy to clayey with a thick layer of humus at the top. In the Apatani valley humid black and reddish soil are found. The base of the valley consists of geisha and schist overlaid on a wide area with almost horizontally disposed older alluvial deposits comprising partially consolidated both of gravel, interbedded sand, grit, loam, clay and peat. In the upper regions of Siang the soil is usually stony, brown and reddish in colour, while that in the middle portion of the slopes it is loamy and latter developed. In the Lower regions and in the valleys the soil is alluvial and fertile, rich in organic matter and in the foothills it is sedimentary in character. The soil of the river valleys of Siang and Siyom, though rich in humus on the surface, is composed mainly of sand and gravel lying below the top soil. In this soil water percolates quickly, for which manuring is necessary for cultivation of deep-rooted crops. The common agricultural soil is porous, for it contains a high percentage of sand.

In the Lohit region, the soil is acidic in character particularly in the lower Lohit Valley. The fertile soil on the surface is generally a few centimeters thick over the embedded rocks. It is not compact or static, but loose in texture and friable. Sandy in most parts and progressively clayey in nature, the soil is well accreted and porous, but the easy percolation is somewhat controlled due to humus, for which it can absorb and retain water. The nature and production of soil vary according to altitudinal and regional variations. Soil along the foothill areas is alluvial, loamy or sandy loam mixed with canker brought down by rain waters from higher altitudes. The soil in the valley is clay alluvial and rich in organic content. The main characteristic of the soil is acidity which increases with rainfall and heaviness of soil. Along the river banks in Upper Lohit, the soil is generally sedimentary in nature. On the higher altitudes, it varies from sandy soil to rocky. In the old rivers beds along the foothills, there is more accumulation of sandy loam, while black cotton soil prevails towards Roing and Dambuk areas of the Lower Dibang Valley region. All these type of soil on the hills and slopes have a coarse texture possessing the constituents of coarse sand gravels, and low percentage of clay, loam, organic matter etc. and they are assigned to the residual group of sedentary type of soil. In the Hawaii area, marshy patches exhibit a very good type of soil, fertile and congenial, particularly, for the purpose of wet-rice cultivation. The soil in the Dau and Delai valley as also in the lower Lohit valley is suitable for cultivation of maize, millet, sweet potatoes, wheat, local pulses, and soyabeans. In the upper Lohit Valley, the soil is best suited for the growth of paddy (Ahu and Sali), wheat, barley, maize, millet, jower and certain vegetables.

In the Tirap and Changlang regions, the soil in the hills is of variegated nature ranging from sandy to clay loam, but there are patches of peat soil rich in humus. On hill-tops, the soil is generally deep and it varies from clay to heavy loam. On the slopes it is loamy more developed and of slightly open texture. In the foothills, it has mixed featured. The hill-tops are more suited for the temperate deciduous plants. Cereals and other root crops grow on the slopes, paddy can also be cultivated.

### **CROPS UNDER HYV**

The grossed cropped area, as per agricultural census in 1970-71, 1995-96 and 2000-01 was 1,29,775, 1,83,166 and 2,08,042 hectares respectively. The major crops are rice, maize, millets and wheat, and the subsidiary crops include pulses, groundnut and various oil seeds. For details information in connection with the district wise area in the state under the high yielding varieties are shown in the table – F-1, F-2, F-3 and F-4.

The crops may be broadly divided into Kharif seasons crops and the Rabi season crops. The Kharif crops are rice, maize, and millets, and the Rabi crops include wheat, mustard, potato etc.

Rice is the principal crops for most of the tribes. The Monpas are advanced cultivator, who till their fields with ploughs drawn by bullock, fields are filled several times crops-wise until the soil is well pulverized. The Monpas of all areas grow rice either on irrigated fields and terraces or Jhum fields.

The cycle of agriculture activities in the Monpas area of Kalaktang is usually as follows<sup>1</sup>

March – April	: Sowing of millets (Italian or Foxtail) and Broadcasting of paddy
April – May	: Sowing of maize and Millet.
July – August	: Sowing of buckwheat and cow-pea.
August–September	: Harvest of maize and millet.
September – October	: Sowing of barley and harvest of foxtail millet and paddy
November–December	: Harvest of cow-pea, buckwheat and barley.

<sup>1</sup> See the article by Bibhas Dhar, the Monpas of Khalagthang alias, the Tsanglas, published in the tribes of North-East India, (Shillong, 1984) edited by S. Karotemprel, p. 303

**District-wise area and average yield per hectare of HYV crops in Arunachal Pradesh,  
during the year 2003-2004**

**Table-F(1)**

(Area in hect. Yield in qntl.)

District	Rice				Wheat				Maize							
	Area		Yield		Area		Yield		Area		Yield		Area		Yield	
	Total	HYV	Total	HYV	Total	HYV	Total	HYV	Total	HYV	Total	HYV	Total	HYV	Total	HYV
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
Tawang	911	275	13.40	16.00	2025	1950	14.90	15.00	885	500	19.00	20.00	835	-	12.00	-
W/Kameng	859	256	8.40	17.20	679	250	11.30	15.00	3670	2010	15.50	16.00	1300	-	9.70	-
E/Kameng	8510	2540	12.60	16.50	16	13	17.50	17.50	2010	1200	13.40	14.10	445	-	9.10	-
P/Pare	8470	2400	11.60	18.00	133	115	16.50	17.00	2098	1225	13.50	14.00	656	-	1.10	-
L/Subansiry	8460	4015	12.00	14.50	-	-	-	-	1541	1162	12.70	13.20	2374	-	12.90	-
K/Kumey	7434	1715	8.60	15.00	15	12	10.70	12.00	1350	760	12.70	13.50	620	-	10.90	-
U/Subansiri	4550	1416	11.60	15.00	23	15	11.70	12.00	1030	600	18.90	19.50	1055	-	10.90	-
W/Siang	19355	4960	11.50	14.00	75	65	12.80	15.00	3335	1620	12.30	13.40	2554	-	8.40	-
E/Siang	12100	3795	23.10	18.00	464	432	19.60	20.00	2718	1637	19.70	21.00	2170	-	12.20	-
U/Siang	5500	1415	9.80	12.00	-	-	-	950	530	11.60	13.00	1500	-	8.00	-	-
D/Valley	1700	405	10.00	11.50	-	-	-	-	950	530	11.00	13.00	240	-	8.50	-
L/D/Valley	9650	3765	11.50	18.00	175	150	14.90	15.50	5450	3140	18.00	19.15	1320	-	6.40	-
Lohit	14257	5220	13.60	16.75	340	310	17.00	18.50	9058	6070	11.00	12.50	740	-	9.60	-
Changlang	11867	3335	15.60	17.80	205	182	19.10	20.00	918	515	15.60	16.50	2000	-	8.20	-
Tirap	5582	1560	6.90	13.00	-	-	-	-	2737	1215	12.10	13.00	4470	-	8.10	-
Total for AP	119205	36572	13.00	15.98	4150	3494	15.20	16.26	38610	22714	14.10	15.13	22279	-	9.60	-

Source: Arunachal Pradesh economic and statistical-2004, p 24



**District-wise average yield rate in respect of different major crops in Arunachal Pradesh  
during the year 2003-2204**

**Table-F(2)**

**(Yield in Qtls per Hect)**

District	Rice	Maize	Millet	Wheat	Pulses	Oilseed	Potato	Ginger	Turmeric	Chill	S/cane
1	2	3	4	5	6	7	8	9	10	11	12
Tawang	13.40	19.00	12.00	14.90	11.90	12.00	55.50	25.00	6.60	20.00	-
W/Kameng	8.40	15.50	9.70	11.30	9.10	10.60	90.00	15.10	-	34.00	-
E/Kameng	12.60	13.40	9.10	17.50	11.20	10.80	50.60	44.50	-	14.30	-
P/Pare	11.60	13.50	1.10	16.80	10.50	10.10	92.40	79.30	-	13.80	15.36
L/Subansiry	12.00	12.70	12.90	-	13.30	8.00	92.00	69.20	-	15.40	13.49
K/Kumey	8.60	12.70	10.90	10.70	11.70	8.60	71.10	71.00	69.20	13.00	12.90
U/Subansiri	11.60	18.90	10.90	11.70	10.20	11.90	81.50	47.40	17.30	13.10	74.00
W/Siang	11.50	12.30	8.40	12.80	9.80	10.30	60.90	66.70	38.60	15.50	20.43
E/Siang	23.10	19.70	12.20	19.60	10.80	9.40	82.10	82.70	20.00	11.10	39.59
U/Siang	9.80	11.60	8.00	-	8.10	9.40	47.30	66.70	-	12.60	-
D/Valley	10.00	11.00	8.50	-	9.50	8.50	70.00	80.00	-	14.70	-
L/D/Valley	11.50	18.00	6.40	14.90	11.00	9.70	80.00	85.00	62.10	12.00	20.00
Lohit	13.60	11.00	9.60	17.00	11.00	12.00	82.00	90.00	25.00	14.00	10.00
Changlang	15.60	15.60	8.20	19.10	10.60	7.30	55.00	56.50	51.50	15.50	67.20
Tirap	6.90	12.10	8.10	-	9.50	9.60	59.10	46.10	-	12.00	-
Total for AP	13.00	14.10	9.60	15.20	10.80	10.20	73.50	79.40	34.20	14.70	20.53

*Source: Arunachal Pradesh economic and statistical-2004, p 25*

The area and production of High Yielding Variety (HYV) crops during 2002-2003, 2003-2004, 2004-2005, and 2005-2006 are as follows in table –F (3) and table –F (4)

**Table F-3**

Sl. No.	HYV Crops	Production (in 000 MT) during			
		2002-2003	2003-2004	2004-2005	2005-2006
1.	Rice	152.500	154.589	134.950	146.191
2.	Maize	56.441	54.510	54.935	57.898
3.	Millet	14.411	21.326	21.374	22.376
4.	Wheat	6.250	6.320	6.652	6.140
5.	Pulses	7.793	7.455	7.591	8.285
<b>Total Foodgrains</b>		<b>237.395</b>	<b>244.20</b>	<b>225.552</b>	<b>240.890</b>

**Table F-4**

Sl. No.	HYV Crops	Area Coverage (000 Hect.) during			
		2002-2003	2003-2004	2004-2005	2005-2006
1.	Rice	124.584	119.205	121.642	122.267
2.	Maize	40.548	38.610	37.800	41.853
3.	Millet	21.110	22.279	22.400	22.802
4.	Wheat	4.114	4.150	4.278	3.976
5.	Pulses	7.305	6.909	7.046	7.720
<b>Total Area Coverage</b>		<b>197.661</b>	<b>191.153</b>	<b>193.166</b>	<b>198.618</b>

Most of the Monpa farmers of Dirang area practice permanent terrace and do little Jhum cultivation. They are adapt at terrace cultivation, both wet and dry. They grow rice, as stated earlier, on wet fields. Paddy seedlings grown in a separate plot of land in the months of April and May are transplanted in July and August.

November and December are the month of harvest. The other important crops cultivated by them are maize, millet (*eleusine coracana*), wheat and

barley seeds of Maize, pulses and beans are sown in April and June and the crop is harvested in August to October. Harvest of wheat, millet and barley also takes place generally after three months from the date of sowing.

Extensive cultivation, both settled and limited shifting, is practiced by the Monpas of Tawang district. They are progressive farmers, expert in terrace cultivation. Their indigenous method of channelising water for irrigation is remarkable. Crops cultivated by them are mainly wheat, barley, rice, millet, maize and buckwheat. An agricultural activity varies with altitude. Rice cultivation is confined to the lower regions of the valleys. Villagers living in higher regions grow wheat, barley and also potatoes and soyabeans. Chilies are grown abundantly in the Tawang area.

The cycle of agricultural activities in the Tawang region, as observed by Dr. Furer-Haimendorf, is approximately as follows:

January	: Weeding of wheat and barley fields.
February	: Weeding of wheat and barley fields continues. Felling of trees and clearing of Brushwood on plots settled for Jhum- cultivation.
March	: Clearing of Jhum fields continues.
April	: Clearing of Jhum-fields, and burning of brushwood, repairs of Terrace fields, construction or repair of irrigation channels or repair of irrigation of potatoes and Sowing of rice in nurseries.
May	: Sowing of millet and maize by dibbling on Jhum-fields and by broadcasting on ploughed fields.
June	: Harvest of buckwheat and transplanting of millet and rice.
July	: Transplanting of millet and rice, weeding of maize.
August	: Weeding of rice fields.
September	: Sowing of buckwheat.
October	: Harvest of wheat, millet, rice and maize.
November	: Ploughing of wheat and barley fields followed by sowing of wheat and barley in both ploughed fields and jhum fields.

December : No agricultural work except in Lumla circle where wheat is sown"<sup>1</sup>

Rice is cultivated by transplantation of paddy seedling. Seeds are sown first in well-prepared seed-beds in the months of March and April. After a couple of months, seedlings are transplanted in the paddy fields. Radish is grown by the Monpas and Sherdukpens on a fairly large scale. Dried up radish is supplied by them to the plains of Asom.

The cultivators of the Tawang regions are greatly attached to their agricultural pursuits. At the time of harvest, they select best kind of grains for seeds, which they preserve with loving care in baskets covered with mud. Two months later the seeds are dried and finally wetted with water or liquor before sowing. "Throughout the Monpa country and particularly in the Tawang circle, I was impressed by the careful utilization of the land, a phenomenon which reminded me of the intensive land-use typical of the Apa Tanis. There are few patches of land which are not put to some use. However, steep and torn by ravines the terrain may be it is either under cultivation or used as pasture for cattle and ponies, or is covered by privately owned forest. Wherever possible, steep slopes are terraced and used for the intensive cultivation of such crops as potatoes or soyabeans"<sup>2</sup>

The Nyishis, Akas, Hill Miris, Tagins, Monpas, Sherdukpen etc. are jhum cultivators. However, gradually the plough and bullock cultivation in plots of land developed for settled agriculture under the subsidy of the government has been introduced in the East Kameng District and others. Rice, a major food crop, is grown by the respective tribes in the district on their Jhum land as well as wet fields. They cultivate a variety of rice. The common crops in the Aka area are maize and millet. Rice cultivation is limited to a small area. The Akas also grow pulses, French beans, potatoes and sweet potatoes.

The yearly cycle of agriculture activities of the Sherdukpens and the crops they raise are as follows:

July-August	: Beginning of agricultural activities with sowing of millets and weeding of Maize fields.
August-September	: Measure taken for protecting the maize crops from the ravages of animals.

<sup>1</sup> C. Von Furer-Haimendorf, *Highlanders of Arunachal Pradesh* (New Delhi, 1982), p-164.

<sup>2</sup> *Op. cit.*, p-155.

September-October	: Sowing of barley and wheat and harvest of maize.
October-November	: Clearing of jungle for jhum-cultivation and harvest of millets.
November-December	: Harvest of millets continuous and sowing of barley.
January-March	: Winter camping in Doimara for trade with the plains.
April-May	: Ploughing of fields adjacent to village for sowing maize, chilies, Soybeans, pumpkins and mustard.
June-July	: Sowing of maize and millets in nearby fields.

The Sherdukpens in the West Kameng district practiced shifting and settled cultivation and they cultivate food grains and commercial crops but rice is produced in a few quantity because of not suitable in their land.

The Apatanis are progressive farmers. Their mode of rice cultivation by irrigation, as already stated is remarkable. Preparation of soil for cultivation starts from the end of March and continues up to May, while transplanting is done during the period from mid-April to mid-June. The Nyishis do not transplant paddy seedlings. They start sowing seeds in February, and it continues through March and April. Maize is one of the most important crops cultivated by the people of Subansiri, particularly the Nyishis and the Hill Miris. Seeds are sown by dibbling which begins in April and continues till late May and June. Maize is harvested from July to October-November. Millets of both finger and fox-tail variety cultivated in the Jhum-fields are an important crop in Subansiri. Sowing of fox-tail millet is done by broadcasting during the months from February to May. The crop takes about four to five months to mature before harvesting. Yam is cultivated from January to June in the jhum fields. Sweet potato is another important subsidiary crop.

Rice is the staple food of the people of Siang as well as other parts of the Arunachal Pradesh. There are mainly two varieties of Ahu paddy and Sali paddy grown in Siang. While seeds of Ahu paddy, Job's tears and maize are sown by dibbling, finger-millet and fox-tail millet are sown broadcast in between the farm. The time for sowing of various crops may vary from area to area according to climate and ecological conditions. The Ahu paddy cultivated in the jhum fields starts flowing towards the end of April and harvest takes place from June to August. The seed is grown in flat patches of land developed for wet-rice cultivation. Seeds are sown in May-June and seedlings are transplanted towards the

end of July. The crop is harvested in November. A variety of finger millets are grown by Jhumming in all parts of Siang. Millets are important to the people in that they largely supplement their food requirements. Early varieties are sown in May and June. The crops mature in about five to six months before they are harvested from October to January. Sowing, broadcasting and harvesting of fox-tail millet are the same as of finger millet. Maize, a major food crop grown in the jhum-fields, is sown in March and April and harvested in June and July. The green vegetables as they are grown in Siang are of two kinds- summer and winter. The summer vegetables are brinjal, French-bean, bitter gourd etc., while the winter vegetables include pumpkins, country bean, Flat bean, soyabean, white gourd, mustard, onion etc. potatoes and tomatoes introduced later in this area have become popular. The spice crops are chilies and ginger. They are sown mixed with other crops in the jhum fields in March and April and harvested in October and November. Cultivation of sugarcane in northern Siang is very old and there are three recognized varieties. It has been introduced in other areas as well for production of Gur or molasses. Sown in March and April, the crop is harvested in December and January. Besides the food crops some fiber crops are also raised. Cotton is grown in the jhum-fields. Tobacco (*nicotiana Rustica*) is cultivated along with the cotton in the jhum fields of many villages in Siang.

The Mishmis tribe's viz. The Taraons and the Kamans of the Lohit valley and the Idus of the Dibang valley, practice 'sequence of crops' in their fields according to their fertility of soil. Ahu Paddy, millet, maize, yam and soyabean are grown in the first year maize, finger millet and Sali paddy in the following year. In the third year maize, millet or paddy, sweet potato and other are cultivated. Millet is grown immediately after buck-wheat is harvested, and this again is followed by cultivation of upland paddy. The seeds of the major crops are sown broadcast. They also grow other crops, such as wheat, barley, jobs tear, mustard; pulses, tobacco etc. vegetables comprising gourds, potatoes, brinjals, peas etc. are also cultivated in the jhum-fields. The Padams of the Dibang valley grow cotton and mustard successively after the harvest of paddy. Ginger is their commercial crops. The Zakhriings and Meyors of Walong and Kibitho area grow either peas or wheat in the first year followed by paddy, maize and some subsidiary crops in the next year. The Khamptis of Lohit are progressive farmers, and they grow cereals on a larger scale in their wet-rice cultivation fields. They as well as their neighbours the Singphos have been able to produce surplus rice. Paddy is the principal crop where permanent cultivation is practiced. The Khamptis plough their paddy fields mainly with buffa-

loes. They follow the method of transplantation of paddy. The good quality rice which they produce is known as 'Khampti rice'. High yielding variety of rice, namely 'Taichung' and IR-18 are also grown in the Khampti and Singpho areas. In the upper Lohit valley, paddy, maize and millet are generally grown in the permanent and terraced cultivation fields. Finger-millet, which is generally grown in the Jhum- fields, is sown from February to May or June. The crops ripen in about four to five months. Fox-tail millet is cultivated by mixed cropping. The method of cultivation of this crop as practiced by the Mishmis is similar to that of finger millet. Maize is cultivated along with finger millet and other crops. It is usually sown during February to May, and it takes three to four months to ripen. Wheat is cultivated on a limited scale by the Meyors and the Mishmis of the upper Lohit valley. The wheat seeds are broadcasted during September to December and the crop is harvested in April and May.

In Tirap and Changlang, rice is the Chief cereal crop. Millet is grown in the Jhum lands in rotation with maize and millet crops takes place in summer, which is followed by the cultivation of potatoes and root crops like yam, tapioca and arum, paddy is cultivated in a separate plot of Jhum land. The important local vegetables are the mustard leaf, spinach, onion, gourd, pumpkin, brinjal, cucumbers and chilies. The main crops cultivated by the Tangsas are paddy, millet, sweet potato and ginger. Like the Tangsas the Noctes also rely on Jhuming, although wet-rice cultivation is practiced by them on a small scale. Their crops are paddy, millet, arum, tapioca, maize and pulses. The Wanchos also cultivate the same crops.

### AGRICULTURAL IMPLEMENTS

The indigenous agriculture tools are the products of age-old experience and ingenuity of the tribal farmers. These tools are specially designed for agricultural operations in the hills, mainly by slash-and-burn cultivation or Jhum as it is called. The tools are simple, handy and easily operable, on the hill slopes, and they upturn or disturb the soil to a very little extent. The tools commonly used are Dao or machete, wooden or bamboo dibbler and weedier, wooden rake and fork, hatchet, hand hoe, scythe and felling-axe. The Dao is used in all purposive and indispensable instruments for clearance of jungle, felling of trees, and construction of houses, cane and bamboo works and so on. Besides these, bamboo baskets for carrying food-stuff, wooden mortar and pestle for pounding or husking, winnow etc. are also in use.

The Monpas and Sherdukpens also know the technique of animal traction. The Monpas use very large and heavy ploughs with iron shares drawn by bullocks.

The plough used by the Sherdukpens is called Ganga which is drawn by a pair of oxen. It is a wooden plough with a very broad yoke. The Khamptis and Singphos also plough their paddy fields as the plains people plough their fields and the ploughs are generally drawn by buffaloes. The plough of the Zakhring and Meyors is made of a hard wood consisting of three parts- the handle and the body which are in one piece, the pole which joins the plough at the junction of the handle and the body, and yoke, a piece of wood fastened by a rope at right angle to the pole with pegs affixed to prevent it from sliding from the necks of the bullock. The front part of the body is sharpened to a point which is affixed to a share made of pine wood.

Jhuming is subsistence cultivation. The yield per hectare of a Jhum field is comparatively low. It has been observed that food production in this hilly area can be augmented through a process of improvement of the jhum cultivation as well as development of permanent cultivation by scientific method and devices. Use of modern instruments of agricultural production is essential for this purpose. Some improved types of implements, which could be easily handled and also serve as a labour saving devices, were at first introduced. The progressive farmers were provided with modern hoe, felling-axe, pick-axe (khurpi), spade, shovel, jumper, rake, sickle etc free of cost till the 1955 -56 and thereafter on 50% government subsidy. The improved agricultural implement distributed to the farmers include plough tata hoe, jumper felling axe, pick axe, khurpi, shovel, cross-cut saw, sickle, Dao, pruning knife, garden rake and spade. It has been observed that the farmers are fond of using these implements in place of the archaic tools. Modern agricultural machinery, namely tractor, power tiller, pumping set and power sprayer have also been distributed to the farmers (for details see table G-1).

Table G-1 showing the distribution of farm implements and machineries during the year 2004-2005 and 2005-2006.

**Table G-1**

Sl. No.	Items		Unit (in number)			
			2002-03	2003-04	2004-2005	2005-06
1.	Distribution of farm implements and machineries	Nos	3927	1860	2985	-
2.	Subsidy for tractor	Nos	60	50	80	50
3.	Subsidy for power tiller	Nos	-	-	100	-
4.	Watershed development programme in shifting cultivation area	Hect.	207	1610	1500 (13 project)	1500

Source : Draft AOP, Department of Agriculture, 2005-6 and 2006-07, p 24



## SEEDS AND MANURES

Seeds commonly used are of local vegetable or grains collected by the farmers during the harvest, and these are carefully preserved by them for the next crop. Good quality seeds suitable to the local soil are procured from government seed farm, nurseries and other sources. These seeds are introduced into the cultivation fields through demonstration and adaptive trial has been successful in some part of Arunachal Pradesh. Improved and high yielding varieties of seeds supplied to the cultivators are mainly of paddy (Sali and ahu), maize, potato, sugarcane, wheat, vegetables, Shillong variety of maize, hybrid variety of maize, hybrid variety of millet, gram, groundnut, pea and bean. The Monpas being advanced cultivators are fairly selective about seeds to be sown. The farmers of Tawang, in particular, take special care for preservation of best kind of seeds. The seeds of healthy plant are usually procured. The seeds of irrigated paddy are different from those of unirrigated variety. The irrigated paddy seeds in the Apatani valley are of three varieties, viz. early, medium and late. The Apatanis believe that their seeds have evolved through centuries and are suitable to their valley. Cultivation of vegetables such as cabbage, cauliflower, turnip, spinach at Shergoan and Sarli have successfully launched with the collaboration of the National Seeds Corporation.

The people have their indigenous methods of manuring the cultivation fields. Jungles slashed and burnt for Jhumming form a layer of ash on the top soil on which seeds are dribbled on overcast. The soil mixed with the ash serves as manure. The jhum fields are left fallow for a number of years for recuperation of soil fertility by natural processes. The use of cow-dung as manure is known. Besides the cow-dung, the Monpas of Dirang and Tawang used dried oak leaves to manure their fields. These leaves collected and stored during the winter and spread over the fields before cultivation. Sheep-dung is used as a fertilizing substance in some areas. In the Apatani valley, paddy stalks are decomposed under irrigated water which is allowed to stand in the fields for several days. At the time of paddling this decomposed stalk is mixed with the soil to set as fertilizer. Paddy husks are also scattered over the rice fields for manuring purposes. In the millet fields, weeds gathered in heaps are covered with earth for formation of composts. Moreover, weeds growing on hill slopes around the rice fields are burnt every year before the paddy is transplanted. As a result, during the rains the ashes are carried away to the rice fields. The fields are thus fertilized by mineral ash especially potash. In Lohit district, the Mishmis, who practice Jhum cultivation, rely mainly on ash as a fertilizing agent.

They also use house refuges and waste as manure. The Zakhring and Meyors besides cowdung use house waste and leaves of trees as manure. The Khamptis and Singpho use ammonium sulphate, oil cake and borne meal as fertilizer.

Under the Agricultural Development Programmes, the cultivators are persuaded to make compost pits and use of organic manures and fertilizers for better crop. Trials and demonstrations of the manures are also held in the Community Development Blocks to raise the fertility of the soil. There has been a growing demand now for artificial manures and chemical fertilizers.

The district wise consumption of fertilizers in Arunachal Pradesh during the year 2003-2004 is as follows in the table H-1:

Table H-1

District	In term of Material						In term of Nutrients			
	Urea	DAP	SP	MOP	Complex 15:15:15	Total	N	P	K	Total
1	2	3	4	5	6	7	8	9	10	11
Tawang	115.00	25.00	66.86	13.53	25.00	243.39	61.15	24.30	10.75	96.20
West Kameng	133.89	40.00	50.00	20.00	20.00	263.89	71.78	30.20	15.00	116.98
East Kameng	25.00	10.00	20.00	6.00	8.00	69.00	11.02	9.00	4.80	24.82
Lower Subansiri	17.00	15.00	20.00	8.00	5.00	65.00	10.42	10.80	5.70	26.92
Kurung Kumey	10.00	10.00	10.00	4.00	5.00	39.00	8.00	7.00	3.00	18.00
Upper Subansiri	25.00	15.00	20.00	5.00	7.00	72.00	13.25	11.15	4.05	28.45
Papum Pare	18.00	20.00	25.00	10.00	20.00	93.00	10.88	4.15	9.00	24.03
East Siang	75.00	35.00	60.00	15.00	10.00	195.00	42.30	27.20	10.50	80.00
West Siang	70.00	25.00	50.00	15.00	5.00	165.00	37.45	17.75	9.75	64.95
Upper Siang	15.00	15.00	15.00	5.00	10.00	60.00	11.10	10.80	4.50	26.40
Lohit	1000.00	30.00	80.00	22.00	10.00	242.00	52.90	18.10	14.70	95.70
Dibang Valley	10.00	10.00	15.00	0.00	5.00	40.00	5.90	16.00	2.50	24.40
Lower Dibang Valley	55.00	15.00	60.00	5.00	5.00	140.00	30.00	9.00	2.00	41.00
Changlang	50.00	20.00	20.00	5.00	10.00	105.00	28.10	13.90	4.50	46.56
Tirap	15.00	20.00	20.00	10.00	15.00	80.00	12.75	14.65	8.25	35.65
Total for AP	733.00	305.00	531.86	143.53	160.00	1874.28	407.00	234.00	109.00	750.00

Source: Statistical Abstract of AP, 2004, p. 27

## HORTICULTURE

Arunachal Pradesh has a bright prospect for development of horticulture. The soil and climatic conditions in some parts of West Kameng and Tawang as in some other parts of Arunachal Pradesh are conducive to the growth of temperate fruits in the higher regions and citrus and sub-tropical fruits in the lower regions.

The department of Horticulture was separated from department of Agriculture on 1st October 1988<sup>1</sup>. This separation was effected considering the fact that Horticulture as a Profession needs altogether different approach towards dealing with its major subject matter or discipline. Such as pomology (fruit culture), floriculture (vegetables), aromatic and medicinal plants, spices plantation, mushroom etc. hence, these vast subject under Horticulture needs special professional and require entirely different planning for development of these crops in the state. While agriculture primarily deals with the fields crops are perennial in nature. Therefore, it was necessary to create a new department in order to look after the affairs of the cultivation of Horticultural crops with the following objects:-

- 1) To bring progressive more land under fruit cultivation in the state through extensive, motivation of villagers, technical guidance, provision of input and other support services.
- 2) To stimulate Horticulture activities in various agro-climatic zone through government farms and by encouraging private initiative.
- 3) To execute sponsored schemes for weaning way people from shifting cultivation by assisting them in raising Horticulture gardens in cluster.
- 4) To stimulate growth of fruits based industries which may absorb surplus produce.
- 5) To generate self-employment among the educated unemployed youth.
- 6) To build infrastructure for marketing horticulture produce both within and out side of the State.

Arunachal Pradesh is the centre of origin of many present day crops. Some of the important Horticultural crops whose centre of origin lies in Arunachal are Citrus, Banana, Walnut, Kiwi, straw berries and many other barriers, chest nut, rambuttan, pear, persimmon etc. besides fruits, the state is

---

<sup>1</sup> Vide Govt. order No. PD/ES-38/88 dated 30th September 1988.

the storehouse of numerous mushrooms, medicinal plants like Long Piply, citronella etc, flowers and orchids.

As per the climatic and ecological conditions in Arunachal Pradesh, the Horticulture Department prioritized the crop and identified the areas for cultivation of fruits. Apple, Walnut and Kiwi were concentrated in Tawang, West Kameng and Ziro area. Orange was concentrated in Lohit, Tirap, Changlang, Dibang Valley, West Siang, East Siang and Upper Siang. And the rest of the fruits like pineapple, Lemon, Litchi, papaya, banana, plum and grape as well as temperate fruits, such as plum, pear, peach, chilies, almond etc. are grown in different altitudinal zones and the productions of fruit and spices is shown in the table I-1, I-2, I-3 and I-4. In 2003-2004, 1, 37,896 metric tones of fruits were produced.

#### Agroclimatic conditions

**Table I-1**

Agroclimatic Zones	Potential Horticultural crops grown	Districts / Areas
Mild tropical	Litchi, Banana, Guava, papaya, Jack fruit, Coconut, Black, Ginger, Tumeric, Vegetables, patchouli, stevia, citronella, Cinnamon, areca nut etc.	Plains/foothill of Lohit, Changlang, Tirap, lower Dibang valley, east & west Siang, Papum Pare, west & East Kameng.
Sub tropical	Orange, pineapple, grapes large cardamom, safed Musli etc.	Low and Mid hills of west & east Siang, Anjaw, Upper & Lower Subansiri, Tirap, Changlang, P/Pare, K/Kumey, Lohit, upper & Lower Dibang Valley, East & West Kameng.
Sub temperate	Plum, pear, peach, walnut, geranium, tomato, other vegetables	Areas in between mid hills and high hills.
Temperate & Alpine	Apple, walnut, kiwi, peacan, chestnut, cheery, geranium, texus, ginseng, stars anis, saffron etc.	High hills of West Kameng, Tawang, Ziro, Anini, upper reaches of Anjaw, U/Subansiri, U/Siang.

*Source: Annual Report 2004-2005, Department of Horticulture, Govt. of A.P. Chimpu, Itanagar, p-5*

### Area and production of Fruits and Spices during 2004-2005

**Table I-2**

Fruits	Area	Production (MT)	Surplus prod (MT)	Productivity MT/Ha
Apple	8403	9474	6632	7.5
Kiwi	190	62	44	8.0
walnut	3516	58	41	0.60
Orange	23360	27251	19076	8.00
Banana	4914	14817	10372	15.00
Pineapple	7913	36310	25417	13.00
Others	5916	15262	10683	7.80
<b>Total</b>	54212	103234	72265	
Large Cardamom	4142	572	400	0.50
Black Pepper	1612	133	93	0.90
Ginger	7618	36666	25666	12.00
Total	13372	37371	26159	
<b>Grand Total</b>	67584	140605	98424	

*Source: Annual Report 2004-2005, Dept. of Horticulture, p-8*

The government in order to increase production and fulfill the demand in the market and prevent the post harvest losses, under the MINI MISSION-1V (MM-1V) PROCESSING was started and its result is shown in the table I-5.

Apples, in particular produced in Arunachal Pradesh are comparable with some of the best kinds. The Bomdila and Tawang region offer ideal agro-climatic conditions for apple plantation. Instead the apple has caught the imagination of local farmers for its plantation appears to be quite profitable.

There is a regional Apple Nursery at Dirang and a State Agricultural garden and Nursery at Shergoan.

**District & Crop-Wise Area & production of Horticulture  
Fruits and Spices crops during 2004-2005**

**Table I(3)**

**Area in Ha.**

**Production in M.T**

	Tawang		Bomdila		Seppa		P/Pare		Ziro		Daporijo		K/Kumey		Along		Pasighat		Yingkiong	
	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P	A	P
Apple	1808	2280	5357	7005	120	-	-	-	821	189	37	-	-	-	64	-	-	-	21	-
Walnut	1102	17	1415	31	81	-	23	-	513	10	8	-	-	-	52	-	-	-	58	-
Kiwi	18	3	97	53	-	-	-	-	32	3	-	-	-	-	4	-	2	-	8	-
Citrus	56	19	159	20	504	79	447	89	527	787	3564	2919	304	155	8355	9707	4535	7764	1108	4076
Pineapple	-	-	19	-	58	4	188	912	36	10	835	3500	43	4	4078	21846	1122	4139	520	1326
Banana	16	3	74	82	151	215	221	347	310	691	300	1148	130	131	770	1446	576	4041	332	2264
Others	181	387	313	1268	279	784	399	984	384	2779	131	644	60	103	477	1104	1077	1537	355	995
Cardamom	-	-	172	29	140	55	261	9	305	45	259	33	194	9	405	66	355	54	249	31
B/pepper	-	-	26	-	94	2	203	7	26	-	31	2	15	-	194	17	330	28	22	-
Ginger	37	61	50	152	80	185	81	182	82	240	110	220	75	7	907	4864	797	4111	140	304
Total	3218	2770	7684	8640	1507	1324	1823	2530	3036	4754	5257	8466	821	409	15306	8794	8794	21674	2813	-

*Source: Annual Report 2004-2005, Dept. of Horticulture, p-9*

**District & Crops wise Area & production of Horticulture fruits & Spices crops during 2004-2005**

**Table I(4)**

*A-Area in Ha. P-Production in M.T.*

Name of crops	Anini		Roing		Lohit		Changlang		Tirap		Total		Locally consumed	Surplus Prod-	Productivity Per hectare
	A	P	A	P	A	P	A	P	A	P					
Apple	106	-	3	-	27	-	37	-	-	-	8403	9474	2842	6632	7.5
Walnut	124	-	6	-	52	-	27	-	55	-	3516	58	17	41	0.60
Kiwi	25	3	1	-	1	-	-	-	2	-	190	62	18	44	8.00
Citrus	191	117	727	351	1596	559	483	303	804	306	23360	27251	8175	19076	8.00
Pineapple	-	-	99	1649	133	456	663	2369	119	95	7913	36310	10893	25417	13.00
Banana	63	351	571	526	325	1274	475	1290	600	1008	4914	14817	4445	10372	15.00
Others	41	119	390	1063	581	835	735	1286	513	1374	5916	15262	4579	10683	7.80
L/cardamom	81	14	381	52	407	73	328	40	605	62	4142	572	172	400	0.50
B/pepper	26	4	113	18	244	32	96	-	192	23	1612	133	40	93	0.90
Ginger	371	1893	3318	17028	1239	6689	108	122	223	608	7618	36666	11000	25666	12.00
Total	1028	2501	5609	20687	4605	9918	2952	5410	3113	3476	67584	140605	42181	98424	

*Source: Annual Report 2004-2005, Dept. of Horticulture, p-10*

**Present Area & Production of Horticulture crops and % age increase over Pre-Mission Period.**

**Table I(5)**

**A-Area in Ha.**

**P-Production in M.T.**

Name of crops	2004-05 (post Mission period)					2001-02 (Pre Mission period)					% age increase over Pre Mission period.		
	Area & production		Locally Consume	Surplus Prudn.	Productivity/ Ha	Area & production		Locally Consume	Surplus Prudn.	Productivity/ Ha	Area	Prodn.	Productivity
	A	P				A	P						
Apple	8403	9474	2842	6632	7.5	6852	8588	3435	5153	6.37	22.68	10.32	17.74
Walnut	3516	58	17	41	0.60	2374	51	20	31	0.50	48.10	13.73	20.00
Kiwi	190	62	18	44	8.00	55	5	-	-	-	245.00	1140.00	
Citrus	23360	27251	8175	19076	8.00	19626	24232	9692	14540	5.72	19.00	12.50	39.86
P/apple	7913	36310	10893	25417	13.00	7549	22289	12915	19374	8.72	4.82	62.90	49.08
Banana	4914	14817	4445	10372	15.00	3958	13302	5320	7982	12.50	0.025	11.39	20.00
Others	5916	15262	4579	10683	7.80	4360	10953	4381	6572	5.56	35.69	39.34	40.54
	54212	103234	30969	72265	8.56	112715	79420	35763	53652	6.56	51.90	30.00	30.50
L/Cardamom	4142	572	172	400	0.50	2342	512	205	307	0.45	76.86	11.72	11.11
B/pepper	1612	133	40	93	0.90	820	118	47	71	0.90	96.58	12.71	
Ginger	7618	36666	11000	25666	12.00	6579	32295	12918	19377	8.28	15.79	13.53	45.45
	13372	37371	11212	26159	4.47	9741	32925	13170	19755	3.21	37.28	13.50	39.25
Medicinal Plant	750	-	-	-	-	-	-	-	-	-	-	-	-
Aromatic Plant	1307	7000	1000	6000	5.3	-	-	-	-	-	-	-	-
Total	67584	140605	42181	98424	-	-	-	-	-	-	-	-	-

Source: Annual Report 2004-2005, Dept. of Horticulture, p-22



### AGRICULTURAL DISEASES AND PESTS

There is no fresh report of any major destruction of crops due to agricultural diseases or by pests except some sporadic attack of insect pests on cultivated plants. The measure commonly taken by the people against pest attack is scorching the soil by fire and through weeding and cutting of shrubs and jungles. In their erstwhile helplessness at the time of pest attack the people offered sacrifices to the deities to drive away the pests. To drive away birds which damage the crops they tie empty tins to bamboo posts all over the field. These tins when shaken or pulled produce sounds, which scare the birds off. Besides these, the cultivation fields are fenced to protect the crops from destructions by wild cattle.

Some of the common agricultural diseases injuring the crops and the remedial measures taken are as follows:

Crops	Diseases	Remedies Applied
1. Paddy	Paddy Blast	Agro-mercurial compound @ 1.400 by weight with 10% active material.
	Bacterial Blight	Seed treatment with streptocycline @ 0.5 gms per 10 kg seeds.
	Root-Knot	Seed treatment with 1% active material 1.400 by weight of any organic mercurial compound before sowing.
2. Potato	Early and Late Blights	Copper fungicide, Blitox 52.
3. Wheat	Smut	Copper fungi vide, Blitox 52.
4. Citrus Crops	Canker	Streptocycline.
5. Peas	Powdery Mildew	Fungicides.
	Brown Rust	
6. Cucurbit	Powdery Mildew	Fungicides.

- |                                      |   |
|--------------------------------------|---|
| 7. Cabbage and Cauliflower Root-Knot | Seed treatment with 1% active material 1.400 by weight of any organic mercurial compound before sowing. |
|--------------------------------------|---|

The common insect pests causing damages to crops are the following:

Crops	Pests
1. Paddy	Grasshoppers, leaf-hoppers, rice- beetles, rice-bugs, case-worms, stem borers, rice-hispa etc.
2. Citrus crops	Stemborers.
3. Mustard	Aphids and saw-fly.
4. Winter Vegetables	Cut-worms.
5. Maize	Caterpillar.
6. Beans	Hairy Caterpillar.

The common insects pests that cause considerable damages to crops are Gandhi-bugs, Rice-bugs, rice-hips, grasshoppers, caterpillars, stem bores, sawflies etc. Field rats are also a menace to young crops. They attack the crops in large numbers, particularly during the bamboo flowering season. Besides these, crops in the hills covered with jungle are damaged by birds and animals.

The Agricultural Department has been taking effective measures to save crops from diseases and ravages of pests. One such measure is the formation of Plant Protection Units. These units work under the Agriculture Inspectors stationed at different places. The Village Level Workers are also associated with the units. The plant protection service, rendered free to the cultivators, includes application of various insecticides and fungicides, spraying and dusting with chemicals and other protective measures. The units keep stock of equipments and medicines to deal with the crop diseases and pests.

### PROGRESS OF SCIENTIFIC AGRICULTURE

In July 1946, an agriculture department was created exclusively for the 'Excluded Areas' with its headquarters in Shillong. The department was headed by an Agriculture Officer, who was responsible to the then adviser to

the Governor of Asom concerned with the administration of the so-called 'Excluded Areas' Major C.R. Stonor was the first agricultural officer. He was assisted initially by seven officer inspectors and others staff. The agricultural officer with his office staff functioned from Shillong while the field staff had their operational headquarter located in the plain of Asom just outside the present day boundary of Arunachal Pradesh. Later two Assistant Agricultural Officers stationed at Shillong and Pasighat respectively joined the department.

Except the areas around Pasighat, the department had a very scanty knowledge of the land, the agro-climatic conditions and the agricultural practices of the people. Major Stonor toured extensively in the interior hills to get a first hand knowledge of the people and their agriculture. Shifting cultivation was, as it is today in most areas, the traditional mode of cropping on the high and low hills, even on steep slopes. Rice was not staple food everywhere and the people did not have much of it. With the exception of the Apatanis and the Khamtis of the Lower Subansiri and Lohit districts respectively, the foothills and river valleys were not cultivated by other tribes.

The government of India adopted a policy of non-interference in the traditional methods of agriculture of the tribes, but they encouraged 'plough agriculture' in suitable areas for more food production. The agricultural workers try to impress upon the people benefits of rice cultivation in irrigated permanent plots, but they were met with staunch opposition from the conservative farmers who have strong faith in their own traditional mode of farming and who did not like to deviate it for an unfamiliar method. In the village around Pasighat the new idea was, however, well accepted. The people of these areas had an intimate knowledge of the functioning of the government since 1911 when an administrative centre was opened at Pasighat. Shri Tagoli Jamoh, a notary of Pasighat, who was appointed as Agricultural Inspector in 1937, did a lot of work for introduction of irrigated rice cultivation in the ranging village nearly 14 km away from Pasighat on the Panging road.

The pioneers of the department ultimately succeeded in winning over the people for the cultivation of rice in permanent plots in spite of enormous difficulties. The efforts of the farmers for permanent cultivation were at first subsidized in full by the government. As the idea of settled cultivation took roots, the subsidy was progressively reduced. By the end of 1976-77, a total of 28,852 hectares of land was brought under permanent cultivation. Irrigable land in the low lying valleys and foothills, flat or with very easy gradient, was

developed by now for permanent cultivation of rice and this was followed by development of gentle slopes into terraces for irrigated rice cultivation. Preparation of terraces being labour intensive and costly, the progress of the development of terraces was naturally much slower than the development of the land in the valleys and foothills. Nevertheless, one would find today large chunks of hills slopes converted into terraces in different parts of the State, such as the Tawang Sub-division and the areas around in the East Siang district.

In 1952, the new concept of rural development through community development (CD) and National Extension Service (NES) block was formulated. The first CD block in Arunachal Pradesh was opened at Pasighat on October 2, 1952 followed by the NES blocks at Namsang in 1953 and at Ziro in 1954 and so on. Opening of these development blocks paved the way for implementation of the land development programme for rice cultivation. The gains of plough agriculture had by now caught the imagination of the farmers. Some farming families moved to the plain areas in the southern parts of the Siang and Lohit regions for cultivation of rice and the cash crop of mustard. One would find today stretches of rice fields in the lower region of Arunachal Pradesh.

The agriculture department being nodal department encourages the farmers on the scientific basis. Every efforts step had been taken towards self-sufficiency of food by introducing improved methods of cultivation. The programmes drawn up to achieve this objective include, among other things, were:-

1. Development of land under permanent cultivation,
2. Distribution of improved agricultural implements and machines amongst the progressive farmers,
3. irrigation by channels and construction of Minor irrigation projects,
4. Implementation of 'Rural Water Supply' schemes,
5. Supply of fertilizers and improved seeds,
6. Agricultural demonstrations,
7. Multiple cropping
8. Farmer's training and
9. Training to personnel in specialized branches of agricultural sciences, soil conservation etc.

The lone Gram Sevak Training Centre near Pasighat opened in 1950 under the name of Agricultural Training Institute has been playing a very im-

portant role in training the local young people in the methods of rural development including agriculture. The VLW trained up in this centre have been helping the cultivators to learn the techniques of scientific agriculture for gainful and increased food production.

Besides this institution, another allied institution/laboratory namely the Farmer Training centre (FTC) at Pasighat, Kherem, Salari, Ziro in Lower Subansiri and Khonsa in Tirap district upto 2005, Seed testing laboratory at Sonajuli Papum Pare district, Soil testing laboratory at Pasighat, East Siang district and Organic fertilizer production unit at Kherem in Lohit district was set up. The object of this centre is to provide vocational support to the farmers through need based production-oriented training courses.

### **AGRICULTURE PRODUCT**

With an objective to safeguard the interest of the producers of agricultural and other allied commodities the state agriculture department is having an "Agricultural Development Policy". To streamline the policy, the Arunachal Agricultural Produce Marketing (Regulation ACT-1989 ACT NO. 6 of 1990) was notified on 10th September' 1990. Subsequently, the Govt. of Arunachal Pradesh vide its notification NO. AGRI/MKT- 1/90-91, dated -12/12/1994 has constituted the state Agriculture Produce Marketing Committee (APMCs) and emphasis has been laid on development of marketing infrastructure and techniques of preservation, storage, and transportation etc. with a view to reduce the post harvest losses and ensuring a better return to the grower . Direct marketing and procurement by a notified State level procurement agency, as and when required with storage facilities of different items made available to the production areas. Upgradation and dissemination of market intelligence receives particular attention. Efforts are being made to strengthen the market infrastructure which is functioning in all districts of Arunachal Pradesh.

Tremendous progress has been made by APMCs in marketing the commodities even outside Arunachal Pradesh. Commodities marketed outside Arunachal Pradesh during the year 2004-2005 is as follows (see table J-1).

**Table J-1**

Sl. No.	Name of commodities	Quantity in MT	Remarks
1	2	3	4
1	Paddy	900 MT	Estimated approx. total value of Rs. 1729.00 lakh on the basis of existing market prices.
2.	Maize/Millet	3777 MT	
3.	Pulses	93 MT	
4.	Mastard/ Sesamum	2746 MT	
5.	Ginger (green)	5232 MT	
6.	Vegetables	1133 MT	
7	Fruits	545 MT	
8.	Others	3480 MT	
9.	Potato	809 MT	

*Source: Directorate of Agriculture, Nlg.*

### **AGRICULTURE POLICY OF ARUNACHAL PRADESH, 2001.<sup>1</sup>**

#### **1. Addressing problems related to shifting cultivation.**

Special emphasis to be given to shifting cultivation, ensuring better management, introducing improved cultivation in slope land through agro-forestry, horticulture, and encouraging other household activities. The programme is to be designed in such a way that there will be simultaneous thrust on weaning the jhum farmers towards better modes of cultivation.

#### **2. Location-specific strategy for development.**

Effort will be made to formulate an area-specific, differentiated strategy taking into account the agronomic, climatic, socio-economic practices as well as the resource-worthiness of the farmers. Special emphasis will be made for introducing newly developed HYV seeds, improved planting material, adoption of new technology and mechanized farming.

#### **3. Convergence of allied activities**

There would be a shift from the commodity approach to a systems approach in agriculture. All land based activities like that of agriculture, sericul-

<sup>1</sup> Arunachal Pradesh, Human Development Report 2005, p-77.

ture, livestock, fish-rearing, etc. would be given a new dimension and synergetic functional assignment. The policy will aim at avoiding duplication of programmes/works by different functionaries, as far as possible. Towards that end, there will be regular monitoring and evaluation of all schemes implemented by the Agriculture and allied departments through an appropriate mechanism.

**4. Technology transfer**

Importance will be accorded to identify new location-specific and economically viable improved species of agriculture, sericulture, livestock, and fish-rearing. The entire extension system will be revitalized. Innovative and decentralized institutional changes will be introduced to make the extension system responsible and accountable. The development of human resources through capacity – building and skill upgradation of extension functionaries is to receive due attention.

**5. Supply of inputs**

Adequate and timely supply of inputs such as seed, fertilizer, pesticides, agri-tools and implements, credit at reasonable rate to farmers will be provided by the Government and other institution subject to availability of resources and funds. Greater emphasis will be given to increase the consumption of such inputs for achieving the targeted increase per unit of area. As far as possible, use of organic manure/compost will be encouraged to avoid ill-effects of inorganic fertilizers.

**6. Facilitate private investment in agriculture**

Efforts would be made to create conditions that encourage participation of private enterprises in the establishment of agro-based industries. An incentive package and guidelines would be finalized ensuring participation of the private sector and financial institutions in the agricultural sector as a whole. NABARD will have to play a major role in channelising investment.

**7. Peoples's participation**

The new policy would encourage formation of Self-Help-Groups and village committees, at different levels. The village committee would be vested with the task of maintaining and managing the assets created so far like irrigation channels, terraces, market sheds, etc.

**8. Research and technology package**

Location-specific agriculture research, based on identified agro-climatic

zones, will be accorded foremost importance. Development of need-based technology package for achieving higher productivity would constitute the thrust area of the new policy. Efforts will be made to build a well-organised, efficient and result-oriented agricultural research and education system for introducing technological changes in the agricultural sector.

**9. Marketing infrastructure**

Emphasis will be laid on development of marketing infrastructure and techniques of preservation, storage and transportation, with a view to reducing the post-harvest losses and ensuring a better return to the grower. Upgradation and dissemination of market intelligence will receive particular attention. Efforts will be made to strengthen the market infrastructure.

**10. Agro-processing**

Setting up of agro-processing units in production areas will be given priority. To reduce post-harvest wastage, an effort would be made to add value, especially to agricultural and horticultural produce, by setting up small processing units. The Small Farmers Agricultural Business Consortium (SFAC) will be activated to cater to the needs of farmers entrepreneurs. Tea plantation will be brought under the agriculture sector, but, for processing, it may be under the industries sector.

**11. Price support**

Market intervention scheme, involving procurement through a notified agency, will be implemented for selected agricultural crops, so that the farmers are assured remunerative prices.

**12. Use of information technology (IT)**

The database for the agricultural sector will be strengthened to ensure greater reliability of estimates and forecasting, which will help in the process of planning and policy-making.

**13. Flood and drought management**

It will be the endeavour of the Government to devise a mechanism through which the floods and droughts, affecting agricultural production, are tackled. The provisions of the national Crop Insurance Scheme will be reviewed facilitating its introduction in the State. In the foothill areas, water-pumping systems will be provided to exploit the groundwater.



## IRRIGATION

Irrigation of agricultural fields in this mountainous region is relevant only to sedentary cultivation. Jhuming is done periodically on the slants of hills by means of shifting cultivation and the Jhums fields are rain-fed. The fields under wet rice or terrace-rice cultivation are irrigated usually by gravitational and diversion channel. Pumping sets are also used for irrigation of small holding. In some areas, water from a nearby stream or spring is channelised through bamboo or polythene pipes for irrigation.

The estimated area of the operation holdings by size classes and irrigation status in the state of the schedule tribe group and all social groups as per census 2000-01 are below and others different sources of irrigation such as canal, wells, tanks, tube wells etc. of the schedule tribe group are also shown in the following tables, K(1), K(2), K(3), K(4), K-4(1).

## ANIMAL HUSBANDRY

Rearing of livestock plays an important part in the socio-economic life of the people. The livestock consists mainly of pigs, cattle and goats, mithuns (*bos frontalis*) sheep and yaks which are reared for meat, hide wool and also socio-religious purposes. The pigs are commonly found roaming around the house premises of most of the tribes. They are kept in pigsty, which generally lie under the floor of the house. The pigs are numerically the largest group of animal domesticated by the people. The Mithun, in particular, is considered valuable, for it symbolizes power, wealth and status. It is the animal of the bovine species, somewhat of a mixture of cow and buffalo in appearance, heavy and clumsy-looking. It has a large massive head with a pair of huge horns, a hump and pale blue eyes. The front legs are larger than the hind ones. Its hide is very thick and the colour of the coat is brown varying from coffee to black. It is held in high esteem by the people. A man's social status is often determined by the number of Mithuns he owns. Mithuns are usually allowed to roam freely in nearby jungles, but they are kept under watch. The cattle including mithuns are sometimes kept confined within fenced pastures and moved to other grazing grounds when fodder is exhausted. The yak (*bos grunion*) is important to the people of Tawang and West Kameng districts. Churpi (cheese), ghee, cream etc. are made from yak's milk. Yak's hair and tail-stump are utilized for making various articles. The people of these two districts of Arunachal Pradesh are familiar with dairying even though their method is somewhat crude. Some of the breeds of yak serve as pack-animal in addition to mules. Besides

**Estimated number of operational holdings by size classes and irrigation status.**

**Table K(1)**

**Social group: ST, Area (in Hectares)**

Sl. No.	Size Class	Total Holding		Wholly irrigated Holding		Wholly un-irrigated holdings		Partially irrigated holdings			Holding receiving irrigation	
		No.	Area	No.	Area	No.	Area	No.	Total Area	Irrigated area	No.	Net irrigated area
1	2	3	4	5	6	7	8	9	10	11	12	13
1	Below 0.5	5134	1396	339	109	4096	852	666	178	73	1005	183
2	(0.5-1.0)	8646	5679	910	590	7159	3521	945	538	212	1855	802
	Marginal	13780	7075	1249	699	11255	4373	1611	716	285	2860	985
3	(1.0-2.0)	19586	25921	1179	1074	13068	12202	5770	6433	2698	6949	3772
	Small	19596	25921	1179	1074	13068	12202	5770	6433	2698	6949	3772
4	(2.0-3.0)	21517	49245	899	1364	12511	16415	8357	13089	5806	9256	7170
5	(3.0-4.0)	14454	46471	566	1121	8057	13226	5935	12420	4927	6501	6048
	Semi Medium	35971	95716	1465	2485	20568	29641	14292	25509	10733	15757	13218
6	(4.0-5.0)	10593	45091	506	1167	5985	9898	4192	11700	4964	4698	6131
7	(5.0-7.5)	13977	83057	390	1251	8779	18326	4860	15506	6091	5250	7342
8	(7.5-10.0)	4959	42273	161	892	2597	8875	2206	7666	2536	2367	3428
	Medium	29529	170421	1057	3310	17361	37099	11258	34872	13591	12315	16901
9	(10.0-20.0)	4851	59805	154	1153	2127	9305	2593	11716	5112	2747	6265
10	20 & above	770	25600	44	1306	347	6733	423	4628	1913	467	3218
	Large	5621	85405	198	2459	2474	16038	3016	16344	7025	3214	9483
11	All classes	104497	384538	5148	10027	64726	99353	35947	83874	34332	41095	44359

**Source : Agricultural census 2000-01 ( social group -ST)**

**Estimated Number of Operational Holdings by Size Classes receiving Irrigation and Area  
Irrigated by different sources.**

**Table K(2)**

**Social group: ST group, Area (in Hectares)**

Sl. No.	Size Class	Total Holding		Canal		Tanks		Wells		Tubewells		Other Sources		Excl. No. of Holding receiving Irrigation	Net Irrigated area
		No.	Area	No.	Area	No.	Area	No.	Area	No.	Area	No.	Area		
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
1	Below 0.5	5134	1396	129	35	0	0	0	0	0	0	877	148	1005	183
2	(0.5-1.0)	8646	5679	505	316	5	2	0	0	0	0	1345	485	1855	802
	Marginal	13780	7075	634	351	5	2	0	0	0	0	222	633	2860	985
3	(1.0-2.0)	19596	25921	1350	818	6	5	0	0	0	0	5643	2949	6949	3772
	Small	19596	25921	1350	818	6	5	0	0	0	0	5643	2949	6949	3772
4	(2.0-3.0)	21517	49245	2236	1987	27	17	5	2	0	0	7115	5163	9256	7170
5	(3.0-4.0)	14454	46471	1723	1594	44	22	0	0	0	0	4959	4431	6501	6048
	Semi Medium	35971	95716	3959	3581	71	39	5	2	0	0	12074	9594	15757	13218
6	(4.0-5.0)	10593	45091	963	1378	35	11	0	0	0	0	3829	4742	4698	6131
7	(5.0-7.5)	13977	83057	778	1174	0	0	0	0	0	0	4580	6168	5250	7342
8	(7.5-10.0)	4959	42273	416	485	0	0	4	12	0	0	1957	2930	2367	3428
	Medium	29529	170421	2157	3037	35	11	4	12	0	0	10366	13840	12315	16901
9	(10.0-20.0)	4851	59805	210	663	0	0	8	21	0	0	2537	5581	2747	6265
10	20 & above	770	25600	65	285	0	0	7	65	0	0	408	2869	467	3218
	Large	5621	85405	275	948	0	0	15	86	0	0	2945	8450	3214	9483
11	All classes	104497	384538	8375	8735	117	57	24	100	0	0	33250	35466	41095	44359

Source : Agricultural census 2000-01

**Estimated Number of Wells and Tube wells by size Classes**  
**Table K(3)**

Sl. No.	Size Class	Total Holdings		No. of Wells in Use				No. of Wells not in Use	No. of tube wells		
				With Pump Set			Without pump sets		Elect.	Diesel	Total
		No.	Area	Electrical	Diesel	Total					
1	2	3	4	5	6	7	8	9	10	11	12
1	Below 0.5	5134	1396	22	0	22	0	0	0	0	0
2	(0.5-1.0)	8646	5679	0	0	0	0	0	0	0	0
	Marginal	13780	7075	22	0	22	0	0	0	0	0
3	(1.0-2.0)	19596	25921	64	0	64	0	0	0	0	0
	Small	19596	25921	64	0	64	0	0	0	0	0
4	(2.0-3.0)	21517	49245	62	15	77	0	0	0	0	0
5	(3.0-4.0)	14454	46471	29	0	29	10	0	0	0	0
	Semi Medium	35971	95716	91	15	106	10	0	0	0	0
6	(4.0-5.0)	10593	45091	0	0	0	0	8	0	0	0
7	(5.0-7.5)	13977	83057	31	30	61	0	0	0	0	0
8	(7.5-10.0)	4959	42273	14	0	14	14	78	57	7	64
	Medium	29529	170421	45	30	75	14	86	57	7	64
9	(10.0-20.0)	4851	59805	8	22	30	2	0	0	0	0
10	20 & above	770	25600	0	59	59	10	0	0	0	0
	Large	5621	85405	8	81	89	12	0	0	0	0
11	All classes	104497	384538	230	126	356	36	86	57	7	64

Source : Agriculture Census 2000-01 (Social Group- ST)

## Estimated irrigation and Unirrigated Area by Size Classes under different Crops.

Table K(4)

Social Group : Scheduled tribe

Area (in Hectares)

Sl. No.	Size class	Total Holdings		Gross cropped Area		
		No.	Area	Irrigated	Un-irrigated	Total
1	2	3	4	5	6	7
1	Below 0.5	5134	1396	182	1050	1232
2	(0.5-1.0)	8646	5679	806	4264	5070
	Marginal	13780	7075	988	5314	6302
3	(1.0-2.0)	19596	25921	3779	17355	21134
	Small	19596	25921	3779	17355	21134
4	(2.0-3.0)	21517	49245	7193	25985	33178
5	(3.0-4.0)	14454	46471	6050	22821	28871
	Semi Medium	35971	95716	13243	48806	62049
6	(4.0-5.0)	10593	45091	6145	18417	24562
7	(5.0-7.5)	13977	83057	7363	30877	38240
8	(7.5-10.0)	4959	42273	3429	15199	18628
	Medium	29529	170421	16937	64493	81430
9	(10.0-20.0)	4851	59805	6293	17651	23944
10	20 & above	770	25600	3217	9966	13183
	Large	5621	85405	9510	27617	37127
11	All classes	104497	384538	44457	163585	208042

Totals may not tally due to rounding off

Source : Agriculture Census 2000-01 (Social Group- ST)

Table K-4(1)

Social Group : Scheduled tribe

Area (in Hectares)

Sl. No.	Size Class	Paddy (0101)				Maize (0104)			
		No. of Holding	Irrigated Area	Un-irrigated Area	Total				
1	2	3	4	5	6	7	8	9	10
1	Below 0.5	2366	182	227	409	2880	0	290	290
2	(0.5-1.0)	6012	799	1424	2203	5046	5	806	811
	Marginal	8378	961	1651	2612	7926	5	1096	1101
3	(1.0-2.0)	16681	3713	6915	10628	13474	24	3307	3331
	Small	16681	3713	6915	10628	13474	24	3307	3331
4	(2.0-3.0)	20659	7027	11712	18739	15505	63	4159	4222
5	(3.0-4.0)	14000	5922	10119	16041	11606	34	3753	3787
	Semi Medium	34659	12949	21831	34780	27111	97	7912	8009
6	(4.0-5.0)	10294	6008	8761	14769	8352	47	2935	2982
7	(5.0-7.5)	13840	7207	14771	21978	11394	51	4472	4523
8	(7.5-10.0)	4902	3398	6713	10111	3884	11	1962	1973
	Medium	29036	16613	30245	46858	23630	109	9369	9478
9	(10.0-20.0)	4796	6208	7612	13820	3300	2	1670	1672
10	20 & above	755	2983	3879	6862	391	56	732	788
	Large	5551	9191	11491	20682	3691	58	2402	2460
11	All classes	94305	43427	72133	115560	75832	293	24086	24379

Totals may not tally due to rounding off

Source : Agriculture Census 2000-01 (Social Group- ST)

the animals, poultry is also reared for meat and egg.

The cattle are not usually reared by most of the tribes for milk. The art of milking is a new development in this tribal area. With the opening of cattle farms and dairy units, milk is gradually becoming popular especially among the educated section of the people. They are now fond of tea with milk; dairy farming has ample scope for development in this area having good stretches of grasslands and pastures.

There are various development programme under animal husbandry and veterinary, the main objective is to provide appropriate and adequate veterinary cover to the livestock and poultry population throughout the State in such a way that almost all the villages are brought under veterinary coverage and thus minimizing loss of animal by epidemic of both infections and contagious diseases.

The ever green forest of Arunachal Pradesh is studied with valuable fodder trees and variety of grasses which makes the good sources for livestock. For effective planning, the state has been divided into three main zones.

1. Lower belt of foothill area covering the altitude of 500 ft. occupying mainly 20% of the total area suitable for rearing Mithun, Cattle, Sheep and Poultry.
2. Middle belt of broad valley and plateau from 3000 ft. covering nearly 35% of the total area suitable for rearing Mithun, cattle, sheep and poultry.
3. Upper belt of having altitude of 6000 ft. to 11000 ft covering 35% of the total area suitable for rearing Sheep, Yak and Dzo-Dzomo etc.

Under the cattle development programmes it is to upgrade the local indigenous stock of animal through cross breeding programme to increase production and quality animals for more milk and wool, the following institutions are functioning under the programme are (1) Cattle upgrading centres -120 numbers (2) Key village centres -1 block with 30 numbers of sub-centres and (3) Cattle Breeding Farms- 11 numbers. The cattle up grading centres and key village centres taking up animal health coverage in their locality with objective of cattle breeding farms : 1) to provide scientific management to increase milk production, 2) To impart training to the farmers and field staff and 3) To provide clean and wholesome milk to consumers.

Almost all the tribal family is engaged in pig rearing and Arunachal Pradesh has the highest population of pigs among the North Eastern Region.

The piggery development programme emphasizes on up-gradation of pig with the local stock through improved cross breeding with exotic breed such as large white Hampshire. With this objective, Central Pig Breeding Farm at Karsingsa in Papum Pare district and Regional Exotic Pig Breeding Farm at Loiliang in Lohit district were established by the Government. The two farms are functioning with the following objectives (1) production of pure breed stock for distribution to the local breeders for upgradation of local stock. (2) Demonstration unit for the local youth and (3) to fulfill the requirement of breeding stock for the North Eastern Region.

Sheep rearing has also been one of the traditional activities of the living in the high altitude areas. Under the scheme for improvement of local sheep through breeding with exotic Marino Ram for enhancing the production of quality wool is taken up. (1) Sheep Breeding Farm: - The Regional Sheep Breeding farm was established with the original stock of 35 nos. (2) Four numbers of Ram and 23 numbers of Lambs of Russian Merino were transported from Government sheep breeding farm Shergoan to Sangti during 1986-87. (3) Fifty numbers of Russian Merino ewes were transported from USSR (now Russia) during 1977. The farm is now in a position to supply pure/cross breed Merino sheep to the nearby states also. There are seven numbers of Sheep & Wool Extension centres in Tawang and West Kameng district, viz at (1) Mukto, (2) Thimbu, (3) Tawang, (4) Zemithang, (5) Dirang, (6) Mandlaphudung and (7) Nykmadung. One Regional Sheep Breeding farm is at Sangti in West Kameng district and this centre imparts training periodically to the interested rural people as well as field personnel.

The poultry development programme aims at improvement of local breed through scientific breeding to enhance production to improve the rural economy. There is a poultry development farm in all the districts, as good numbers of local entrepreneurs have also started participating in poultry development. Beside this one central poultry farm and another central Hatchery at Nirjuli are functioning. The central poultry farm, Nirjuli in addition to poultry breeding, cater the need of egg and broiler for the capital complex. It also provides hatchable eggs and breeding birds for distribution to the local farmers and imparts training to the rural youth and field staffs. The central Hatchery is attached to central poultry farm, Nirjuli with a capacity to hatchout 15,000 chicks at a time. It has been established to meet the demand of Day Old Chicks, to the district, CD/RD block for rural development. The hatchery produced total 50,385 numbers of day old chicks during 2006-2007.

Besides, the above development programmes emphasis is also being



given on conservation and management of indigenous livestock like Mithun, Yak and Rabbit. Considering the importance of Mithun and Yak, a Mithun breeding farm was set up at Sagalee in Papum Pare district as pilot project in the recent years. Yak is reared by the people inhabiting in the higher altitudes (above 6000 m). It is reared for the meat, milk and drought purpose by the local people. While a rabbit farm is running under the department at Loiliang, Lohit district.

Feeds and Fodder development goes side by side with the livestock development. The following institutions are functioning under this programme.

- (1) **Central Fodder farm:** The central fodder farm attached to composite livestock farm, Nirjuli has been functioning with 52 acres of land. This farm only can meet up the requirement of green fodder to the farm.
- (2) **District Fodder Farm:** District Fodder farm functioning one each at Seppa, Warjung, Yachuli, Daporijo, Anini and Changlang are supplying green fodder to cattle breeding farms.
- (3) **Feed Mixing Plant:** The feed mixing plant at Nirjuli at present meet the demand of composite livestock farm, Nirjuli and few neighboring beneficiaries of dairy, poultry and piggery units. Total 146.304 MT feed handled during the year 2006-2007.
- (4) **Development of pasture:** Land is taken up simultaneously with feeds and fodder development programme.

Under the programme of education and training it also includes the award of stipend for the under graduate students of veterinary and dairy Science, provide training to in-service graduate level, under graduate level and post graduates. To meet up the manpower shortage of Para-veterinarian, a school of veterinary science and Animal Husbandry has been set setup at Pasighat in 1980-81 which is presently offering various short term and regular courses for the in-service field assistants.

The total livestock and poultry population as per 2003 Livestock Census was 13.56 lakhs and 12.90 lakhs respectively. Thus, in the five years period there was a significant increase of 14.23% in the livestock and 5.86% in the poultry population of the State. The production of all types of livestock registered a growth except Buffalos, Yak and Sheep, Horse & Ponies and other livestock which registered decline of 17.73%, 11.62%, 41.48%, 2.41% and 7.67% respectively for details see table L-1.

**Livestock and poultry district-wise in Arunachal Pradesh as per livestock census- 2003.**

**Table-L(1)**

(in number)

District	Cattle	Buffalo	Goats	Sheep	Pigs	Yak	Mithun	Hotsres & ponies	Dogs	Other Live stock	Total live stock	Poultry
1	2	3	4	5	6	7	8	9	10	11	12	13
Tawang	14770	38	4380	9659	2849	7130	03	2768	2580	3463	47640	9604
W/Kameng	19697	-	13658	5793	6536	803	5224	2620	7282	1734	63347	53805
E/Kameng	29493	-	22003	-	31326	-	20471	-	10940	-	114143	82301
Papum Pare	25921	106	16408	16	11472	-	10573	-	4288	-	68784	84447
L/Subansiri	37436	68	18068	-	36058	-	31262	-	8310	-	131202	80736
K/Kumey	18039	-	20705	34	38503	-	26779	-	10425	-	114485	82265
U/Subansiri	13814	-	18384	-	25646	-	17797	-	10447	-	86082	77701
West Siang	51103	-	14923	-	35715	-	18580	493	12928	-	133742	156204
East Siang	15491	-	6700	43	21178	-	19796	10	4626	-	67844	55052
Upper Siang	56968	674	13967	-	28447	-	20089	18	5040	-	125203	130700
D/Valley	18	07	380	39	1512	-	1735	-	489	-	4189	12676
L/D/Valley	24161	537	9236	56	18137	-	2120	-	3222	-	57469	63638
Lohit	93329	6616	37988	889	35102	-	7394	43	13767	-	195515	188802
Anjaw	-	-	-	-	-	-	-	-	-	-	-	-
Changlang	44569	1166	19262	-	17335	-	2571	159	5879	-	90941	124764
Tirap	13364	288	15210	-	20146	-	-	17	6063	-	55088	87709
Total for AP	458173	9502	231272	16529	329880	7933	184394	6515	106286	5197	1355614	1290408

Source: Statistical abstract of Arunachal Pradesh, 2006, p-53

The Animal Husbandry and Veterinary Department has taken up a number of schemes for improvement of livestock poultry and their protection from diseases. These schemes comprise among other things, animal health coverage, upgrading of the local development of poultry, sheep and fodder etc. Some of the common diseases, parasitic and contagious which afflicts the ill animals and birds are as follows:

- 1) Foot and mouth disease among cattle including Mithuns, pigs and goats.
- 2) Hemorrhagic septicemias.
- 3) Anthrax and fluke-worm among cattle, pig.
- 4) Round-worm and fluke-worm among cattle, pigs, buffalo and elephants.
- 5) Mange among dogs and goats.
- 6) Ranikhet diseases, fowl cholera and fowl pox in poultry and
- 7) Rinderpest among Mithuns and cattles.

Table L-2 shows the number of cases of animals attended in Veterinary dispensaries and aid centre through mass vaccination and treatment in the state in 2005-2006.

**Table L-2**

District	General cases treated	Castration performed	Vaccination done	Animal covered by A.I method		Animal covered by natural method at A.I. centre	
				Cows	Buffaloes	Cows	Buffaloes
1	2	3	4	5	6	7	8
Tawang	20415	2400	15138	25	-	450	-
W/Kameng	26560	2350	22740	16	-	700	-
E/Kameng	18770	6392	10995	22	-	940	-
Papum Pare	43587	3876	26861	120	-	1200	-
L/Subansiri	20695	3000	2800	11	-	700	-
K/Kumey	5980	-	-	-	-	-	-
U/Subansiri	19064	4326	20340	-	-	350	-
West Siang	32912	9248	22799	25	-	160	-
East Siang	10082	1951	-	26	-	460	-
Upper Siang	10500	7899	9000	-	-	200	-
D/Valley	NA	Na	Na	-	-	-	-
L/D/Valley	48756	5429	53826	20	-	630	-
Lohit	38876	7880	64867	32	-	2000	-
Changlang	27329	4307	16563	12	-	46	-
Tirap	62166	5274	23900	-	-	58	-
Total for AP	375192	59058	289829	309	-	7894	-

Source: Statistical Abstract of Arunachal Pradesh, 2006, p-56

The progress of animal husbandry and veterinary activities in the State is rather slow due to several constraints, such as difficult terrain, lack of road communication in the remote and deep interior areas, low educational and living standards, socio-religious taboos, dearth of trained and lack of technical personnel and so on. Nevertheless some remarkable achievements have been made, and it is encouraging to note that there has been a growing response from the people in general to the efforts being made for development in this sector. Animal and birds are distributed to deserving farmers annually on subsidy basis through government agencies for productive purposes. Breeding bulls are provided free of cost to those 'milk pocket areas' which are beyond the coverage cattle upgrading centre or cattle breeding farms. The various institutions like Veterinary Hospital, Veterinary Dispensary and Veterinary Aid Centre to tackle the diseases of the livestock and poultry.

The following veterinary institutions have been functioning in the state as on March 2006 in table L-3.

Table L-3

(In Numbers)

District	Veterinary hospital	Veterinary dispensary	Veterinary aid centre	Cattle Up-Grading centre	District Diagnostic lab	Sheep & wool Extension centres	Cattle breeding farm	Poultry breeding farm	Pig breeding farm
1	2	3	4	5	6	7	8	9	10
Tawang	-	5	11	8	1	4	-	1	1
W/Kameng	-	7	17	15	1	3	1	1	-
E/Kameng	-	7	7	12	1	-	1	1	-
Papum Pare	1	5	11	6	-	-	1	1	1
L/Subansiri	-	9	14	6	1	-	1	1	-
U/Subansiri	-	6	10	8	1	-	1	1	-
West Siang	-	12	19	18	1	-	1	1	1
East Siang	-	8	8	-	1	-	1	1	1
Upper Siang	-	5	9	3	-	-	1	-	-
L/D/Valley	-	6	7	7	1	-	1	-	1
Lohit/ Anjaw	-	9	14	17	1	-	-	1	-
Changlang	-	8	11	8	1	-	-	1	1
Tirap	-	5	12	11	1	-	1	1	-
K/Kumey	-	-	-	-	-	-	-	1	-
D/Valley	-	1	5	1	-	-	1	-	-
Total for AP	1	93	155	120	11	7	10	12	6

Source: Statistical Abstract of Arunachal Pradesh, 2006, p-54

The Cattle Breeding Farm at various locations as shown in the table below provides for better upkeep and feeding of cattle in order to improve milk production and supply of milk to nearby localities. It also provides training facilities to the farmers and field staffs. The farm produces 150833.500 KI of milk from the 10 dairy farms as in 2005-2006 shown in the table L-4 below.

Table L-4

District	Name of dairy farm/cattle breeding farms with location	Milk production (in litres)	Milk Plants		Milk Chilling Centres	
			Number	Capacity (1000 Ltrs)	Number	Capacity (1000 Ltrs)
1	2	3	4	5	6	7
Tawang	-	-	-	-	-	-
W/Kameng	Waryung	12113.50	-	-	-	-
E/Kameng	CBF Seppa	21924.00	-	-	-	-
Papum Pare	CLF Nirjuli	83408.00	1	5000	-	-
L/Subansiri	CBF Ziro	1282.500	-	-	-	-
K/Kumey	-	-	-	-	-	-
U/Subansiri	CBF Daporijo	6975	-	-	-	-
West Siang	-	-	-	-	-	-
East Siang	CBF Pasighat	-	-	-	-	-
Upper Siang	CBF Tuting	1515.500	-	-	-	-
D/Valley	CBF Anini	-	-	-	-	-
L/D/Valley	-	-	-	-	-	-
Lohit	-	-	-	-	-	-
Changlang	CBF Changlang	12762.00	-	-	-	-
Tirap	CBF Khonsa	10853.00	-	-	-	-
Total for AP		150833.500	1	5000	-	-

Source: Statistical Abstract of Arunachal Pradesh, 2006, p-54

The above table shows the production of milk in 2005-2006 estimated at 150.833 thousand litres against 142.58 thousand litres in 2004-2005, showing an increase of 5.79% over the previous year. It is observed that the per capita quantity of milk available is 50 milliliters only.

The department envisages producing more numbers of eggs through established Central Poultry Farm and Central Hatchery at Nirjuli and 12 numbers of poultry farms in various areas of Arunachal Pradesh. The production of egg and wool since 2003-04 to 2005-2006 has increased but is unable to fulfill the demand in the market. For details see table L-5.

**Table L-5**

Products	Units	2003-2004	2004-2005	2005-2006
1	2	3	4	5
Milk	'000 MT	55.42	142.58	150.83
Eggs	Million No.	37.00	NA	38.00
Wool	'000 Kg	59.80	NA	60.20

*Source: Economic review of Arunachal Pradesh, 2006, p-20*

The above table shows over whole pictures of milk, egg and wool products during last few years which show the increasing quantity but very slow as compared to the requirement by the growing population of the State.

### **FISHERY**

The State of Arunachal Pradesh is one of the bio-diversity hot spot zones and has drawn considerable emphasis from the environmentalist and planners to conserve and manage the fragile eco-systematically in order to avoid as open excess resource. The major rivers of the State like Lohit, Tirap, Dibang, Siang, Subansiri, Dihing, Dikrong and Kameng which accounts for 350 billion cu. mtr. of water resources provides a natural habitat for the rich and diverse Ichthyo-fauna of the State. Besides this, the State is also blessed with huge number of natural resources in form of rivulets, beels, lakes, tank/ponds, paddy fields and swamps. Till 2005-2006, the State could harness only fifteen to twenty percent of the available Aqua resource of the State. The total area of 7000 ha of lentic and 2000 km of lotic water surface besides 110 ha of coldwater lakes is available in the state (see table-M-1).

Fish is important to the people as an item of diet. Fishing as well as hunting is often a ceremonial enterprise undertaken by the whole village. It is something more than a search for food. It has a religious importance involving taboos. A good or bad harvest, it is believed, depends on the success or failure of a ceremonial hunt.

The methods followed by the tribal people to catch fish by poisoning or harpooning were destructive. Fish culture was unknown to them, and fishing is not an exclusive trade or occupation for any section of the people. There is no class or tribe of fisherman. Persuasive measures were, therefore, to be taken to make people aware of the harmfulness of indiscriminate fishing by poisons or other destructive means. In doing this, extreme caution was needed to ensure that the administrative measures did not in no way hurt the feelings of the

# AREA UNDER PISCICULTURE IN ARUNACHAL PRADESH

Table M(1)

Year	Govt. Fish farms	People Fish ponds/ Farms	Govt. beels/ Lakes	Private Beels/Lakes	Hatcheries (in numbers)	Area under paddy-cum- fish culture	Total area Developed for pisciculture	Fingerings Distributed (in'000 Nos during last financial year.
1	2	3	4	5	6	7	8	9
1997-98	31.00	612.00	99.00	8.00	9	872.00	1622	7500
1998-99	31.00	726.00	99.00	8.00	9	902.00	1766	8000
1999-2000	31.00	807.00	99.00	8.00	9	967.00	1912	8000
2000-01	31.00	857.00	99.00	8.00	11	1031.00	2026	8500
2001-02	31.00	894.00	99.00	8.00	11	1071.00	2103	8500
2002-03	31.00	956.00	99.00	8.00	11	1071.00	2165	8500
2003-04	31.00	1011.00	99.00	8.00	11	1121.00	2270	2500
2004-05	31.00	1011.00	99.00	8.00	11	1171.00	2388	9000
2005-06	31.00	6105.00	99.00	8.00	11	1171.00	2400	9500

Source : Statistical abstract of AP, Directorate of Economics and statistics, Govt. of AP, p-57

tribal people. About their rights of fishing, this was not only an important source of their food, but also connected with their religious beliefs. Besides these, every tribe has its territorial jurisdiction, sanctioned traditionally by custom and usage, over which it asserts a claim for free hunting and fishing. Some clans have established exclusive fishing rights over certain areas along the streams where other clans are not allowed to fish.

Various types of bamboo traps, usually conical in shape with or without valve, are used by the tribal people for fishing. A conical net is used for fishing on stony bed for streams. Edil is a cylindrical valve fish trap, cast net and fishing-rod is also in use.

#### DEVELOPMENT OF FISHERIES IN THE STATE

Fisheries/Aquaculture activity in this alluring frontier has taken a be-lated root in socio-economic restructuring of the rural people. The Fisheries programme was first initiated in the year 1958-59 with the Budget allocation of Rs. 1.00 lakh (Rupees One lakh) only for creation of village domestic fish ponds on 50% subsidy basis and began on a modest scale. Fisheries as a separate department were created in the year 1980-81 by curving out from Agriculture department. Since then, the department, though it is ill equipped and inadequate manpower has made tremendous progress in the field of fishery especially in rural area. In order to enhance the production of fish/fish seed from 7th five year plan to 11th year plan in the State, fund is allocated year-wise to the fishery department, are shown in table M-2.

Trends of fund allocation in Department of Fisheries from 7th Five year plan to 11th Five year plan.

**Table M-2**

Plan period	Year	Out lay (Rs. In lakh)	Expdr. (Rs. In lakh)
7 <sup>th</sup> plan	1985-86	45.70	38.81
	1986-87	42.75	41.91
	1987-88	50.00	47.77
	1988-89	56.00	52.53
	1989-90	58.00	57.37
Annual plan	1990-91	75.00	75.50
	1991-92	97.00	97.49
8 <sup>th</sup> plan	1992-93	114.00	113.74
	1993-94	133.00	130.93



	1994-95	147.00	144.23
	1996-96	170.00	170.66
	1996-97	170.00	169.78
9 <sup>th</sup> plan	1997-98	196.00	190.44
	1998-99	167.00	161.12
	1999-2000	180.00	179.86
	2000-01	230.31	179.90
	2001-02	244.00	193.36
10 <sup>th</sup> plan	2002-03	250.00	233.97
	2003-04	250.00	249.77
	2004-05	203.21	204.64
	2005-06	200.00	200.00
	2006-07	240.00	242.14
11 <sup>th</sup> plan	2007-08	278.00	288.60

However, with the passage of time, people were found to be receptive to the concept of pisciculture as subsidiary income generating source. This may be attributed to the fact the people are basically rural farmers and no 'Fishermen' exists by caste or creed, but yet fish has been an important dietary food of the people of the State since time immemorial. Fishing and pisciculture is not merely a hobby or sport but now occupies subsidiary means of income generating assets to that of agriculture. It has income a means of living for economically backward sectors of the society. At present people are coming forward for acquiring government assistance for taking up aquaculture programme having been realized the actual benefit that can be derived out of it.

The state is also endowed with the rich fish fauna with more than 131 species of which 20% belongs to coldwater. Some species have been introduced from other places which have significantly contributed to the fishery development in the hilly region. Among the huge diversity, a good number of species have economic importance either in the food sector or in sport sector or ornamental fishery.

States have a huge diversity of the aquatic resources and different species available in them, the potentialities of the fishery is quite significant. But provided those are developed on the line of modern technologies. Aquaculture is now considered as a major tool for upliftment of the rural poor with nutritional security for the people. In Arunachal Pradesh, though aquaculture programmes are based with the culture of Indian Major Carps (IMC) and

Exotic carps including Common carp species yet can provide direct and indirect livelihood in the remote areas. Under Integrated fish farming, the Paddy-cum-fish cultures above 5000ft. msl in Apatani Plateau covering about 2500 hectare is a unique activity on pisciculture and even have drawn the attention at all levels including the National Level. Arunachal Pradesh is also endowed with sport fishes like Trout and Mahseer which can attract both local and foreign tourists. The State is also blessed with many rivers and streams with a total perimeter of more than 10,000 Km, of which approximate 2000 Km can be used for Sport Fisheries. The department of Fishery producing 25 millions fish seeds for commercial and economical values from different hatcheries under government and private sectors for stocking the different water bodies as well as for meeting up the requirement of the fish farmers. The total demand of the State is 42 million seeds. The present production of the fish from different sources is estimated at 2730 metric tonnes per annum against the demand of 13,093 metric tons as per 2001 census (see table M-3 below).

### FISH AND FISH SEED PRODUCTION IN ARUNACHAL PRADESH

Table M-3

S/No.	Items	Units	2002-03	2003-04	2004-05	2005-06
1	2	3	4	5	6	7
1.	Fish production (in tons)	Tonnes	2600.00	2652.00	2704	2730.00
	a) Ponds & Tanks	-do-	NA	1147.00	-	1147.00
	b) Beels, Lakes, Swamps	-do-	NA	570.00	-	570.00
	c) paddy-cum-fish culture	-do-	NA	235.00	-	313.00
	d) river, canals, streams etc.	-do-	NA	700.00	-	700.00
2.	Fish Seed production	Million				
	a) Fry	-do-	25.00	25.00	26	30.00
	i) Private	-do-	NA	6.00	-	21.00
	ii) Govt.	-do-	NA	19.00	-	9.00
	b) Fingerlings	-do-	8.50	8.50	9	9.50

*Source: Economic Review of Arunachal Pradesh, 2006, p- 23*

The above table M-3, shown at the end of 2005-2006, the fish production was 2730 tonnes and fish seed and fingerling was 30 and 9.50 million were produced as against in 1997-98 it was 21 tonnes and 24 and 7.50 only which improved a lot in the field of fish pisciculture in the state.

Although steady increase of fish production over the years have been

achieved but still its a long-way to attain self sufficiency for sustenance and providing nutritional security to the people of the State. The present per capita availability of fish of the State is 2.5 kg/person/year whereas National average of fish availability is 12 kg/person/year.

#### Demand Supply Scenario—of Fish and Fish Seeds.

#### 1. **Table Fish**

a) Estimated demand (as per 2001 census)	: 13093 tonnes
b) Estimated demand (by 2020)	: 220000 tonnes
c) Present production	: 2730 tonnes

#### 2. **Fish seed**

a) Estimated demand (in million) fry	: 42 million
b) Estimated demand (by 2020)	: 80 million
c) Present production	: 30 million

It is seen from the table above, that there is a huge gap between demand and supply of fish and fish seeds. The fish shortage is being supplemented by importing about 4500 tonnes of fish annually from the Andhra Pradesh and neighbouring States.

### DEVELOPMENTAL SCHEMES

The following measures are being implemented for enhancing the production of fish and fish seed in the State to bring down the demand-supply gap with the implementation of the following schemes sponsored by the North East Council Plan, Centrally Sponsored Schemes, and Indian Council of Agricultural Research (ICAR) etc.

**a) Paddy-cum-fish culture:** The scheme has established well and gained popularity in the Apatani plateau of Lower Subansiri district. Generally common carp variety of fish are raised along with the paddy for the period of three months and achieves fish production of 300 kg/ha/3 months with little effort and application of supplementary feed. Realizing the dual benefit derived from this schemes, people of middle belts as well as in some high altitude areas like Upper Subansiri, Upper Siang, East Siang, East Kameng, West Kameng, Tawang are gradually taking up pace in providing dual crops viz. paddy and table fish simultaneously by invoking scientific application imparted

by the department. As of now, programme is being propagated throughout the State to maximize production level.

**b) Construction of fish seed farms:** There exist 44 numbers of Government owned farms, transit nurseries, beels and lakes. The main object of setting up of fish/fish seed farms at the inception of the fishery department in 1958-59 was undertaken for demonstration purpose. However, as the Fisheries changed with time, it was shifted towards production and supply of quality fish seeds to meet-up the growing demand-as being the pre-requisite of ponds/tanks fishery development while main focus is on development of beel/lakes and fish Mahals for maximizing government Revenue.

**c) Coldwater fisheries:** Arunachal Pradesh is endowed with numbers of Coldwater i.e., snow fed rivers, streams and lakes which are suitable for implantation/development of Coldwater Fishery such as Mahseer, Snow Trouts, Schizothorax spp. and Exotic Trouts viz. Rainbow and Brown Trout for Eco-tourism. The medium altitude zone represents hill areas of the State and climatically offers much higher average annual temperature than the high altitude zone and biogenic capacity of the streams is comparatively more. This zone particularly inhabits some of the finest sport fishes like Golden Mahseer (*Tor putitora*), deep bodied Mahseer (*Tor tor*) and chocolate Mahseer (*Neolissocheilus hexagonolepis*) which are fighters to the anglers delight. Areas of concentration of Mahseers are Bhalukpong in West Kameng, Daporijo in Upper Subansiri, Namsai in Lohit and Roing in Lower Dibang Valley district. Considering the dwindling trends of Mahseer catch due to excessive fishing, use of poison, dynamite, unregulated mesh size nets etc., the NRCCWF, Bhimtal has established a Mahseer Hatchery at Iduli, Roing for producing Mahseer seeds for replenishing rivers/streams by adopting rivers/stream ranching programmes.

**d) Pig-cum-fish culture:** The integration of fish-pig farming system is one of the most suitable schemes for small and marginal farmers. Raising pigs can be fruitfully blended with fish culture by setting animal housing units on the pond embankments in such a way that the wastes and washing are drained into the fish pond. In such integrated culture system, the fish utilizes the feed spilled by pigs and also the dung/pig waste acts as an excellent fertilizer and raises the biological productivity of the pond water and consequently increases the fish production. The supplementary fish feed and the pond fertilizers are not required in this system as the pig dung's acts as substitute and

results in drastic cut-down on cost of inputs. The integrated approach of Aquaculture practice has many beneficial impacts:-

- i) Fishes utilize the feed spilled by pigs and their excreta which are very nutrients for fish.
- ii) Pig dung produce food organism which are relish by fishes.
- iii) Additional land not required for piggery units, since pigsties are constructed on the embankment of ponds.
- iv) Pond itself provides water for washing pigsties and piglets.
- v) It results in high production of animal proteins per unit.
- vi) Ensure maximum profit through limited investment.
- vii) Pond muck are generally rich in organic matter can be used for growing vegetables and other crops.

**e) Composit Fish Culture:** This programme was launched by the NRCCWF, Bhimtal in the year 2003-2004 covering 10 farmers of Lower Subansiri district in collaboration with the Rajiv Gandhi University, Rono Hills and other three units were sanctioned and implemented on trial basis to examine the growth of three species combination i.e. Silver Carp, Grass carp & Common Carp at Coldwater belts. During 2006-07, additional 20 units were sanctioned for other districts of coldwater region for implementation of the scheme with the department of Fisheries.

**f) Trout Fishes:** This species of exotic variety of fish dwells in water temperature ranging from below freezing point to as high as 20 degree Celsius. Taking into account favourable water temperature in Alpine zones of Arunachal Pradesh, first ever Trout Hatchery along the Nuranang stream at the altitude of about 12000 ft. was established in Tawang district and Brown Trout seeds (*Salmo Trutta fario*) was imported from Jammu and Kashmir. The first consignment was implanted into the Nuranang streams which were more or less devoid of local species (due to chilling water temperature) and found encouraging result. Subsequently, another trout hatchery was established at Shergoan, West Kameng district which lies at the altitude of 8000 ft. for culture of both Brown and rainbow Trouts. The eyed-ova of these trouts were imported from Himachal Pradesh during 1974-74 and bred successfully.

At present, Nuranang produces 15-20 thousand nos. and Shergoan

produces 40-50 thousand nos. of eyed-ova respectively. The incubation period of eyed-ova is about 70-80 days as the breeding season is from October to January when water temperature remains extremely chilling and hence extended incubation period. All available swim-up fry for raising table size fishes.

### **NATIONAL FISHERIES DEVELOPMENT BOARD**

The National Fisheries Development Board was set up at Hyderabad, Andhra Pradesh and registered on 10th July 2006 under the Societies Act in pursuance of the decision of the Government of India as an Autonomous Organization under the administrative control of the Department of Animal Husbandry, Dairying and Fisheries, Ministry of Agriculture, Government of India, with an objective of tapping the un-tap potential in fisheries and aquaculture which can contribute considerably to improve the livelihoods.

Arunachal Pradesh is also getting financial support from the agencies under Government of India like The North Eastern Council (NEC), Indian Council of Agricultural Research (ICAR), Central Institute of Freshwater Aquaculture (CIFA), Bhubaneswar, Central Institute of Fishery Technology (CIFT) Cochin and National Research Centre on Cold Water Fisheries (NRCCWF) Bhimtal etc for development of Fisheries in the state.

### **REMEDIAL MEASURES TO ENHANCE FISH/ FISH SEED PRODUCTION**

Some conscious planning and serious remedial measures is required to be adopted by the Government for enhancement of Fish/Fish Seed production in the State in the following.

1. By re-estimating the water resources of the State with the help of GIS and Satellite mapping to arrive at the actual availability for proper planning and development.
2. Consequent upon introduction of Fishery Act, 2005, the enforcement of the Act in practical would help in development of Fishery in the State.
3. By stocking all water bodies with fingerlings irrespective of the ownership by taking up rivers/ Streams/ Beels and lake easing programmes.
4. By transferring ownership rights of all water resources to Fisheries Department for proper planning and management.
5. By Strictly following off-season for conservation and protection of fish

during breeding season.

6. By prohibiting mass killing of brood fish and juveniles by the use of dynamite, bleaching powder, pesticides, electrocution, diversion of streams/channel alteration to conserve Igethyo fauna.
7. By prohibiting the use of unregulated much size of nets in fishing.
8. By reviving the State Rural Aquaculture Programme which was discontinued since 2003-2004 for upliftment of rural peoples.

An aquaculture being an important economic activity, it requires holistic, dynamic and futuristic planning and developmental policy. The coordinated approach inter-relating with the technology, skill up gradation, marketing, finance and development is the key to successful implementation of schemes/projects for increase fish/fish seeds production for generating employment opportunities and nutritional security thereby shifting the concept of "catch and consume" to "culture and prosper". This is achievable with the developmental strategies harmonizing with the bottom up and participatory process of management, followed by exploring the opportunities and avenues to improve socio-economic condition of the present and future generation, embracing sustainable scientific means of pisciculture.

Aquaculture in Arunachal Pradesh thus holds the promise of a revolution on fish production and the availability of cheap animal protein. The need of the hour is to formulate a long-term comprehensive visionary and all inclusive fishery development model, including the felt needs of the farmers' aquatic environment, Pvt. Environment, etc. for its continuous and sustainable growth.

## **FORESTRY**

### **Importance of Forestry in the Economy of the State**

The importance of the social forestry for the economic development of the state is manifold. Indeed, life in the hills of Arunachal Pradesh without forests is inconceivable. About 82 percent of the geographical area of this state is under forests. The people are largely dependent on forests for their essential needs. The forest provide them the much needed materials, timber, cane and bamboo thatch etc. for handicrafts and house-building, fodder and grass, firewood and so on. Besides these, they also derive many items of food from the forests. The Jhum cultivation is practiced on the forested hill slopes, whereby most of the people subsist themselves. Repeated food production on a plot of

jhum land is possible because of the thick vegetative growth of the forests which retain the soil cover. The importance of forests for soil conservation needs no emphasis.

Forest provides necessary resource for wood-based industries, and a number of such industries on medium scale have come up in Arunachal Pradesh. Many small-scale industries, namely saw mills, paper making basketry of cane and bamboo, bamboo ply, furniture etc. based on forest produce are also operating. The economic development of the state, particular in the industrial sector, obviously depends much on forests.

Forest is the single largest source of revenue for the State government. The gross revenue from forests under the forest department was about Rs. 13.91 crores in 2005-2006.

#### **Forest Division and Forest Areas**

There are four forest circles comprising thirty territorial and functional Forest Divisions as in 1987, subsequently in the year 2006 Forest Divisions has increased to 35. The Forest Circles functioning in the State is 4. Forest Ranges is 124 and Beat offices (including account beat and non account beat) is 150. (see table N-1 and N-2).

#### **Fauna**

The fauna of Arunachal Pradesh is equally rich with as many as 25 species of mammals included in Schedule – I of the Wildlife (Protection) Act, 1972.

The large herbivours of the foot-hills and adjoining plains are the elephant (*Elephas maximus*), gaur (*Bos gaurus*) and the wild buffalo (*Bubalus bubalis*).

Arunachal Pradesh is perhaps the only State which has four major cats, i.e. tiger (*Panthera tigris*), leopard (*Panthera pardus*), clouded leopard (*Neofelis nebulosa*) and snow leopard (*Panthera uncia*). Lesser cats like the golden cat, leopard cat and the marbled cat are also found here. Seven species of primates i.e. hoolock gibbon, slow loris, Assamese macaque, rhesus macaque, pig-tailed macaque, stump-tailed macaque, and capped langur also occur in the forests of the State. This is the only state where all the 3 goat antelopes occurring in India, i.e. serow, goral and takin are found. The highly endangered hispid hare (*caprolagus hispidus*) is also found in low grassy areas of the State. Also



**Classification of district-wise forest management under reservation, protection etc.  
as on 310-03-2006**

**Table N(1)**

**(in sq. km)**

District	No. of Forest Division	Reserved forest	Anchal reserved /VRF	Protected forest	Unclassified State forest	Forest Under	
						Wild life sanctuary	National park
1	2	3	4	5	6	8	9
Tawang	1	-	-	5.98	3050	-	-
W/Kameng	4	708.35	4.57	0.51		217.00	-
E/Kameng	2	1063.86	-	0.27	537.74	861.95	-
PapumPare	6	1007.75	-	-	4388.46	140.30	-
L/Subansiri	1	347.07	-	-		337.00	-
K/Kumey	-	-	-	-		-	-
U/Subansiri	1	504.00	2.00	-	3112.00	-	-
W/Siang	2	248.18	-	-	9806.82	-	-
E/Siang	2	467.39	3.00	-	3806.73	190.00	-
U/Siang	2	-	-	-		-	483.00
D/Valley	1	-	-	-	3050.54	4149.00	-
LD/Valley	2	678.96	-	-		4430.50	-
Lohit	5	4396.53	249.19	-	572.48	783.00	-
Anjaw	-	-	-	-		-	-
Changlang	3	653.48	146.68	-	63.42	177.42	1807.87
Tirap	3	-	219.93	1.04		-	-
Total for A.P.	35	9912.57	625.37	7.80	31466.27	7137.57	2290.82

*Source : Statistical Abstract of Arunachal Pradesh, 2006, p-63*

**District-wise number of Forest management under circles, beat offices as on 31-03-2006**

**Table N(2)**

District	Name of forest circles covering the districts	No. of forest division		No. of ranges	No. of beat offices.	
		Territorial	Survey/Wp/SF research & wildlife		Accounts beat	Non account beat
1	2	3	4	5	6	7
Tawang	Western Circle (Banderdewa)	1	-	3	-	4
W/Kameng		3	2	17	8	16
E/Kameng		1	1	7	1	15
PapumPare		2	5	24	7	13
L/Subansiri		1	-	6	-	5
K/Kumey		-	-	-	-	-
U/Subansiri	Central Circle (Pasighat)	1	-	3	-	8
W/Siang		2	-	7	-	12
E/Siang		1	1	7	1	14
U/Siang		1	1	6	1	5
D/Valley		1	-	2	-	-
LD/Valley	Eastern Circle (Tezu)	1	1	7	2	8
Lohit +Anjaw		2	2	16	4	10
Changlang	Sounthern Circle (Deomali)	2	1	10	2	8
Tirap		2	1	9	-	6
Total for A.P.	4	21	15	124	26	124

Source: Statistical Abstract of Arunachal Pradesh, 2006, p-62

## Name of National Parks and wild Life Sanctuaries in Arunachal Pradesh.

Table N(3)

S/No.	Name of the national parks/ Sanctuary	Area in Sq.km	Location	Important fauna	Notification no. a & date
1	Pakhui W/L sanctuary	861.95	East Kameng District	Elephant, Tiger, Bear, Binturong, Sambhar, Bison, Hornbill	Notf. No. FOR 32/54 of 28-3-77
2	Itanagar W/L Sanctuary	140.3	Papumpare District	Elephant, Tiger, Bear	Notf. No. FOR 11/68/8302-330 of 14-4-78
3	"D" Ering Memorial W/L Sanctuary	190	East Siang District	Hog Deer, Hare	Notf. No. FOR 284/78/2 of 15-12-80
4	Mehao W/L Sanctuary	281.5	Dibang Valley and Lohit District	Red Panda, H.Gibbon, Takin	Notf. No. FOR 77 of 15-12-80
5	Kamlang W/L Sanctuary	783	Lohit District	Capped Longur, Deer, Bear	Notf. No. CWL/D/58/3175-3250 of 18-10-89
6	Eagle Nest W/L Sanctuary	217	East Kameng District	Red Panda, Elephant, Tiger	Notf. No. CWL/D/27/89/301-3174 of 18-10-89
7	Tele W/L Sanctuary	337		Cluoded leopard, Deer, Hornbill	Notf. No. CWL/D/58/88/PT/2993-3092 of 11-9-91 of 14-7-95
8	Kane W/L Sanctuary	55	West Siang District	Elephant, Small Cats, Tiger	Notf. No. CWL/D/58/88/2507-56 of 11-9-91
9	Dibang W/L Sanctuary	4149	Dibang Valley District	Tragupm, Kalis, Takin, Monal pheasant, Tragopan, Khalij, Pheasant, Musk deer	Notf. No. CWL/D/59/88/pt/3220-3260 of 26-11-91
10	Yordi-Rabe Supse W/L Sanctuary	496.15		Capped langur, Clouded leopard, Tiger, Hornbill and Lesser cats.	Notf. No. CWL/D/33/97/448-507 of 23-2-98
11	Sessa Orchid sanctuary	100	West Kameng District	Orchids	Notf. No. CWL/D/28/89/3025-3100 of 18-10-89
<b>National Parks &amp; Sanctuary Projects</b>					
1	Namdapha national Parks (Tiger Projects)	1985.245	Changlang district	Tiger, Hoolock Gibbon, Musk Deer	Notf. No. CWL/D/8/83/5284-5360 of 12-05-83
2	Mouling National Park	483		Scrow, Black Bear, Takin	Notf. No. FOR 55/Gen/81 of 30-12-86

Source: Department of Environment and Forests, Itanagar

see chapter-I to know more about fauna.

The department of Environment and Forests in order to preserve the fauna in the State has initiated the establishment of Wild life Sanctuary at Pakhui in 1977 and afterwards 12 sanctuaries and two national parks till 1996 were established in various part of the State (see above table N-3).

The population of elephants in the state as per the report from the Forest department was 2070 numbers in the 1993-94, which declined to 33 numbers in 1997-98. However, the population of Tiger in Reserves area has increased to 60 in 1999 from 49 which were recorded in 1993. (see table N-4 & N-5 below).

#### Elephant Population

Table N-4

S/No.	Year	Number
1	1983-84	1324
2	1993-94	2070
3	1997-98	33

Source: C.C.F. (Wildlife)

#### Tiger Population

Table N-5

S/No.	Year	In Tiger Reserves	In N.P./WLS outside T.R.	In General forest area	Total
1	1993	49	95	112	256
2	1995	52	-	-	52
3	1997	57	-	-	57
4	1999	60	-	-	60

Source: Department of Environment and Forests, Itanagar.

#### Flora

The forest area in the state as per the State report -1999, published by the forest survey of India, is 68951 sq. Km which accounts for 82.21% of total geographical area of 83,743 Sq.Km of the State. The recorded forest of the State including Orchid Sanctuary of 100 Sq. Km is 51540 Sq. Km which is about 62% of the total geographical area. Thus, the State is proud to have such high percentage of the area under valuable forests cover against the national percentage of 23.28. The district wise forest area in the state is given below in the table N-6.

**District wise forest area**  
**Table N-6**

S/No.	District	Geographic al area	Forest area	% of Geographical	Remarks
1	Tirap	2362	3235	46.34	Forest area includes Changlang also
2	Changlang	4662			
3	Lohit	11402	7415	62.66	
4	Dibang Valley	13029	8160	62.63	
5	West Siang	7643	10487	85.05	
6	East Siang	4687			
7	Upper Siang	6188	5123	82.7	
8	Upper Subansiri	7032	3618	54.45	
9	Lower Subansiri	10135	6697	51.48	Forest area includes Papum Pare & Kurung Kumey district also
10	Kurung Kumey				
11	Papum Pare	2875			
12	East Kameng	4134	2482	51.55	
13	West Kameng	7422	4593	51.54	Forest area includes Tawang also
14	Tawang	2172			
	<b>Total</b>	<b>83743</b>	<b>51540</b>	<b>61.55</b>	

*Source: Department of Environment and Forests, Itanagar*

### **FOREST PRODUCE AND ITS VALUE**

The important types of forests found in the State are Tropical Ever Green, Semi Green, Wet Ever Green, Wet Temperate; Deciduous Mixed coniferous, Alpine, Bamboo breaks etc. The state is very rich in fauna and flora. It has 20% species of country's fauna and about 4500 species of flowering plants, 400 species of pleridendron, 23 species of coniferous, and 35 species of orchids.

Forest creates large employment avenue and it is the single largest source of revenue for the State. However, restrictions imposed by the Supreme Court of India on timber operation has severely affected generations of State's revenue. The forest produce is classified under two categories – major and minor. The major products are timber, firewood, charcoal etc. while the minor products include bamboo, cane, thatch, fodder and grass, sandalwood, resin, shingles and gravel (coptis teeta, Mishmi teeta- a medicinal plant) etc.

Timber is supplied to the Indian railways to meet its demand for sleepers. In 2005-2006, the round timber and firewood produced was of the value of Rs. 540.28 lakhs and Rs. 6.24 lakhs respectively. The bamboo and cane produce during 2005-2006 was valued at Rs. 0.95 lakh and Rs. 8.42 lakh respectively. During the year 2005-2006 revenue earned was Rs. 13.19 crores. (Also see Chapter I to know more about flora of the State).

Timber, cane, bamboo, thatch etc. extracted from the forest are essential items for construction of dwelling houses of the people, for making of tools and implements, basketry and various other useful purposes.

The position shown the out-turn and value of forest produce during 2005-2006 in the table N-7 given below.

**Table N-7**

S/No.	Name of forest product	Unit	Quantity	Value (in Rs.)
1	Timber	Cum	17614.68	5,40,28735/=
2	Fuelwood	Cum	12878.906	6,24202/=
3	Cane	Kaps	56.590	8,42,445/=
4	Bamboo	No	10,4342	95,795/=
5	Sand	Cum	3497.48	220,091/=
6	Boulder	Cum	727	53,957/=
7	Shinge	Cum	10	400/=
8	Rubia codifolia	Kg	15,900	80,197/=
9	Resin	Blaz	141530	31,15,707/=
10	Laneru	Ton	29.5	88,500/=
11	Delayed chirpine	Ton	270	56,700/=
12	Tatch	Bdl	106000	43,127/=
13	Jang leaves	No.	108500	1,4111/=
14	Broom sticks	No.	11900	25194/=
15	Pole	No.	2143	16,267/=
16	Toko leaves	No.	328135	8,612/=
17	Ballies	No.	1749	8,736/=
18	Grazing permit	No.	120	144/=
19	Chirota	Kg.	1300	29,900/=
20	Lichi	M.T	3.5	52,500/=
21	Sunglass	bdls	4000	1,643/=

Source: Statistical Abstract of Arunachal Pradesh, 2006, p-66

### **MEASURES TO SECURE SCIENTIFIC EXPLOITATION AND DEVELOPMENT OF FORESTS**

Working plan are drawn up and implemented by the forest department for scientific management of state forests. These plans envisage development of forestry on scientific lines with special emphasis on aided natural regeneration and plantation of indigenous species without disturbing the existing forests and checking of denuded areas with trees. Efforts are also made to raise plantation of various timber species and cash crops in areas under Jhum and unclassified state forests.

The Forest Resources Survey Wing of the Forest department has carried out a survey of the resources in the 'Unclassed State Forests' so as to ensure better management of these forests by scientific methods and techniques. The department has been making endeavours for fruitful exploitation of the vast forest resources through execution of various schemes, namely afforestation, aided natural regeneration, raising the valuable of plantations, construction of forest roads, forest research and social forestry. The plantation schemes relate generally to regeneration of economically important species like hollock, hollong, mekai, teak, simul etc. under the afforestation scheme, pine plantations are raised in degraded forest areas and abandoned jhum land.

~~~~~

## **CHAPTER – IV**

# **INDUSTRIES**

### **Old-time Industries**

Difficult terrain, the erstwhile isolation of the tribal people, lack of road communication and of transport and market facilities, low level of technical development and dearth of skilled labour were some of the major constraints in the growth of modern industries in this state. Before independence, no administrative effort was made for industrial and economic developments. They depended almost entirely on jhum or shifting cultivation for subsistence, agriculture being the mainstay of the people. All other productive activities were subsidiary occupations. Their industrial enterprises were confined to production of articles meant chiefly for their own use. Besides handloom and handicrafts, there was no medium or even small-scale industry prior to 1947. The little surplus goods that were produced were exchanged for other bare necessities and the transaction was carried on by barter. Money was seldom used in these transactions; monetization of the local economy was a post-independence development. There was not enough incentive for trade to flourish and expand beyond certain fixed limits and a few market places. Moreover, journey from one area to another in this mountainous region was often perilous, and the traders belonging to a certain tribe of a particular area had usually no free passage through another adjacent tribe area. The tribal economy based on subsistence cultivation, stock-breeding and traditional cottage industries suffered a long stagnation with the result that the living standard of the people remained changelessly low. Under such stringent conditions, the industrial back-



wardness of territory continued to persist in spite of its vast natural resource.

But, the tribal people by their own genius and with the aid of simple tools had raised their arts and crafts of weaving carpet-making, basketry-cane and bamboo work, smithery, wood-carving and other handicrafts to a high degree of perfection. The plan for development of the present day cottage industries aims at promoting these old-time tribal arts and crafts.

### **Cottage Industries**

#### **Weaving:**

Dr. Verrier Elwin writing in the fifties observed that the chief art of NEFA is weaving and it is on the handloom that the greatest progress has been achieved. Weaving is of special importance to the tribal people, for it meets their essential requirements of cloth items of dress, bag etc. Their looms are small, simple and portable, generally a single heddle tension on loin-loom, which can be easily operated. Weaving in Arunachal Pradesh is an exclusively household craft of women amongst all the tribes. It is a part of the day's work of a woman. The girls in the house are trained up in the weaving from their teens, and it is handed down from generation to generation. The tribes have their own distinctive dresses. Although some of them are now being attracted towards modern textiles, their weaving designs are still excellent and they display workmanship of high order. The Monpa women weave in wool, cotton and bark fibre. Their main products are sashes, shawls, a wide variety of bags etc. The Sherdukpen women are also skillful weavers. The Monpas and the Sherdukpens make beautifully designed textile bags in combination of various colours – red, yellow, green, white and black. The Apatanis are comparatively advanced in the art of weaving. They make beautiful multicoloured shawls with borders skirts and loin-cloth. Weaving is widely practiced by various groups of the Adis. The Adi women are fond of bright attractive colours. The Mishmis, in particular, are renowned for the wealth and beauty of their weaving designs for their sense of colour and pattern. The shawls made by the Taraon and Kaman Mishmi women are excellent. The Idus too are fine weavers. The Khamptis have a slightly larger loom than that of the other tribes, which is suitable for weaving the lungi. The Khampti women make beautiful bags, embroidered bands for the hair, finely woven belts etc. The most valuable specimens of weaving of the Singphos are the turbans (both for men and women), women's skirts, men's Lungis (a sort of sarong) and handbags. The Tangsas are fond of designing their woven pieces with geometrical symbols and flora motifs. Some of their beautiful products are hand-bags and skirts woven in different colours.

### ***Carpet – Making***

The Monpas are adept in the craft of carpet – making. The carpet making is one of the economically viable craft of the Monpas. Each and every family usually processed at least one carpet in their house. The women in particular are proud of the carpet they weave. Now a days, synthetic dye of various colour and other materials like woolen yarn, cotton yarn and cotton twisted thread are purchased from local markets together with the tools and implements viz. iron hammer, wooden hammer, scissors, iron rods, chisel, needle, knife, coir brush, jack etc.

The loom has two vertical wooden beams with fixed pages at the top and the bottom, while two horizontal beams carry the warp threads cotton are tied to each other. The knotting is done by looping wool along the warp along with a rod which is held at right angle to the warp. The knotting is started from one end and finished at the other. The loops on the rod are cut by gliding edge of a chisel to release the rod, and then, a three ply twisted wool is thrown across the warps to fix up the loose loops of wool. To weave design on a carpet, desired colour wool is placed in lieu of the ground coloured wool in the normal course of weaving. After completion of weaving, the carpet is dressed by cutting unwanted wools and finally brushed.

The carpet weaving is a traditional craft of the Monpa women. Any interested women can learn the carpet weaving either by associating with expert women or by training in the government craft centre situated in the district headquarters. On completion of the training one can set up a small scale industry as there is a great demand for these carpets. There are now a good number of privately owned SSI units run by the Monpa women. These SSI units provide employment opportunities to good number of women folks and simultaneously earn a sizeable amount of cash by selling out the carpets in strengthening their economy. The carpets and mate woven in Tawang, Bomdila and other places of West Kameng are in great demand for their artistic beauty, lovely designs and elegant soft texture.

### ***Basketry : Cane and Bamboo Work***

A striking feature of the culture of a large number of tribes living in a vast area stretching from the eastern parts of West Kameng district to Lohit district, described as the central cultural area of Arunachal Pradesh, is the prominence of cane and bamboo craft, and the absence of wood carving or

mask-making. Cane and bamboo grown abundantly in this area is utilized to the fullest extent for many important and productive purpose ranging from house-building to basketry. Even large suspension bridges, aptly called "marvels of untutored engineering skill" were made of cane. Indeed, the technical skill and artistic ingenuity of the people of this area find eloquent expression through their fine work in cane and bamboo.

The Bangnis (Nyishis) of East Kameng like other tribes of the central area are greatly attached to the cane and bamboo craft. The art of basketry of the Monpas and Sherdukpens living outside this area is also remarkable. The Akas and Puroiks are expert basket-makers. The Nyishis, Hill Miris, Apa Tanis and Tagins make various useful and fine articles of cane and bamboo, e.g. decorative cane-hats, bags, cane-baskets, mats of cane and bamboo, vessels, containers etc. The cane suspension bridges, as already mentioned, made by the Adis are simply wonderful. The best Adi cane-work is seen in the making of a variety of hats. The basketry is so fine that some of the helmets can hold water. They make a variety of essential household and other articles of cane and bamboo, such as carrying cum storing baskets, winnowing fans, haversacks, sheaths of daos and knives, mats, hunting and fishing traps, bows and arrows, water tubes.

The Monpas, Membas and Khambas living along the international border adjoining the Siang region make caps, hats, coats, carpets and blankets from compressed wool and goat hair. Like other tribes the Idus, Mishmis, Noctes, Tangsas and Wanchos are also adept in cane and bamboo work. Their basketry is of high standard, particularly the baskets of hexagonal shape in the lids.

**Smithery.** 122. *Smithery is generally confined to certain families or villages as hereditary occupation among some of the tribes. Among the Monpas, for example some itinerant blacksmiths from the north used to come down to the south to do the work. The Monpas of Dirang seem to have a dependence on them for articles of iron they needed. The Sherdukpens of Jigöan village is, however, known for their skill in smithery. They make daos, knives, hatchets and sickles with iron imported from the plains. Pig iron and scrap are used. The anvil is either of iron or stone. The Bangnis (Nyishis) have also skilled blacksmith among them, who produce essential iron tools and implements. The Sulung (Puroik) learnt this craft from the Bangnis, and now they forge iron brought from Assam to make knives, hammer, felling axe, dao, spearheads and arrow-*

Smithery is generally confined to certain families or villages as hereditary occupation among some of the tribes. Among the Monpas, for example some itinerant blacksmiths from the north used to come down to the south to do the work. The Monpas of Dirang seem to have a dependence on them for articles of iron they needed. The Sherdukpens of Jigöan village is, however, known for their skill in smithery. They make daos, knives, hatchets and sickles with iron imported from the plains. Pig iron and scrap are used. The anvil is either of iron or stone. The Bangnis (Nyishis) have also skilled blacksmith among them, who produce essential iron tools and implements. The Sulung (Puroik) learnt this craft from the Bangnis, and now they forge iron brought from Assam to make knives, hammer, felling axe, dao, spearheads and arrow-

heads. The Nyishis have among them skilled craftsmen, who smelt and cash metals. Their ironsmiths make daos, knives and even felling axes. The silver-smiths cast molten bronze and silver into traditional and artistic ornaments. They make their own brass ornaments, dishes, sacred bells and silver smoking pipe. These articles are usually obtained from Assam. The craftsmen use simple tools, which for iron smithy consist of hammers, chisels and tongs with cane and bamboo handles.

The Adi blacksmiths are expert in making iron tools. They manufacture most of their weapons themselves. There is a smith almost in every Adi village. These smiths do not belong to a separate clan, but the profession is generally passed on from father to son inherited by their nearest male relatives. The Nocte and Wanchos blacksmiths forge iron scrapers, daos, spades, spear-heads etc. The Wanchos also make brass ornaments. The daos made by the Singphos were highly forged all over the frontier for temper and durability.

Silver smithy among the Monpas is a fine art though they do not do much work in silver. Monpas ornaments of silver are surprisingly beautiful. Their silversmiths are also proficient in making various other articles such as spoons, candle-stand, ash-tray of brass, rings etc. Which are of high artistic value. The sherdukpens are fond of wearing silver ornaments-necklace bangles, bracelets etc, but this craft is apparently confined to a few silversmiths among them. The craftsmen among the Sulung make brass ornaments, pipes and imitation sacred bells. The Mishmis possesses a considerable quantity of silver, but they depend upon other tribes and also smithy of nearest plains for their silver ornaments and articles. Their silver tobacco-pipes are made by the Galos and their earrings are procured from nearby markets in Assam. The silver-charm-box, and an appendage hung from their necklace, was previously obtained from the Tibetans and now they are made by silversmiths who forge a great number of daos and knives annually.

### ***Wood-Carving***

The Monpas as also the Sherdukpens have a tradition of woodcarving. Their best work in wood is in the carving of bowls, cups, dishes, candle-stands, Flower-vase and things like that which are often painted with beautiful designs. Mask-making is an important aspects of this craft. Wonderful stimulus to artistic creation is found among the Sherdukpens, Membas, Khambas and Monpa dances or pantomimes. These require ornate dresses and ornaments and large number of Masks, some of which are natural that they appear almost

like real faces, while others represent birds and animals. The wooden images of Lord Buddha are made by Monpa artists. The masks are carved from single blocks of wood hollowed out inside, holes are usually made for eyes and mouth and most of the masks are painted.

Wood-carving in Siang is a crafts exclusively of the Memba and Khambas, who are Buddhist by religion. They carve out of wood. These apart, they also make decorative pieces of wood such as candle-stand, flower-vase etc. In Lohit, the Khamptis, who are also Buddhists, are fond of wood carving. They make wooden masks and embossed shields. Their carvings of images of the Lord Buddha are specimens of fine worship. Some of the finest and best wood-carving in the entire area of Arunachal Pradesh are found among the Wanchos of the Tirap District. The central motif in wood-carving is a human head. The head-hunting is the inspiration not only of the wooden or brass-heads worn by the warriors, but also of carvings on drinking mugs and pipes, of head-hunting scene on the pillars of morungs and human figures carved on baskets or other artifacts. Other specimens of wood-carvings are dolls, plates, tobacco pipes, statuettes and forms, such as the frog, tiger and other animals. The above specimens are mainly carved for household purpose or as items of furniture, and they have ceremonial values as well. Wood-carvings are not generally meant for sale in the open markets, only on certain occasions they are exchanged for other articles. Wood-carving of an image is connected with religious performances.

### **Crafts Centre**

The first step taken by the government after independence towards industrial development of this area, where there was no mechanized industry until recently was an endeavor to preserve, revitalize and promote the traditional village and cottage industries so that the beauty and wealth of tribal arts and crafts were not lost. With these aim in view, a number of craft centers and weaving units have been setup. The craft centers have two functional wings training unit and production unit, which are concerned with various crafts, such as weaving, wood-carving, carpet making, cane and bamboo work, smithery etc. Training in improved methods is imparted to the local artisans, both men and women. The object of the production unit is to manufacture articles primarily to meet the local requirements and provide adequate jobs to the successful trainees. Some of the tribal crafts, weaving in particular, may suffer gradual decay unless they are protected against the impact of current economic and

industrial developments. The mill-made clothes are popular today Fly-shuttle loom has been introduced in the craft centers to increase their efficiency and productivity. But, it is been suggested that application of modern techniques, installation of power looms and wider markets are necessary for the growth and further development of the cottage industries. Of late, there has been a considerable of growth of internal market. External market facilities are also being extended. Emporiums have been setup at the district headquarters and outside. Articles produced in the craft centers are sold through the emporiums and show-rooms.

**DISTRICT-WISE CRAFT CENTRES/WEAVING CENTRES AND OTHER ACTIVITIES IN ARUNACHAL PRADESH  
AS ON 31-03-06**

| Districts                 | Craft/<br>Weaving<br>Centre<br>(in Nos.) | Trainee<br>in Craft<br>&<br>Weaving<br>Centres<br>(in Nos.) | Handloom<br>Developme<br>nt Centre &<br>quality<br>dyeing unit.<br>(in Nos) | Value of<br>Production of<br>cloth/craft<br>during the<br>year<br>(in Rupees) | No. of<br>Emple-<br>yees | No of<br>show<br>rooms<br>cum<br>sale<br>counters | Annual Sale<br>proceed of<br>Emporium<br>and show<br>room cum<br>sale counters. |
|---------------------------|------------------------------------------|-------------------------------------------------------------|-----------------------------------------------------------------------------|-------------------------------------------------------------------------------|--------------------------|---------------------------------------------------|---------------------------------------------------------------------------------|
| I                         | II                                       | III                                                         | IV                                                                          | V                                                                             | VI                       | VII                                               | VIII                                                                            |
| Tawang                    | 2                                        | 40                                                          | 1                                                                           | 123489.00                                                                     | 1                        | -                                                 | 1,78,406.00                                                                     |
| West<br>Kameng            | 3                                        | 58                                                          | -                                                                           | 1,65,261.00                                                                   | 1                        | -                                                 | 2,12,532.00                                                                     |
| East<br>Kameng            | 8                                        | 69                                                          | -                                                                           | 2,37,190.00                                                                   | 1                        | -                                                 | 1,76,048.00                                                                     |
| Papum<br>Pare             | 5                                        | 35                                                          | 1                                                                           | 20,179.00                                                                     | 2                        | 1                                                 | 82,039.00+<br>1,10,905.00                                                       |
| Lower<br>Subansiri        | 3                                        | 30                                                          | 1                                                                           | 1,40,181.00                                                                   | 1                        | -                                                 | 1,46,023.00                                                                     |
| Upper<br>Subansiri        | 6                                        | 70                                                          | 1                                                                           | 53,197.00                                                                     | 1                        | -                                                 | 78,294.00                                                                       |
| Kurung<br>Kumey           | 5                                        | 24                                                          | -                                                                           | 7,565.00                                                                      | -                        | -                                                 | 18,533.00                                                                       |
| West<br>Siang             | 12                                       | 133                                                         | 1                                                                           | 2,06,823.00                                                                   | 1                        | 1                                                 | 1,67,320.00                                                                     |
| East<br>Siang             | 4                                        | 40                                                          | -                                                                           | 29,492.00                                                                     | 1                        | -                                                 | 96,455.00                                                                       |
| Upper<br>Siang            | 6                                        | 65                                                          | -                                                                           | 1,45,034.00                                                                   | 1                        | 2                                                 | 1,81,035.00                                                                     |
| Dibang<br>Valley          | 2                                        | 14                                                          | -                                                                           | 58,334.00                                                                     | 1                        | -                                                 | 69,526.00                                                                       |
| Lower<br>Dibang<br>Valley | 3                                        | 36                                                          | -                                                                           | 84,619.00                                                                     | 1                        | -                                                 | 1,70,906.00                                                                     |
| Lohit                     | 5                                        | 57                                                          | 1                                                                           | 75,018.00                                                                     | 1                        | -                                                 | 1,72,368.00                                                                     |
| Anjaw                     | -                                        | -                                                           | -                                                                           | -                                                                             | -                        | -                                                 | -                                                                               |
| Changlang                 | 6                                        | 55                                                          | -                                                                           | 2,11,176.00                                                                   | -                        | -                                                 | 1,18,991.00                                                                     |
| Tirap                     | 18                                       | 159                                                         | -                                                                           | 1,20,260.00                                                                   | 1                        | 1                                                 | 1,10,946.00                                                                     |

|                         |   |   |   |     |   |   |              |
|-------------------------|---|---|---|-----|---|---|--------------|
| New Delhi               | - | - | - | N.A | 1 | 1 | 34,771.00    |
| Calcutta                | - | - | - | N.A | 1 | - | 71,360.00    |
| Itanagar (H.Q) Emporium | - | - | 1 | N.A | 1 | - | 11,65,595.00 |

*Source:- Director of Textile and Handicraft, Arunachal Pradesh, Itanagar*

In 1987, there were 64 craft centers including weaving and knitting units in the State, and their total outrun and sale proceeds in that year were Rs. 20, 27,000.00 and Rs. 20, 94,000.00 respectively. In 2006, there were 88 craft/weaving centers, 886 trainee in craft and weaving centers, 6 Handloom Development centre and quality dyeing unit, 18 numbers of Emporium, 6 Nos of show rooms cum sale counters in the state and the value of production of cloth/craft and Annual Sale proceed of Emporium and show room cum sale counter were Rs. 16,77,827.00 and Rs. 33,62,053.00 respectively.

### **Development of Modern Industries**

There was no modern industry of any scale in this state before independence. Lack of infrastructural facility, such as power, roads, entrepreneurial and technological know-how as well as knowledge of production techniques, have for a long time deterred the growth of industries. Besides this, industrialization of a difficult mountainous terrain with a low manpower and dearth of labour, skilled and unskilled, was evidently an uphill task given the conditions peculiar to this State, the development programmers drawn up in a phased manner aims at building on infrastructure to boost the growth of modern industries larger than indigenous crafts so as to initiate the process of industrializations.

Endowed with abundant forest, mineral and hydel power resources, Arunachal Pradesh has a high industrial potential. The coal reserve of the State comprising the Namchik – Namphuk coal mine in the Tirap–Changlang region was estimated at about 900 lakh tones. This coal mine has been leased out to the Coal India Limited for commercial exploitation. The estimated crude oil reserve is 15 lakh tones. Vast deposits of dolomite exist at Rupa in the West Kameng district. The Lime stones deposit at Tidding in the Anjaw district indicated a reserve of 910 lakh tones. Limestone also occurs at Hunli in the Dibang Valley district and Menga in the Upper-Subansiri district. These apart, occurrences of graphite, quartzite, Kyanite, Mica, Iron and copper ores were also reported.

Remarkable progress has been achieved in the small-scale industrial sector. In 1987, the number of small-scale industries comprising saw, rice and

oil mills, fruit preservation, soap and candle manufacturing units, steel fabrication, wood works etc. was 1625. The district-wise details are as follows:

**DISTRICTWISE SMALL SCALE INDUSTRIES, EMPLOYMENT, INVESTMENT  
AND ANNUAL PRODUCTION IN ARUNACHAL PRADESH, AS ON 31-03-2006.**

| Sl. No.                    | Districts           | No of Village & SSI Unit registered Permanently functioning) | No of Medium Industries. | No of Rural Industrial Projects. | Total o. of Employment | Total Investment 2005-2006 (Rs in Lakhs) | Total Annual Production 2005-06 (Rs.in lakhs) | Remarks |
|----------------------------|---------------------|--------------------------------------------------------------|--------------------------|----------------------------------|------------------------|------------------------------------------|-----------------------------------------------|---------|
| 0                          | 1                   | 2                                                            | 3                        | 4                                | 5                      | 6                                        | 7                                             | 8       |
| 1.                         | Tawang              | 23                                                           | -                        | -                                | 110                    | 25.20                                    | -                                             |         |
| 2.                         | West Kameng         | 55                                                           | -                        | -                                | 70                     | 105.00                                   | -                                             |         |
| 3.                         | East Kameng         | 06                                                           | -                        | -                                | 30                     | 12.50                                    | -                                             |         |
| 4.                         | Papum Pare          | 91                                                           | 3                        | -                                | 1500                   | 2500.00                                  | -                                             |         |
| 5.                         | Lower Subansiri     | 12                                                           | -                        | -                                | 60                     | 50.00                                    | -                                             |         |
| 6.                         | Kurung Kumey        | 3                                                            | -                        | -                                | 20                     | 11.00                                    | -                                             |         |
| 7.                         | Upper Subansiri     | 09                                                           | -                        | -                                | 30                     | 21.00                                    | -                                             |         |
| 8.                         | West Siang          | 51                                                           | -                        | -                                | 125                    | 151.00                                   | -                                             |         |
| 9.                         | East Siang          | 48                                                           | -                        | -                                | 1251                   | 300.00                                   | -                                             |         |
| 10.                        | Upper Siang         | 03                                                           | -                        | -                                | 62                     | 95.70                                    | -                                             |         |
| 11.                        | Lower Dibang Valley | 72                                                           | 2                        | -                                | 679                    | 350.00                                   | -                                             |         |
| 12.                        | Dibang Valley       | 03                                                           | -                        | -                                | 12                     | 10.00                                    | -                                             |         |
| 13.                        | Lohit/Anjaw         | 63                                                           | 2                        | -                                | 234                    | 280.00                                   | -                                             |         |
| 14.                        | Changlang           | 21                                                           | 5                        | -                                | 350                    | 582.37                                   | -                                             |         |
| 15.                        | Tirap               | 44                                                           | 3                        | -                                | 58                     | 300.00                                   | -                                             |         |
| <b>Total for Arunachal</b> |                     | <b>504</b>                                                   | <b>15</b>                | <b>-</b>                         | <b>4591</b>            | <b>4793.07</b>                           |                                               |         |

Source: Director of Industries, Arunachal Pradesh, Itanagar.



After 1947, four medium industries come up by 1980. The Assam Saw Mills and Timber Company limited have been operating a plywood factory at Namsai in the Lohit District since 1952. In 1959, it became a director – controlled company under Messars Jalan Industries Private Limited. It had been producing 3, 50,000 tea-chests annually. Besides, tea-chests, plywood panels and sawn timber, the company also manufacture commercial and decorative ply-wood, black-board, railway sleepers etc.

The Nocte Timber Company Limited was established at Deomali in the Tirap District with a share capital of Rs. 20 lakh for production of tea veneers, tea-chest panels, black boards etc. The capital formation as standing on October 1, 1977 was as follows:

The controlling share of the company was subscribed between the government and the Assam Saw Mills and Timber Company Limited at 61% and 39% respectively. The management of the company was taken over by the government in July, 1977.

The Narottam Co-operative Industries Limited was established also at Deomali in 1972 with authorized share capital of Rs. 10,18,000/- namely plywood manufacturing unit, saw mill unit and mustard oil crushing unit.

The Arunachal Saw mill and Veneer Mill Private Limited at Jairampur in the Changlang district is another forest-based medium industry established in this period. It produces ply-boards, tea-chests, veneers etc.

By 1993, the number of medium industries rose to 17. These are all forest-based industries. An infrastructure to promote the growth of major industries is in the process of being built up. An important industry in this sector is the light roofing-sheet factory at Pasighat, which has already become operational. It has a production capacity of 50 corrugated sheets per day. A fruit processing plant with a production capacity of five metric tones of processed fruits per day has been set up at Nigmai in the West Siang district. A cement plant at Tezu having a production capacity of 30 tonnes per day, a lemongrass oil expeller unit at Tawang and a citronella distillation plant at Pasighat are the other important undertakings in the major industries sector. Drilling in the Ningru oil fields undertaken by the Oil India Limited has brightened the prospect of a small refinery to come up at Kharsang in the Tirap district. Besides these, possibilities of another cement plant at Tidding in the Anjaw district with a production capacity of 200 tonnes per day and a paper industry at Bhalukpong

An electronic unit has been set up at Itanagar for assembling television sets, quartz clocks, mini-microphones, radio etc. in collaboration with the Hindustan Machine Tools factory, Bangalore. Establishment of a rural industries development centre at Dirang in the West Kameng district is under way.

15 (Fifteen) industrial estates covering most of the districts have been established at various places including Itanagar, Naharlagun, Pasighat and Deomali. The total industrial area acquired by March 2003 for these estates is about 82.03 acres.

**INDUSTRIAL AREA AND ESTATE DEVELOPED IN A.P.A.S ON 31-03-2006.**

(Area in Acres)

[illegible]

|                                |           |               |           |           |           |              |             |           |          |
|--------------------------------|-----------|---------------|-----------|-----------|-----------|--------------|-------------|-----------|----------|
| West Siang                     | 1         | 50.00         | 04        | -         | 4         | -            | -           | -         | -        |
| East Siang                     | 1         | 19.78         | 02        | -         | 2         | -            | -           | -         | -        |
| Upper Siang                    | -         | -             | -         | -         | -         | -            | -           | -         | -        |
| Dibang Valley                  | -         | -             | -         | -         | -         | -            | -           | -         | -        |
| Lower Dibang Valley            | -         | -             | -         | -         | 3         | 9.88         | Developed   | 3         | 1        |
| Lohit                          | 1         | 4.00          | 02        | 2         | -         | 3.91         | Undeveloped | -         | 1        |
| Changlang                      | 2         | 7.80          | 06        | -         | 6         | -            | -           | -         | -        |
| Tirap                          | 2         | 5.72          | 08        | 5         | 3         | -            | -           | -         | -        |
| <b>Total Arunachal Pradesh</b> | <b>13</b> | <b>212.29</b> | <b>67</b> | <b>44</b> | <b>26</b> | <b>82.00</b> | <b>-</b>    | <b>17</b> | <b>4</b> |

Source: Director of Industries, Arunachal Pradesh, Itanagar.

#### **Arunachal Pradesh Industrial development and Financial Corporation (APIDFC)**

Arunachal Pradesh Industrial Development and Financial Corporation Ltd. (APIDFC), a fully state Govt. undertaking was incorporated in the year 1978 as a company under Companies Act, 1956 in order to co-ordinate, guide and assist the industries in various fields of production and for promotion of industries in the state of Arunachal Pradesh. It is performing the twin role of State Industrial Development Corporation and State Financial Corporation.

##### ***Function and objectives.***

- i) Development of infrastructure facilities for development of industries.
- ii) Promotion of industries
- iii) Extending financial assistance to the prospective entrepreneurs

##### ***Development of Infrastructure Facilities***

One of the main objectives of setting up APIDFC is to develop infrastructure facilities for industrial development in the state. However, APIDFC could not take up the activities due to the fact that the state department of the Industries is looking after all infrastructure development activities like establishment of industrial estate/growth centre, export promotion industrial park and integrated development centres.

***Constraints for Industrial Promotion***

- i) Late start to the process of industrialization in the region leading to slow growth of entrepreneurial and industrial culture;
- ii) Lack of adequate infrastructure in the form of road network, rail link and airports resulting in higher production cost;
- iii) Lack of adequate electrical power at competitive rates;
- iv) High cost of recruiting and training of personnel due to inadequate availability of professional talents and skilled workers;
- v) Necessity of maintaining large inventory due to the remoteness of the region;
- vi) Limited and dispersed market of goods within the region coupled with Higher cost of marketing outside the region;
- vii) Lack of inflow of investment-worthy funds from outside the state.

In spite of all the inherent bottlenecks and constraints for industrial development in the state, APIDFC has, in the last 28 years, promoted a wide spectrum of projects covering various industrial and service sectors like handloom and handicrafts, saw mill, plywood manufacturing, pharmaceuticals, hotels, transport etc. by extending financial assistance to the tune of Rs. 898.18 lakhs to 177 units.

***Subsidiaries***

APIDFC has 2 (two) subsidiary companies viz., Parasuram Cement Ltd. (PCL), a 30 TPD cement plant at Tezu in Lohit district and Arunachal Horticulture Processing Industries Ltd. (AHPIL), a 5 TPD fruit processing plant at Nigmoi, Aalo in West Siang district.

Both the plants were closed down in 1995 due to continuous loss incurred by the plants. AHPIL has since been leased out to a local businessman. In respect of PCL, efforts are being made for outright sale of the assets.

***Joint venture project***

The Corporation has also promoted a joint venture hotel project at Itanagar with India Tourism Development Corporation in the name and style of Donyi Polo Ashok Hotel Corporation Ltd.

***Agency activities***

APIDFC is the state channelising agency to implement the various

schemes of assistance of National Scheduled Tribes Finance and Development Corporation, a Govt. of India undertaking which is an apex financial institution for financing, facilitating and promoting the economic development activities of the benefice scheduled tribes of the state

The Corporation is also running 2 departmental units viz., Arunachal Printing and Arunsiri Gas Agency.

***Present status***

The corporation is passing thorough, a very difficult period for the past few years due to rise in; non-performing assets as well as salary expenses in one hand and decline in generation of income on the other. Taking cognizance of the important role of APIDFC in industrial development of the state, the government is considering financial and organizational restructuring of the Corporation not only to improve its performance but also to facilitate it to play its mandate role meaningfully.

**ROLE OF THE STATE GOVERNMENT IN INDUSTRIALISATION**

The Department of Industries, Government of Arunachal Pradesh is the nodal department for industries in the state. Two related but separate departments are those of Textile, Handloom & Handicrafts, and Trade & Commerce.

The main focus of the Industries Department in the state is to encourage small and medium scale industries based on locally available raw materials, which are mainly agricultural, horticultural, and forest based products. The industries being encouraged are fruit and spice processing, cane and bamboo based products including handicraft items, furniture, pulp etc., handlooms, processing of medicinal plants, and light fabrication industries. The Department is also the Nodal Department for Food Processing Industries in the State.

There are 16 District Industries Centres (DICs) in the state, one in each district. The DICs act as single window agency for industries and extend all possible assistance and guidance to entrepreneurs and artisans. The industrial sheds in the industrial estates and open space in industrial areas are allotted by the DICs to industries. The Prime Minister Rojgar Yojna (PMRY) Scheme is also administered by the DICs. Details of existing Industrial Estates & industrial Areas, and areas earmarked for proposed DICs, and the upcoming Industrial Growth Centre.

The Industrial Training Institutes (ITI's) in the state are run by the Industries Department as part of the Human Resource Development program and to provide trained manpower to the industries of the region. There are three functioning ITI s at Roing, Tabarijo, and Dirang. The ITI at Miao and another, a women's ITI at Yupia are coming up and expected to be operational by 2006.

**TRADE-WISE PASSED OUT TRAINEES IN  
ARUNACHAL PRADESH DURING 2003-2004**

| Sl. No.                                | Name of Trade                | No. of Candidate<br>admitted for<br>training |              |       | No. of Candidate<br>passed out training |
|----------------------------------------|------------------------------|----------------------------------------------|--------------|-------|-----------------------------------------|
|                                        |                              | ITI Roing                                    | ITI Tabarijo | Total |                                         |
| 1                                      | 2                            | 3                                            | 4            | 5     | 6                                       |
| 1.                                     | Electrician<br>Trade         | 16                                           | 14           | 30    | 12                                      |
| 2.                                     | Fitter                       | 9                                            | -            | 9     | 6                                       |
| 3.                                     | Mechanic<br>(General Elect.) | 14                                           | -            | 14    | 11                                      |
| 4.                                     | Wireman                      | 16                                           | -            | 16    | 6                                       |
| 5.                                     | Draughtsman<br>(Civil)       | 17                                           | 17           | 34    | 31                                      |
| 6.                                     | Mechanic (MV)                | 16                                           | -            | 16    | 14                                      |
| 7.                                     | Carpenter                    | -                                            | -            | -     | -                                       |
| 8.                                     | Welder                       | -                                            | -            | -     | 6                                       |
| 9.                                     | Plumber                      | 13                                           | -            | 13    | 10                                      |
| 10.                                    | Surveyor                     | 18                                           | -            | 18    | 15                                      |
| 11.                                    | Mechanic<br>(Radio & TV)     | -                                            | 7            | 7     | 6                                       |
| 12.                                    | Secretarial<br>Practices     | -                                            | 17           | 17    | 12                                      |
| 13                                     | Mechanist                    | -                                            | -            | -     | -                                       |
| <b>Total for Arunachal<br/>Pradesh</b> |                              | 19                                           | 55           | 174   | 129                                     |

*Source: Director of Industries, Arunachal Pradesh, Itanagar*

**Arunachal Pradesh State Industrial Policy 2008<sup>1</sup>**

Arunachal Pradesh, the largest in area amongst the Northeastern States of India, is endowed with plenty of natural resources, which need to be converted into goods and services for the development of the State and its people. At present, the industrial growth in the State is dismal and at a nascent stage despite enormous potential for industrial growth.

Further, the Government of India has given tremendous thrust on the “Look East Policy” which itself calls for greater infrastructure for industries and trade. The North East Industrial Investment & Promotion Policy-2007 (NEIIPP-2007) has been formulated by the Ministry of Commerce and Industry, Government of India for industrialization and proper development of North-East Region.

Arunachal Pradesh with its huge hydropower potential of over 57,000 MW, which is being developed in a phased manner, will soon have surplus power to feed power intensive industrial units.

Therefore, the State Government of Arunachal Pradesh felt the need of reviewing the State Industrial Policy, 2001 in order to make it investor-friendly and to facilitate optimum utilization of locally available raw materials by encouraging setting up of appropriate industrial units for value addition. The Policy also aims at providing industry access to high quality infrastructure, extending institutional support for technology up-gradation, deregulating the business environment for an efficient, proactive and transparent administrative frame-work and catalyzing the entrepreneurial as well as creative capabilities of the human resources.

Accordingly, after due deliberations and taking into consideration all issues relating to investments and industrial growth in the State, the Industrial Policy, 2008 of Arunachal Pradesh has been formulated.

The prospective investors and entrepreneurs will find this policy attractive enough to select Arunachal Pradesh as their most attractive investment destination.

**1. Short title and commencement****1.1 The policy may be called the State Industrial Policy,**

<sup>1</sup> Department of Industries govt. of A.P. Udyog Sadan, Itanagar-791111.

- 1.2 Save as provided under sub-clause (ii) and (iii) of clause 17 of this policy, this policy shall come into force on the date of its publication in the Arunachal Pradesh state Gazette.

## 2. *Objectives*

The Industrial Policy, 2008 of Arunachal Pradesh is formulated to achieve the following objectives:

- 2.1 To create an investment-friendly environment in the State for industrial growth in the private/ joint venture/ Cooperative sectors for sustainable economic development of Arunachal Pradesh.
- 2.2 To generate employment opportunities in the State.
- 2.3 To make Arunachal Pradesh a preferred destination for outside investors.
- 2.4 To encourage local entrepreneurs to set up enterprises based on locally available raw materials.
- 2.5 To promote export oriented industrial units.
- 2.6 To take steps to promote handloom and handicrafts.
- 2.7 To promote local investors through joint ventures with outside investors.
- 2.8 To encourage industrial units producing high value - low volume products.
- 2.9 To ensure fast track clearance of industrial proposals.

## 3. *Thrust Areas*

The State Government has identified the following industries as thrust areas, which will be eligible for various incentives:

- 3.1 Industries based on agricultural, horticultural and plantation produce.
- 3.2 Industries based on non-timber forest produce: bamboo, cane (rattan), medicinal plants / herbs, aromatic grass, tea, coffee etc.
- 3.3 Industries based on locally available raw materials except timber.
- 3.4 Textiles (handlooms and power looms), Handicrafts and Sericulture
- 3.5 Electronics and IT based Enterprises.
- 3.6 Mineral Based Industries (eg. Ferro-alloys, Cement Plant etc.).
- 3.7 Facilitation and Development of Industrial Infrastructure including



- Power, Communications etc. under Public Private Partnership (PPP).
- 3.8 Food Processing Industries.
- 3.9 Engineering and Allied Industries (Rolling Mill, Steel etc.).
- 3.10 Tourism (tourism infrastructure including resorts, hotels, restaurants etc.).

(The thrust areas mentioned above will be reviewed periodically to include other sectors of industrial activities from time to time).

#### **4. *Development of Infrastructure***

- 4.1 The State Government shall make special efforts to create proper infrastructure by promoting establishment of Industrial Estates, Industrial Growth Centres, Integrated Infrastructure Development Centres, Small Industries Cluster Development, Export Promotion Industrial Parks, Export Promotion Zones, Special Economic Zone (SEZ), Food Parks; strengthening of existing Industrial Estates, Border Trade Centres, Industrial Cluster Development etc.,

#### **5. *Period and extent of Equity holding / Ownership***

- 5.1 Entrepreneur(s)/ a group of entrepreneurs/ consortium of industries will be allowed cent percent equity holding / ownership of their industrial unit(s)/ enterprises for a period of 50 years. After the end of 50 years, the State Government reserves the right to review and modify equity holding / Ownership on mutually agreed terms and conditions.

#### **6. *Period of Land lease***

- 6.1 Entrepreneurs/ Investors shall be allowed to hold the land on lease for a period of 50 years on a predetermined lease rent. The consideration for lease of land may be in the form of annual or lump sum payments or equity participation. After the expiry of lease period, the State Government may renew the lease period further on mutually agreed terms and conditions.

#### **7. *Sales Tax/VAT Exemption to eligible industrial units***

- 7.1 State Government shall provide 99% Sales Tax (VAT) / Entry Tax exemption to eligible industrial units on import of actual raw materials, machineries and equipments into Arunachal Pradesh as also on sale of finished goods in the State for a period of 7 years from the date

of commencement of commercial production.

(NB: Subject to amendment of the Arunachal Pradesh Goods Tax Act, 2005)

#### **8. Trading License**

- 8.1 At present, trading licenses are issued only to indigenous local traders. The present policy will continue to hold good for small scale industries / enterprises. However, under this policy the trading license will be issued to all entrepreneurs including outside investors for the industries/enterprises which involve investments of minimum Rs 5.00 Crore in plant and machineries, whereas in case of service sector the minimum investment on equipments should not be less than RS.2.00 Crore to qualify for obtaining trading license.

#### **9. The State Fiscal Incentives**

- 9.1 Price Preference: State Government Departments and other state Government controlled bodies and organizations, while making purchases will give price preference to the products manufactured by registered Micro and Small Enterprises. Other things being equal they will be given a price preference in contract bids as indicated below:
- 9.2 Purchase Preference: State Government Departments and other State Government controlled bodies and organizations shall give preference to the registered Units/Enterprises of the State while purchasing from the products manufactured by them.
- 9.3 Subsidy on cost of preparation of Feasible Project Report (FPR): An enterprise would be eligible for subsidy on payment made towards preparation of project report to the professional Consultant/ Agency on the condition that the project report should be approved and sanctioned by the Financial Institution /Commercial Bank in a ceiling limit as prescribed below:

| Sl.No. | Type of Industries                | Price preference rates |
|--------|-----------------------------------|------------------------|
| 1.     | Cooperative Ventures              | 7.5%                   |
| 2.     | SSI units, cottage and tiny units | 15%                    |

- a) Micro Sector: 90% of the cost but not more than Rs. 9000/-

- b) Small Sector: 75 % of the cost but not more than Rs. 25,000/-
  - c) Medium/Large Sector: 50% of the cost but not more than Rs.1,00,000/-
- 9.4 **Power Subsidy:** The power subsidy shall be regulated under State Power Policy and NEIIPP 2007.
- 9.5 **Incentive for Quality Control:** The Department of Industries shall be the Nodal Department for quality control of all industrial products in the state and for the products notified by the union government from time to time.
- To maintain quality of the products manufactured by the industrial units in the State, the State Government shall subsidize the cost of quality testing equipments procured by the industries from recognized firms by 50% of the cost of equipments. Besides, the State Government shall also reimburse 100 % cost of the tests incurred by the micro and small enterprises /industries with a ceiling limit of Rs.50,000/- only. Registration fee and Annual fee with the Bureau of Indian Standards etc. will be reimbursed in full for the first five years.
- 9.6 **Exemption of Stamp Duty:** Approved industrial units / enterprises projects will be exempted from payment of Stamp Duty upto 80 per cent of the applicable amount in execution of deeds for a period of 5 years.
- 9.7 **Special Incentives for Food Processing Industries:** Special incentives will be provided to eligible Food Processing Units as additional State Capital Investment Subsidy @ 20 % subject to a ceiling of Rs.25.00 lakhs.
- 9.8 **Priority Clearance for setting up of Large/Heavy Enterprise:** The State Govt. favours setting up of eligible large and heavy enterprises particularly those utilizing locally available natural resources. Accordingly, the State Govt. will ensure time bound mandatory clearances prescribed under various statutes.
- 9.9 **Liberalized Licensing Policy:** There will be no licensing requirements for industry save as may be provided by any law or Government policy.
- 9.10 The financial institutions under the control of the State Government

will be revamped and the District Industries Centers and financial institutions will work in tandem to ensure smooth flow of credit to new projects, existing industrial units for modernisation/ expansion/diversification, village industries and rural artisans.

#### 10. Enterprise and Skill Development

10.1 The State Government will make all out efforts to develop entrepreneurship and capacity building development of local people to meet the technical and managerial needs of the industries. To achieve this goal the State Government will draw up a comprehensive skill upgradation programmes for ensuring that local personnel/workers gain the required skill to meet the skilled manpower needs of the industries in collaboration and consultation with various training and educational institutions. With this objective the existing Industrial Training Institutes will be upgraded into a Centre of Excellence.

#### 11. State Level Empowered Committee

A State Level Industrial Empowered Committee headed by the Chief Secretary will be constituted, which will comprise the Commissioners/Secretaries of the concerned administrative department and representatives from banking and financial institutions as members for smooth passage of various clearances through a Single Window Clearance System.

#### 12. District Level Advisory Committee

A District Level Industrial Advisory Committee headed by Deputy Commissioner will be constituted in each district of the state to facilitate and augment the functioning of the District Industries Centre with a view to accelerate the Single Window Clearance at district level.

#### 13. Strengthening of District Industries Centres (DICs)

The state Government will strengthen and modernise the DICs. The DIC will be armed with Udyog Sahayak Cell to guide the entrepreneurs and helping them in selection of product, preparation of project report and obtaining credit for the project. A data bank covering all aspects of information sought by investors will also be maintained in DICs.

**14. Public Sector Policy**

The State Government shall gradually vacate economic space for the private and cooperative sectors and the public and state sectors will engage themselves in economic/ commercial activities only in absence of private and cooperative enterprises.

**15. Filling of Entrepreneur Memorandum (EM)**

The authority for registration/filling of EM shall be regulated as per the provisions of Micro, Small and Medium Enterprises Development Act 2006. In case of Micro and Small Enterprises, the DIC will have the authority for filling of EM and its approval. However, in order to ensure systematic growth of enterprises in the state, in case of medium enterprise, the Directorate of Industries will have the authority to grant approval of the EM on recommendation of the concern DIC.

**16. Incentives under NEIIPP 2007**

All incentives granted by the Central Government under NEIIPP 2007, shall be made available to eligible enterprises established in the state of Arunachal Pradesh.

- (i) Central Capital Investments Subsidy Scheme.
- (ii) Transport Subsidy Scheme.
- (iii) Central Working Interest Subsidy Scheme.
- (iv) Comprehensive Insurance Scheme.
- (v) Tax Duty holidays and etc.,

**17. Eligibility**

All the industrial units/ enterprises to be eligible for the package of state incentives should be registered with the Directorate of Industries, Government of Arunachal Pradesh.

The following industrial units/ enterprises will be eligible for the package of state incentives, namely:-

- (i) The industrial units/ enterprises setup after the commencement of this policy.
- (ii) The existing industrial units/ enterprises which have undertaken substantial expansion/ modernization to the extent of

- 25% of the original cost ,of plants and machineries; and
- (iii) The existing units/enterprises which are yet to complete five years of its commercial production from the date of the commencement of this policy.

### **STATUS OF SMALL SCALE INDUSTRIES SECTOR**

Like in the rest of the country, the third SSI census was carried out in Arunachal Pradesh in 2001-02. Some important data obtained for the census results are given below:

Out of a total of 516 registered units, only 266, i.e. 51%, were found Functional, which is indicative of the difficulties being faced by the SSIs for survival.

1. Total investment in the sector was estimated at RS.14.82 crores.
2. Gross output of the sector for that year was estimated at around Rs.33 crores.
3. Employment in the SSI sector was estimated to be 1513 persons, indicating an average employment of 5.68 persons per unit. The ratio of rural to urban employment was about 40.60.
4. Of a total 19nos. of Medium Scale Industries in the State only 2 Nos. of MSI is running smoothly based on minerals, rest been closed due to Hon'ble Supreme Court ban imposed on Forest based Industries.

### **ARUNACHAL PRADESH KHADI AND VILLAGE INDUSTRIES BOARD (APKVIB)**

The Arunachal Pradesh Khadi & Village Industries Board is a statutory Body created by an act of State Legislature to promote and develop the KVI Sector in the State of Arunachal Pradesh. The Khadi & Village Industries Commission (KVIC), a statutory body of Govt. of India under the Ministry of Agro & Rural Industries provides fund to the Board for implementation of such developmental schemes.

#### ***The background of Rural Employment Generation Programme***

In the second All India Conference of the Industry Minister held on 11-2-97 at Vigyan Bhavan; New Delhi, it was announced that in order to minimize the burden of interest on village craftsman, artisans and rural entrepreneurs, the KVIC would deposit the margin money in advance with the public sector

banks who will be entrusted with the responsibility for implementing the REGP in the rural areas. Accordingly, after discussion with the State Government functionaries and bankers at various levels, a scheme for implementation of REGP through Scheduled Commercial (public Sector) Banks was finalized in a meeting held at Reserve Bank of India on 22nd July, 1997 which has since been circulated by the RBI and KVIC and the Head Office of various Banks.

The REGP which is in its present form known as Gram Odyog Rojgar Yojna has since been undergone various changes.

#### **Objectives of Gram-Odyog Rojgar Yojana**

Providing more and more new avenues of employment for rural unemployed people in the country-side has all along been the prime concern of the Government of India. Keeping in mind the expectations of various sections of rural area, the Govt. of India has launched REGP through KVIC in a big way. The board objectives that the KVIC/KVIB has set before it are:

- a) To generate employment in rural area.
- b) To develop entrepreneurial skill among the rural unemployed youth.
- c) To achieve the goal of rural industrialization.
- d) To mobilise Bank Finance looking to the limited resources of KVIC.

#### **The Scheme**

The Scheme envisages that for special area like North East states or for the A.P.S.T. candidates 30% of the project cost for the project upto Rs. 10.00 lakhs will be provided as Margin Money. The project cost upto Rs. 25.00 lakhs is eligible for financing under the scheme, but maximum limit of margin money turn to Rs. 3.00 lakhs only. For taking the benefit of margin money at the enhance rate as stated above, an attested copy of the Caste Certificate issued by the competent authority is required to be produced along with the Margin Money Claim.

The Industries/Co-operative Societies, trusts specifically registered all SC/ST/ OBC/Women/PH/Ex-serviceman and Minority Industries with necessary provision in the bye-law to that effect alone are eligible for Margin Money @ 30% of the project cost upto Rs. 10.00 lakhs. A certified copy of the bye-laws are required to be appended to the Margin Money Claim.

Project cost includes Capital Expenditure and one cycle of Working Capital. Projects without Capital Expenditure are not eligible for financing under the Scheme. Projects of more than 5.00 lakhs, which don't require working capital, need clearance from the Reg. Office or Controller of the Bank's Branch and claims are required to be submitted with such certified copy of approval from Regional Office or Controller as the case may be.

Cost of the land should not be included in the project. Cost of the ready built as well as long lease or rental work shed/Workshop/Building/Shop can be included in the project.

The Gram-Odyog Rojgar Yojana is applicable for all viable Village Industries projects except activities as given in the negative list of Village Industries as under.

- a) Any industry/business connected with meat (Slaughtered) i.e. processing, canning and/or serving items made of it as food, production/manufacturing or sale of intoxicant items like Beedi/Pan/Cigar/Cigarette etc. any Hotel or Dhaba or sales outlet servicing liquor, preparation/producing tobacco as raw materials, Trapping of Toddy for sale.
- b) Any industry/business connected with cultivation of crops/plantation like Tea, Coffee, Rubber etc. Sericulture (Cocoon rearing), Horticulture, Floriculture, Animal Husbandry like pisciculture, Piggery, poultry etc.
- c) Khadi and polyvastra and any project producing yarn and cloth under Khadi Certification Rules.
- d) Manufacturing of polythene carry bags of less than 20 microns thickness and manufacture of carry bags or containers made of recycled plastic for storing, carrying, dispensing or packaging of food stuff and any other item which causes environmental problems.
- e) Industries such as processing of Pashmina Wool and such other products like hand spinning and hand weaving, taking advantage of Khadi programme under the purview of Certification Rules and availing sales rebate.

Only one person from a family is eligible for obtaining finance under



the GramOdyog Rojgar Yojana (REGP).

### **The Beneficiaries**

- a) Individual Entrepreneurs.
- b) Institutions.
- c) Co-operative Societies.
- d) Trusts.
- e) Public Limited Companies.
- f) Self Help Groups.

The Partnership firms/Private limited Companies/Joint Borrowers /Co-borrowers/Co-obligators/Joint Ventures/HUF do not come under the ambit of GramOdyog RojgarYojana. (REGP).

### **Own Contribution**

5% of the project cost in respect of beneficiaries belonging to state of Arunachal Pradesh i.e. APST candidates.

### **Financial Institutions**

- a) Public sector Banks Operating in the State (SBI, UCO Bank, Central Bank of India, Vijaya Bank, UBI etc.) .
- b) A.P. (Regional) Rural Bank.

### **Bank Finance**

The financing Bank will sanction 95% of the project cost, in case of APST beneficiary/institution and disburse expenditure in the form of Term Loan and working capital in the form of Cash Credit. Project can also be financed by the Bank in the form of Composite Loan consisting of C.E. & W.C.

Working Capital component should be utilized in such a way that at one point of stage it touches 100% limit of Cash Credit within two years of lock in period of Margin Money and not less than 75% utilization of the sanction limit. If it does not touch aforesaid limit, proportionate limit of the Margin Money is to be refunded to the KVICIAPKVIB at the end of the second year.

Though Bank will claim Margin Money on the basis of projections of capital expenditure in the project report and sanction thereof. Margin Money on the actual availment of Capital Expenditure only will be retained and excess,

if any will be refunded to the KVIC/APKVIB, immediately after the project is ready for commencement of the production.

**Village Industry**

Any Village Industry including coir based projects (except those mentioned in the negative list) located in the rural area which produces any goods or renders any service with or without the use of power and in which the fixed capital investment per head of a full time artisan or worker does not exceed Rs. 50,000/-.

**Rural Area**

- i) Any area classified as Village as per the revenue record of the State, irrespective of population.
- ii) It also includes as area even if classified as town, provided its population does not exceed 20,000.

**Per Capita Investment**

It Should not exceed Rs. 50,000/- per artisan or worker i.e. Capital Expenditure on Building/work shed, Machinery & Furniture divided by Full time employment created by the project should be Rs. 50,000 or less.

**Age Limit**

Any adult beneficiary above 18 years is eligible for financing under the REGP.

**Modalities of the operation of the Scheme**

- i) Sponsoring of project by any agency is not mandatory. The beneficiary can directly approach Bank along with his project or it can be sponsored by KVIC/APKVIB.
- ii) Banks will appraise projects technically as well as economically and after ensuring that each project fulfils the criteria of Village Industry, per Capita Fixed Investment, "Own Contribution" and "Rural Area", take their own credit decision on the basis of viability of each project. In case Bank feels that the cost of the project is more according to the circumstances prevailing in the area, they can reduce the cost of the project.

- iii) Once the project is sanctioned and first installment of the Bank Finance is released to the beneficiary, Bank will inform the APKVIB or State Office of the KVIC, Itanagar for arranging EDP training to the beneficiary, if he has not already undergone such training. If he has already undergone such training either of repute, recently, such beneficiary need not undergo EDP training. The EDP training is a must.
- iv) After the successful completion of EDP training arranged by the KVIC/KVIB Bank will release second installment of Bank Finance to the beneficiary.
- v) After the release of Bank Finance either partly or fully, Bank will submit Margin Money claim on the prescribed format to the Chief Executive Officer, APKVIB, Itanagar. The Utilization Report of assistance released by Bank to be submitted along with the Margin Money claim.
- vi) Once the Margin Money is released in favour of the loanee, it should be kept in the Term Deposit Receipt for 2 years at branch level in the name of the Beneficiary/Institution. No interest will be paid on the TOR and no interest will be charged on loan to the corresponding amount of TOR.
- vii) Since Margin Money is to be provided in the form of middle-end-Subsidy (Grant), it will be credited to the Borrower's loan account after 2 years from the date of first disbursement to the borrower/Institutions.
- viii) In case of Bank's advance goes "bad" before the 2 years period is over, Margin Money will be adjusted by the Bank to liquidate the loan liability of the borrower either in part or full.
- ix) In case any recovery is effected subsequently by the Bank from any source what soever, such recovery will be utilised by the Bank for liquidating their outstanding dues first. Any surplus will be remitted to APKVIB/KVIC as the case maybe.
- x) Margin Money will be onetime assistance from KVIC. For any enhancement of credit limit or for expansion/modernisation of the project: Margin Money assistance is not available.
- xi) Margin Money assistance is available only for new project sanctioned specifically under the REGP/Gram-Odyog Rojgar Yojana. Existing units

- are not eligible for finance under the scheme.
- xii) As per the existing guidelines of the Reserve Bank of India, beneficiary already assisted under REGP/Gram-Odyog Rojgar Yojana is not eligible for further, assistance under another scheme or vice-versa.
- xiii) Projects financed jointly i.e financed from two different sources, are not eligible for Margin Money assistance without the prior approval of the competent authority of the Commission.
- xiv) Bank has to obtain undertaking from the beneficiary before the release of Bank Finance that, in the event of objection by APKVIB or KVIC, he will refund the Margin Money kept in TOR or released to him after 2 years period.
- xv) Bank has to ensure that each beneficiary prominently displays sign board at the main entrance-of his project site.
- xvi) Margin Money claim will be submitted by the Financing Branch of the Bank to the APKVIB within three months from the date of disbursement of first installment. Belated claim will be entertained only on approval by the competent authority.
- xvii) All the advances under the REGP are collateral security free advances.

### **Registration**

Registration with the KVIC/KVIBs under the Scheme is mandatory. To avail fiscal and other concessions the unit will have to get registered either with KVIC or KVIB. For registration with APKVIB, they will have to apply on the prescribed form available with the Board, duly recommended by the concerned financing Bank.

The application for Registration should be accompanied by registration fee @ 1 % of the project cost. This Registration is valid for 3 financial years. For further renewal of the registration, registration fee @ 0.5% of the project cost is to be paid.

### **Inspections and Report**

APKVIB/KVIC will conduct periodical inspection/physical verification of the units through its officials. Beneficiary will submit quarterly report on productions, sales employment, wages paid etc. to the APKVIB, through the

financing bank branch. 100% physical verification of the units financed under the REGP is mandatory.

### **Skill Development Training**

Candidates interested to take up REGP/Gram-Odyog Rojgar Yojana also need to undergo necessary training in the particular discipline of his/her choice. In case candidate is already trained in the particular discipline it is not necessary to undergo the skill development training.

### **Village Industries**

The Village industries/schemes under the purview of KVIC are classified in seven major groups as under:

#### **Mineral Based Industry**

(1) Cottage Pottery Industry. (2) Lime Stone. Lime Shell and other lime products industry. (3) Stone cutting, crushing, carving and engraving for Temples and Buildings. (4) Utility articles made out of stone. (5) Slate and slate pencil making. (6) Manufacture of plaster of parish. (7) Utensil washing powder. (8) Fuel briqueting. (9) Jewelers out of Gold, Silver, Stone, shell and synthetic materilas. (10) Manufacture of Gulal, Rangoli. (11) Manufacture of Bangles. (12) Manufacture of paints, pigments, Vamishes and Distemper. (13) Manufacture of Glass Toys. (14) Glass Decoration cutting, designing and polishing. (15) Gem cutting.

#### **Forest Based Industry**

(16) Hand made paper. (17) Manufacture of Katha. (18) Manufacture of Gums and Resins. (19) Manufacture of Shellac. (20) Cottage Match Industry, manufacture of fire works and Agarbattis. (21) Bamboo and Cane work. (22) Manufacture of paper cups, plates, bags and other paper containers. (23) Manufacture of exercise book binding, envelop making, register making including all other stationery items made out of paper. (24) Khus tattis and broom making. (25) Collection, processing and packing of forest products. (26) Photofarming. (27) Manufacture of jute products (under fibre industry).

#### **Agro Based and Food Industry**

(28) Processing, packing and marketing of cereals, pulses, spices, condiments, masala etc. (29) Noodles making. (30) power atta chakki. (31) Mini

rice shelling unit. (33) Palmgur making and other palm products industry. (34) Manufacture of Cane Gur and Khandsari. (35) Indian Sweet Making. (36) Rasawanti-sugarcane juice, catering unit. (37) Bee keeping. (38) Fruits and vegetable processing, preservation and canning including pickles. (39) GhaniOil industry. (40) Menthol Oil. (41) Fibre other than coir. (42) Collection afforest plants and fruits for medicinal purpose. (43) Processing of Maize and ragi. (44) Pith work, manufacture of mats and garlands etc. (45) Catchew processing. (46) Leaf cup making. (47) Milk products making unit. (48) Cattle feed, poultry feed making.

### **Polymer and Chemical Based Industry**

(49) Flaying, curing and tanning of hides and skins and ancillary industries connected with the same and cottage leather industry. (50) Cottage soap industry. (51) Manufacture of rubber goods (dipped latex products). (52) Products out of Rexin PVC etc. (53) Horn and Bone including ivory products. (54) Candle, camphor and sealing wax making. (55) Manufacture of mehendi. (56) Manufacture of Essential Oils. (57) Manufacture of Shampoos (58) Manufacture of Hair Oil. (59) Detergents and washing powder making (non-toxic). (60) Manufacture of Bindi. (61) Manufacture of packing items of plastics.

### **Engineering and non-Conventional Energy**

(62) Carpentry. (63) Blacksmith. (64) Manufacture of Household aluminium utensils. (65) Manufacture and use of manure and methane (Gobar) Gas from cow dung and other waster products (such as flesh of dead animals, night soils etc.) (66) Manufacture of paper pins, clips, safety pins, stove pins etc. (67) Manufacture of decorative bulbs, bottles, glass etc. (68) Umbrella assembling. (69) Solar and wind energy implements. (70) Manufacture of handmade utensils out of brass. (71) Manufacture of handmade utensils out of copper. (72) Manufacture of handmade utensils out of bell metal. (73) Other articles made of brass, copper and metal. (74) Production of Radios. (75) Production of cassette player whether fitted or not fitted with radio. (76) Production of cassette recorder whether or not fitted with radio. (77) Production of voltage stabilizer. (78) Manufacture of electronic clocks and alarm time pieces. (79) Carved wood and artistic furniture making. (80) Tin smithy. (81) Motor winding. (82) Wire net making. (83) Iron grill making (84) Manufacture of rural transport vehicles such as hand carts, bullock carts, small boats, assembly of bicycles, cycle rickshaw; motorized cars etc. (85) Manufacture of musical instruments.

### **Textile Industry (Excluding Khadi)**

(86) Manufacture of lok vastra cloth. (87) Hosiery. (88) Tailoring and preparation of readymade garments. (89) Batick works (90) Toys and Doll making (91) Thread Balls and Woolen Baljing, Lacchi making. (92) Embroidery. (93). Manufacture of surgical bandages. (94) Stove wicks (95) Carpet weaving. (96) Traditional dress. (97) Shawl weaving.

### **Service Industry**

(98) Laundry. (99) Barber. (100) Plumbing. (101) Servicing of Electrical wiring and electronics domestic appliances and electronics domestic appliances and equipments. (102) Repairs of diesel engines, pump sets etc. (103) Tyre vulcanizing unit. (104) Agriculture servicing for sprayers insecticide, pump sets etc. (105) Hiring of sound system like loud speaker, amplifier, mike etc. (106) Battery charging. (107) Art board painting. (108) Cycle repair shops. (109) Masonry. (110) Band troupe. (111) Motor cycle, taxi. (112) Dhabas (without serving liquor) (113) Tea stall (114) iodize salt.

### **Geology and Mining**

The Department of Geology and Mining was created way back in the year 1996, thereby bifurcating from the parental department of Industries with the objectives to explore and exploit the mineral potential of the state for better economic development of the state in particular, and region as a whole. As envisaged under the business of the Government of Arunachal Pradesh (Allocation) Rules, 1988 as amended upto 14 April, 2005, the Department of Geology & Mining is endowed with the following subjects;

- (i) All matters relating to Mine & Minerals.
- (ii) Development and utilization of Mines & Minerals.
- (iii) Grant of Licenses for exploitation of Mining / Mineral resources, in consultation with Finance Department.
- (iv) Grant of Concession, assessment and collection of royalty, fee and minerals etc.
- (v) Grant of Certificate of approval for mining / survey of Mining etc.
- (vi) All matters relating Geological Survey to be made by the State or by the Geological Survey of India.
- (vii) All matters pertaining to Arunachal Pradesh MDTC.
- (viii) Administration of relevant Acts and Rules.

The department has framed Arunachal Pradesh Minor Mineral Concession Rules-2002 (APMMCR-2002) and enforced with effect from 01.01.2003. Details of revenue accrued in the form of royalty as on date are as below;

| Petroleum<br>(Rs. In lakh) | Coal<br>(Rs. In lakh) | Minor<br>Minerals<br>(Rs. In Lakh) | Total<br>(Rs. In lakh) |
|----------------------------|-----------------------|------------------------------------|------------------------|
| 11782.84                   | 46.02                 | 2657.27                            | 14486.31               |

The tremendous effort made by the department has rejuvenated the almost sick and defunct state owned company, Arunachal Pradesh Mineral Corporation Limited (A Govt. of Arunachal Pradesh Undertaking) by starting the open cast coal mining at Namchik Namphuk Coalfield in Changlang District of the state. The company is starting making profits with effect from March, 2007 and has already deposited a royalty of Rs.46.2 lakhs to the government exchequer against the sale of coal. The department is proposing to start new coal mining project namely "SOUTH EAST OPEN CAST COAL MINE PROJECT" in 133 hectare area in Namchik Namphuk coalfield in Changlang district. The expected revenue from this mine project would be Rs.330.00 lakhs per annum.

The department amidst persuaded the Oil Industry Development Council, New Delhi to pay or release the differential royalties to the tune of Rs.30.55 lakhs only against the production of crude oil in the state.

Presently, two numbers of oilfields are in operation in the state namely, Ningru (Kumchai) and Kharsang Oilfields which is located in Changlang District. The Khumchai oilfield is operated by M/S Oil India Limited in 540,668 sq km area. And the Kharsang oilfield is operated by a consortium of four companies viz; Oil India Ltd - 40%, GeoPetrol International Inc - 25 %, Enpro India Ltd -25 % and GeoEnpro Petroleum Ltd - 10% in 11 sq km area.

A Petroleum Exploration License has also been granted for 295 sq km area to a consortium of three companies viz M/S NTPC Limited, GeoPetrol International Inc. and Canoro Resource Limited in the state in Block AA-ONN 2003/2 (NELP- V), in Changlang District.

The department has obtain government approval for granting of working permission to Assam Gas Company Limited (AGCL) for construction of pipeline for transportation of natural gas from Khumchai oilfield to Dirak River within Arunachal Pradesh with a total length of 39 kms.



An overview of mineral reserves on the basis of exploration carried out by GSI, CIL, OIL, MECL, CMPDIL & APMDTCL shown as follows.

| Sl. No | Mineral                    | Location         | District        | Estimated Reserves<br>(in million tones) |
|--------|----------------------------|------------------|-----------------|------------------------------------------|
| 1      | Coal                       | Namchik Namphuk  | Changlang       | 84.23                                    |
| 2      | Dolomite                   | Rupa             | West Kameng     | 143.0                                    |
|        |                            | Kaspi (Jameri)   | -do-            | 11.13                                    |
| 3      | Limestone                  | Tiding           | Lohit           | 140.0                                    |
|        |                            | Pang in          | East Siang      | 225.0                                    |
|        |                            | Hunli            | Dibang Valley   | 13.35                                    |
|        |                            | Menga            | Upper Subansiri | 0.70                                     |
| 4      | Graphite                   | Bopi             | Upper Subansiri | 2.46                                     |
|        |                            | Khetabari        | Lower Subansiri | 0.50                                     |
|        |                            | Taliha           | Upper Subansiri | 0.30                                     |
| 5      | Marble                     | Tezu             | Lohit           | 30.30                                    |
|        |                            | Dora             | -do-            | 43.30                                    |
|        |                            | Hunli            | Dibang Valley   | 2.34                                     |
|        |                            | Pyuli            | -do-            | 0.18                                     |
| 6      | Ferro-Silicon<br>Quartzite | Kalaktang        | West Karnteng   | 1.25                                     |
| 7      | Oil & Gas                  | Kharsang         | Changlang       | Reserve not estimated                    |
|        |                            | Diyun (Khumchai) |                 |                                          |
| 8      | Lead & Zinc                | Shergaon         | West Kameng     | Reserve not estimated                    |

Source: Department of Geology and Mining.

#### Royalty receipt from the various minerals up to August'05

| Sl No. | Year         | Crude Oil<br>(Rs. in lakh) | Coal<br>(Rs. in lakh) | Minor Minerals<br>(Rs. in lakh) | Total          |
|--------|--------------|----------------------------|-----------------------|---------------------------------|----------------|
| 1      | 1995-1996    | 154.00                     | -                     | -                               | 154.00         |
| 2      | 1996-1997    | 214.00                     | -                     | -                               | 214.00         |
| 3      | 1997-1998    | 195.00                     | -                     | -                               | 195.00         |
| 4      | 1998-1999    | 321.00                     | -                     | -                               | 321.00         |
| 5      | 1999-2000    | 432.00                     | -                     | -                               | 432.00         |
| 6      | 2000-2001    | 518.00                     | -                     | -                               | 518.00         |
| 7      | 2001-2002    | 427.00                     | 13.30                 | -                               | 440.30         |
| 8      | 2002-2003    | 633.47                     | 9.80                  | 171.00                          | 814.27         |
| 9      | 2003-2004    | 786.00                     | -                     | 431.00                          | 1217.00        |
| 10     | 2004-2005    | 2264.83                    | -                     | 445.95                          | 2710.78        |
|        | <b>Total</b> | <b>945.30</b>              | <b>23.10</b>          | <b>1047.95</b>                  | <b>7016.35</b> |

Source: Directorate of Geology and Mining

## Power

The first hydel project was set up at Kalaktang with the installed capacity of 10 KW only and commissioned on the 23rd September, 1971 to supply power to the town and the neighbouring villages. Another bigger hydel project was installed at Rahung with 500 KW capacity and commissioned on 23rd August, 1972 to supply power to Bomdila, other administrative units and the surrounding villages. Basar also got one micro-hydel project with 100 KW capacity which was commissioned in November, 1972 along with another project with 200 KW capacity at Pasighat. Gradually, a number of hydel projects have been set up and commissioned to cater to the needs of the people of the state. Although power is the main requirement for development in all the sectors. The state has not yet been able to exploit the hydro-electric potential even to the extent of one per cent of the total potential. There are twenty five mini/micro hydel projects which have the installed capacity of 16 to 45 MW in total. The only large-size hydel project in the state is Ranganadi Hydel project near the Yazali town in the Lower Subansiri District which has been installed by the North Eastern Electric Power Corporation (NEEPCO). There is another such Project named the Kameng Hydel Project in the West Kameng district which has capacity of 600 MW and is to be installed by the NEEPCO. About 48 km up stream of Pasighat in the East Siang District the Dihang Hydel Project has been planned on the Siang river which will have a capacity of 20,000 MW and thus, when completed, it may claim to be the largest hydroelectric power project in the world. Another hydel scheme identified by the govt. is the Subansiri Hydel Project with an estimated capacity of 4800 MW.

Although, Arunachal Pradesh possessing immense potential of power in the form of hydel, oil, natural gas and coal resources, the progress in this sector in the state has not taken place on a scale proportionate to resources availability. As a result, there is a big gap between availability and requirement for power in the state. As per 2001 Census out of 2,12,615 households only 116,275 households (54.7%) are having electricity facility.

The total un-exploited hydel potential of the state is -estimated to be 49,000 MW. Even if a part of the available hydro potential is harnessed the state will not only be self sufficient in meeting its own power requirement but at the same time it can earn revenue by supplying power to the other neighbouring states of the region. The existing micro mini hydel projects with an installed capacity of 32.48 MW and Diesel sets with an installed capacity of 27.12 MW are the main sources of power supply in the state.

The National Hydro Power Corporation (NHPC) has undertaken survey and investigation works of Siang and Subansiri basin mega hydro power project with an estimated installed capacity of 20700 MW. The following are the salient features of ongoing and completed projects being implemented by the NHPC and NEEPCO which are in various stages of completion.

#### **The Tawang H.E. project in Tawang phase I**

The Tawang H.E. project in Tawang District of Arunachal Pradesh on Tawangchu river is located at downstream of Forebridge near Jang (2.5 km downstream of Nuranang chu power house). The nearest Rail head to the project site are Guwahati & Naogaon and the nearest airport is Guwahati & Tezpur. The project envisages to harness the hydropower potential of the river by constructing a Concrete Gravity Dam 90m high above river bed, 6.5m x 7.5m size, 14.1 Km long modified horseshoe shaped HRT, an underground power house with 3 units of 250 MW each and 6.5m x 7.5m size., 1250m long modified horseshoe shaped TRT. The project would provide an annual generation of 3156.10 MUs in a 90% dependable year. Main construction activity is planned to be completed in 6.5 years.

The main infrastructure development for Tawang Stage-I & II is proposed to be initiated simultaneously with preparation of DPR for which a provision of 12 months will be kept in programme of stage-II activity and completed in initial 12 months after taking up construction (Stage-III activity) of the projects. Main construction activity is planned to be completed in 6.5 years.

MoA has been signed between NHPC & Govt. of Arunachal Pradesh on 21.09.06 for implementation of project by NHPC. Pre- Feasibility Report of the Project has been prepared by NHPC.

#### **The Tawang H.E. project in Tawang District Phase II**

The Tawang H.E. project in Tawang District Phase II of Arunachal Pradesh on Tawangchu river is located about 15 km downstream of Forebridge near Jang. The nearest Rail head to the project site are Guwahati & Naogaon and the nearest airport are Guwahati & Tezpur. The project envisages to harness the hydropower potential of the river by constructing a 32m high Barrage of RCC raft with piers, 6.5m x 7.5m size, 17.2 km long modified horse shoe shaped HRT, an underground power house with 3 units of 250 MW each and 6.5m x 7.5m size., 1200m long modified horse shoe shaped TRT. The project would provide an annual generation of 3480.40 MUs in a 90% depend-

able year. Main construction activity is planned to be completed in 6 years.

#### **The Sippi HE project**

The Sippi HE project is located on river Sippi. The project is at 16 km from Daporijo, the headquarter of Upper Subansiri district of Arunachal Pradesh. The project is 160 km from Zero & 380 km from Itanagar- the capital of Arunachal Pradesh. This project envisages of 33m trench weir, 445 m intake channel, 28 m long settling basin, 145.5 m penstock. This project has surface power house with an installed capacity of 4000 KW (2x2000KW), which would provide an annual generation of 27.04 MUs on a 100% load factor & 16.2 MUs on a 60% load factor.

#### **Subansiri Lower HE Project**

Subansiri Lower HE Project is the biggest hydroelectric project undertaken in India so far and is a run of river scheme on river Subansiri. The Project is located near North Lakhimpur on the border of Assam and Arunachal Pradesh. The nearest railhead is Nagaon and nearest airport is Lilabari. The estimated annual energy generation from the Project is 7421 MU in a 90% dependable year.

#### **Kambang Project**

At present the project is under active construction.

#### **Dibang Multipurpose project (3000 MW)**

Dibang Multipurpose project (3000 MW) is a hydropower cum flood moderation scheme located about 1.5 Km upstream of Ashu Pani river confluence with Dibang river in the Lower Dibang Valley District of Arunachal Pradesh on Dibang river. The scheme envisages construction of a 288 m high (from deepest foundation level) concrete gravity dam, 6 nos., 9.0 m dia., 300 m to 600 m length horse shoe shaped HRT, an underground power house with 12 units of 250 MW each and 6 nos., 9.0 m dia., 320 m to 470 m length horse shoe shaped TRT. The project would generate 12270 MU in 90 % dependable year along with flood moderation and navigation benefits.

#### **Kameng Hydro Electric Project**

Kameng Hydro Electric Project with an installed capacity of 600 MW (4 x 150) is located in the West Kameng district of Arunachal Pradesh. All the

component sites of the project are approachable via. Balipara, which is 28 km from Tezpur on national highway No. 52. The present head quarter of the project is at Bhalukpong which is 38 km from Balipara, and also is the nearest railhead (metre gauge) for the project. The road distances to Bhalukpong from Tezpur and Guwahati are 60 km and 235 km respectively. Guwahati is the gateway to the Northeast, with its airport and broad gauge. Railway station conveniently connecting other regions of India. Tezpur lies on the north bank of the river Brahmaputra, 175 km from Guwahati. The nearest railhead is Bhalukpong in Arunachal Pradesh. The nearest airport to the project site is at Tezpur. Its commissioning time is November 2009.

Other Details: The power house with an installed capacity of 4 x 150 MW and located near Kimi village on the right bank of Kameng river will utilise the water of Bichom and Tenga rivers, tributaries of the Brahmaputra through 14.500 km long HRT, a surge shaft and (approx.) 1.80 km penstock.

#### **Ranganadi Hydro Electric Plant**

This Project is located in the Lower Subansiri District of the State of Arunachal Pradesh in the Ranganadi basin and the adjoining Dikrong basin with an installed capacity of 405 MW (3 x 35).

*Date of Commissioning:* Unit-I :- 26-January-2002 , Unit – II :- 29-January-2002.

*Beneficiary States :* Assam, Arunachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland and Tripura.

*Evacuation System :* 400 kV Ranganadi-Balipara DIC Lines, 132 kV Ranganadi-Nirjuli SIC Line, 132 kV.

Priority is being accorded by the State Government in annual plans not only to meet increasing power demand within the State but also to bridge the gap of demand and supply in the region as a whole. But due to inadequate State's financial resources, the govt is unable to materialise its ambition of financing large hydel projects. Therefore, the govt. is encouraging participation of private sector companies in hydro power development.

At present the overall power supply position in the state is not satisfactory. The consumption of power in the state has been increasing over the recent years. The present demand is about 95 MW which is partially met from the existing micro/mini hydel stations and diesel generation sets with total in-

stalled capacity of 59.72 MW only and imports of state's share from central sector and purchase from Assam State Electricity Board (ASEB). The achievement made in past few years under various items of power sector is presented in the following table:-

#### ACHIEVEMENT UNDER POWER SECTOR

| Sl. No. | Indicators                           | Unit | Achievement during the year |           |           |
|---------|--------------------------------------|------|-----------------------------|-----------|-----------|
|         |                                      |      | 2002-2003                   | 2003-2004 | 2004-2005 |
| 1       | 2                                    | 3    | 4                           | 5         | 6         |
| 1.      | Installed capacity                   | MW   | 59.30                       | 59.72     | 60.12     |
| 1.1     | Hydel                                | -do- | 32.18                       | 32.60     | 33        |
| 1.2     | Diesel                               | -do- | 27.12                       | 27.12     | 27.12     |
| 1.3     | Stand by                             | -do- | -                           | -         | -         |
| 2.      | Annual Generation                    | MU   | 65.52                       | 56.50     | 49.47     |
| 2.1     | Hydel                                | -do- | 52.04                       | 56.18     | 39.33     |
| 2.2     | Diesel                               | -do- | 10.48                       | 10.32     | 10.14     |
| 3.      | Imported from ASEB                   | MU   | 82.76                       | 3.31      | 636.30*   |
|         | Supplied by NEEPCO                   | -do- | 21.26                       | 47.23     | -         |
| 4.      | Annual Consumption                   | MU   | 76.18                       | 85.22     | 93.91     |
| 4.1     | Domestic                             | MU   | 34.72                       | 37.70     | 38.93     |
| 4.2     | Commercial                           | -do- | 5.56                        | 10.53     | 6.85      |
| 4.3     | Industrial                           | -do- | 1.64                        | 2.07      | 1.98      |
| 4.4     | Public light and water works         | -do- | 5.48                        | 16.63     | 8.02      |
| 4.5     | Agriculture! Others                  | -do- | 28.78                       | 18.28     | 38.15     |
| 5.      | Villages electrified during the year | No.  | 20                          | 106       | 36        |
| 6.      | Total Power required for A.P.        | MW   | 95                          | 95        | NA        |

\* Includes 197.53 MU free power supply from RHEP

Source: *Economic review of A.P., 2006.*

In the field of rural electrification programme achievement made is satisfactory. In spite of difficulties and hilly terrain the department has been able to electrify 2469 villages till the end of March, 2004 accounting for 64% out of total villages of 3863 as per 2001 census. Distribution of household by source of lighting as per 2001 Census.

**DISTRIBUTION OF HOUSEHOLD BY SOURCE OF LIGHTNING**

| Sl. No | Source of lighting | Total   | %     | Rural   | %     | Urban  | %     |
|--------|--------------------|---------|-------|---------|-------|--------|-------|
| 0      | 1                  | 2       | 3     | 4       | 5     | 6      | 7     |
| 1      | Total              | 212,615 | 100.0 | 164,501 | 100.0 | 48,114 | 100   |
| 2      | Electricity        | 116,275 | 54.7  | 73,205  | 44.5  | 43,025 | 89.4  |
| 3      | Kerosene           | 66,779  | 31.4  | 62,279  | 37.9  | 4,500  | 9.4   |
| 4      | Solar energy       | 481     | 0.2   | 375     | 0.2   | 106    | 0.2   |
| 5      | Other Oil          | 1,582   | 0.7   | 1,571   | 1.0   | 11     | 0.0   |
| 6      | Any other          | 9,853   | 4.6   | 9,717   | 5.9   | 136    | 0.283 |
| 7      | No Lighting        | 17,645  | 8.3   | 17,309  | 10.5  | 336    | 0.689 |

*Source: Economic review of Arunachal Pradesh, 2006.*

The hydel potential of Arunachal Pradesh is estimated to be over 50,000 MW, which is about a third of the all India potential.<sup>1</sup> with its numerous rivers and streams. Arunachal has considerable potential for the development of hydroelectric power but, this has so far remained untapped. The Government is conscious of the situation, and is taking urgent steps to realize the potential that exists.

The numbers of micro small hydel station commissioned till March 1986 was 22, starting with a merger 10 Kw in 1971, the total installed capacity of the hydel and thermal plants has increased to 190.27mu (hydel-129.20mu and thermal 61.07 mw) in 1986-87. By March 1987 963 villages were electrified. During 1992-93 37.57 mu of electricity was generated and 1628 villages were electrified in Arunachal Pradesh.

<sup>1</sup>The Department of Power has commissioned 35 mini hydel projects in different parts of the state. Out of an installed capacity of 463.95 MW only 58.95 MW (12.71 percent) has been developed so far in the State sector. In the central sector, 405 MW (87.29%) has been developed by the North East Electric Power Corporation (NEEPCO) by commissioning the Ranganadi Hydel Project. More than a dozen projects are under consideration and are at various stages ranging from the investigation stage to the construction & commissioning stage, with project to 11,000 MW in the Upper Siang Project.

<sup>1</sup> NEDFi, Data bank, Quarterly, 2002

| Year                                           | Installed Capacity (MW) |       |        | Generated (Mu) |       |        | Imported from outside the state (Mu) |
|------------------------------------------------|-------------------------|-------|--------|----------------|-------|--------|--------------------------------------|
|                                                | Total                   | Hydel | Diesel | Total          | Hydel | Diesel |                                      |
| I                                              | II                      | III   | IV     | V              | VI    | VII    | VIII                                 |
| 1997-98                                        | 53.88                   | 23.83 | 30.05  | 89.29          | 69.25 | 20.04  | 78.84                                |
| 1998-99                                        | 55.50                   | 30.73 | 24.78  | 66.89          | 54.35 | 12.54  | 77.43                                |
| 1999-2000                                      | 65.57                   | 30.57 | 35.00  | 62.21          | 52.10 | 10.11  | 98.89                                |
| 2000-01                                        | 58.95                   | 31.83 | 27.12  | 62.00          | 52.00 | 10.00  | 100.01                               |
| 2001-02                                        | 59.60                   | 32.48 | 27.12  | 60.00          | 49.00 | 11.00  | 94.37                                |
| 2002-03                                        | 59.40                   | 32.28 | 27.12  | 62.52          | 52.04 | 10.48  | 104.02                               |
| NB. Including 21.26 Mu free supply from NEEPCO |                         |       |        |                |       |        |                                      |

Source: Statistic Abstract 2003, Directorate of Statistics, Itanagar.

### State plan

Under the State plan generation activity has remained confined to Mini and Micro Hydel Projects. This will continue to be so during Tenth Plan periods also for the reasons of resource constraint, their small gestation period and environmental consideration. No new projects is proposed to be taken up during 10th Plan. Emphasis will be on completion of as many projects as possible with prioritization out of the following already under different stages of execution.

| Sl. No. | Name of Project | Estimated cost | Proposed installed Capacity in MW | Expenditure as on 31/07/2001 | Balance fund required for completion |
|---------|-----------------|----------------|-----------------------------------|------------------------------|--------------------------------------|
| 1       | Domkhong        | 2432.58        | 2.00                              | 2148.07                      | 284.51                               |
| 2       | Kitpi Ph-II     | 2959.04        | 3.00                              | 671.05                       | 2287.99                              |
| 3       | Mukto           | 5400.00        | 9.00                              | 400.21                       | 4999.79                              |
| 4       | Kush            | 2568.97        | 2.00                              | 1440.25                      | 1128.72                              |
| 5       | Liromoba        | 2792.18        | 2.00                              | 1233.19                      | 1558.99                              |
| 6       | Sidip           | 3405.52        | 3.00                              | 1743.33                      | 1662.19                              |
| 7       | Sipit           | 2147.84        | 2.00                              | 1643.38                      | 504.46                               |
| 8       | Pacha           | 2988.79        | 3.00                              | 648.45                       | 2340.34                              |
| 9       | Payu            | 900.00         | 1.00                              | 118.10                       | 781.90                               |
| 10      | Subung          | 3270.00        | 3.00                              | 148.60                       | 3121.40                              |
| 11      | Rina            | 2048.00        | 2.00                              | 91.59                        | 1956.41                              |



|    |                                                                                 |          |         |          |          |
|----|---------------------------------------------------------------------------------|----------|---------|----------|----------|
| 12 | MHS over Eme River                                                              | 1172.40  | 1.50    | 10.31    | 1162.09  |
| 13 | Deopani Ph-II                                                                   | 740.00   | 0.50    | 324.50   | 415.50   |
| 14 | Aug. of Awapani                                                                 | 516.16   | 0.50    | 28.06    | 488.10   |
| 15 | Mati Nallah                                                                     | 598.56   | 0.50    | 117.56   | 481.00   |
| 16 | Halaipani                                                                       | 5137.00  | 9.00    | 632.23   | 4504.77  |
| 17 | C/o 60 nos of small hydel stations of different sizes upto 50KW capacity in A.P | 1612.33  | 2.00    | 1056.32  | 556.01   |
|    | Total:-                                                                         | 40689.37 | 46.00MW | 12455.20 | 28234.17 |

Source: Department of Planning.

The State Govt. has also decided to entrust execution of following four projects with NHPC/NEEPCO for an expected capacity generation of 20.50 MW.

| NHPC          | Installed capacity | Estimated Cost (Rs. in crore) |                                                                                |
|---------------|--------------------|-------------------------------|--------------------------------------------------------------------------------|
| Kambang HEP   | 6.00 MW            | 41.71                         | MoU signed on 11/01/2000 and revised on 9/02/2001. DPR approved by State Govt. |
| Sippi HEP     | 4.00 MW            | 38.33                         | MoU signed on 13/07/2000 and revised on 9/2/2001. DPR approved by State Govt.  |
| Jugdini HEP   | 3.00 MW            |                               | MoU signed on 13/7/2000. DPR yet to be submitted to NHPC                       |
| NEEPCO        |                    |                               |                                                                                |
| Khangtang HEP | 7.50 MW            | 43.75                         | DPR under finalization by NEEPCO                                               |

The State does not have a Grid of its own. However, efforts are under way to develop a Grid system with Central support. The Govt. of India has already sanctioned two transmission lines under Non-Lapsable Central Pool of Resources namely (i) Ziro to Along via Daporijo (132 KV) and (ii) Kathalguri to Deomali (220KV). These are being executed by the Powergrid Corporation of

India. Ziro-Along-Daporijo line can be functional only when Ranganadi HEP to Ziro (34 KM) segment is also constructed for carrying the current from the Ranganadi HEP. It is understood that Power Grid Corporation will construct this Ranganadi to Ziro segment (34 KM) under their work programme. The State Government has also proposed extension of the line from Along to Roing via Pasighat for funding under Non-Lapsable Central Pool. The above lines when completed will cater to the needs of Central and Eastern parts of the State to a great extent. However to meet the requirement of Western part of the State, a transmission line from Balipara to Tenga and Tenga to Jang will also have to be constructed which can materialize only through Central assistance.

To improve the sub-transmission and distribution system the State Govt. has submitted 32 schemes to the Central Electricity Authority for an amount of Rs.111.65 crore under Accelerated Power Development Programme(APDP). Proposal for renovation and modernization of 6 (six) existing hydel projects for a total cost of 11.48 crore also have been submitted to the CEA for funding under APDP.

It is expected that by the end of 10th Plan there would be substantial addition to the installed capacity both Central and State projects taken together. The State Government would be entitled to receive 48.86 MW free power from Ranganadi HEP. These taken together with expected additions of 66.14 MW from the various micro hydel projects under execution in the State sector, total availability will be around 115 MW. This situation needs extra thrust on transmission, Sub-transmission and distribution system. Therefore, in addition to the above mentioned projects under Central funding, new projects of transmission and distribution will be taken up under State sector during Tenth Plan without losing sight of the need for completion of ongoing ones.

Electrification of all the villages by the end of Tenth Plan would be aimed at. To cater to the needs of high altitude remote regions where the villages are too widely scattered, efforts will be made to electrify them under NRSE Programme where grid power cannot be reached for reasons of financial and logistical difficulties.

The New and Renewable Sources of Energy programme would be implemented mostly to meet the needs of remote locations. Guidelines given by the Central Government would be followed.

The important target proposed for Tenth Plan and Annual Plan (2002-

2003) under State sector are as under:

**Power**

|                                      | <b>10th Plan<br/>2002-2007</b> | <b>Annual Plan<br/>2002-2003</b> |
|--------------------------------------|--------------------------------|----------------------------------|
| i) Hydel Generation                  | 84 MW                          | 16.8 MW                          |
| ii) Diesel Generation                | 1 MW                           | Proposal to be phased out        |
| iii) State Transmission line (33 KV) | 241 KM                         | 48.2 KM                          |
| iv) Sub-Transmission/ Distribution   | 1000 KM                        | 200 KM                           |
| v) Rural Electrification             | 1326 Villages                  | 260 KM                           |

**NRSE**

|                                     | <b>10th Plan<br/>2002-2007</b> | <b>Annual Plan<br/>2002-2003</b> |
|-------------------------------------|--------------------------------|----------------------------------|
| i) Bio-gas Plant                    | 800 Nos.                       | 180 Nos.                         |
| ii) High altitude Chullah           | 500 Nos.                       | 100 Nos.                         |
| iii) Village electrification by DLs | 1000 Nos.                      | 200 Nos.                         |
| iv) Erection of Solar fencing       | 50 KM                          | 10 KM                            |
| v) Solar Lantern                    | 3000 Nos.                      | 600 Nos.                         |
| vi) Water Mill                      | 50 Nos.                        | 10 Nos.                          |
| vii) Micro Hydel                    | 1500 KW                        | 300 KW                           |

Outlay proposed for Tenth Plan is Rs.58713 lakh for Power including Rs.9500 lakh for 2002-2003. The corresponding figures for NRSE is Rs.825 lakh and Rs.165 lakh.

Arunachal Pradesh has been endowed with tremendous potential of hydro power which is considered to be the most economical and renewable source of energy. Once the available hydro potential in Arunachal Pradesh is explored the state can not only be self sufficient to meet its demand of power but can also feed other parts of the country. The total hydro power potential of the state has been estimated to be in order of 32,000 MW. So far 23.65 MW installed capacity hydro power in the range of mini/small level has been harnessed.

**The following sites with hydro power potential  
are investigated/identified**

| Sl. No.      | Names of Projects | Power Potential       |
|--------------|-------------------|-----------------------|
| 1.           | Lower Dihang      | 20,000 MW             |
| 2.           | Subansiri         | 4,800 MW under const. |
| 3.           | Rikor             | 2,700 MW              |
| 4.           | Idipo             | 1,150 MW              |
| 5.           | Kameng            | 600 MW under const.   |
| 6.           | Demwe             | 520 MW                |
| 7.           | Upper Subansiri   | 500 MW                |
| 8.           | Upper Lohit       | 500 MW                |
| 9.           | Ranganadi (Ph-I)  | 405 MW commissioned   |
| 10.          | Sisiri            | 200 MW                |
| 11.          | Dikrong           | 100 MW                |
| 12.          | Pakke             | 90 MW                 |
| 13.          | Papu              | 80 MW                 |
| 14.          | Darkarang         | 50 MW                 |
| 15.          | Siemen            | 30 MW                 |
| 16.          | Karmlang          | 30 MW                 |
| 17.          | Burma Nallah      | 10 MW                 |
| 18.          | Deopani           | 10 MW                 |
| 19.          | Shore             | 6 MW                  |
| 20.          | Kambang           | 6 MW                  |
| 21.          | Mengha            | 5 MW                  |
| 22.          | Hirik             | 5 MW                  |
| 23.          | Tippi             | 5 MW                  |
| 24.          | Hime              | 3 MW                  |
| <b>Total</b> |                   | <b>31,905 MW</b>      |

*Power Potential in Arunachal Pradesh by T. Norbu.*

## CHAPTER – V

# BANKING, TRADE AND COMMERCE

### **Banking and Finance**

Though the state is rich in natural and other resources, it has remained by and large, underdeveloped in terms of various indicators of industrial development. Lack of adequate processing and marketing facilities coupled with lack of development of local entrepreneurs, low level of exploitation of power potentials along with lack of adequate availability of financial resources, the pace of development in the state has not achieved as expected. Thus, the economy of the state needs enormous expansion of financial institutions for meeting the demand of diversified economic activities. Bank loans and advances can only enable the entrepreneurs or producers to start a new economic activity and can help existing entrepreneurs to increase their productive capacity, to adopt new methods and idea and to improve working conditions, thereby raising production and consequently the state income.

As per 2001 census about 80 percent of total population in the state is still living in rural areas with agriculture as primary occupation. But the agriculture system and other allied activities are based on traditional technology and organization. Because of subsistence, orientation of agriculture and the average income is very low with zero or negative saving for large masses of the tribal population. As a result substantial segment of tribes of the state is living

below the poverty line in the rural areas of the state. Thus need of the hour is to find out the methods of absorbing the rural poor into productive sectors. This can be done by providing the poor with institutional credit along with necessary services to enable them to participate in various farming and non-farming activities and credit is one of the most essential inputs for economic development as such. Its timely availability in the right quantity and at reasonable interest goes a long way in providing gainful economic activities in farm and non-farm sectors particularly to the asset less poor and rural women. Thus, rural credit is a potent instrument in the hands of the rural financial institutions which can play a vital role in the cause of agricultural development in particular and rural development in general.

It may, however, be mentioned here that banking was quite unknown to the people of this state. Monetization started only after independence (1947), and even today, the system of barter exchange prevails in the interior of the state. It was only in 1970-71 that modern banking started in Arunachal Pradesh by opening the first branch of State Bank of India (SBI) at Pasighat in East Siang District. Realizing the urgency for deposits and credit mobilization, the government has since been endeavoring for popularization and expansion of banking facilities in the State. Slow but steadily numbers of nationalized and other scheduled commercial banks such as State Bank of India (SBI), UCO Bank, Vijaya Bank, Central Bank of India (CBI), Syndicate Bank, etc are coming up rapidly facilitating banking services to the people. Although in initial phase banking development in this state was lukewarm, its momentum had taken since 1979 and covered almost all district of the state by now although many more is yet to be done in this respect. Besides, the branches of other financial institutions like North East Development Bank of India (NEDFI), Small Industries Development Bank of India (SIDBI), Industrial Development Bank of India (IDBI), Industrial Finance Corporation of India (IFCI) and state level financial institutions like Arunachal Pradesh Cooperative Apex Bank and State Rural Bank are also functioning in the state with limited branches. These National level financial institutions are mainly concentrated in some selected urban centre especially at Itanagar, the state capital of Arunachal Pradesh.<sup>11</sup>

There were altogether only 14 bank functioning in the state till 1979 but by 2006, the number of its banking branches had grown to 42 (SBI) numbers and other commercial banks to 9 (nine), 17 (seventeen) APRB and 32 (thirty two) A.P. Co-p Apex Bank covering almost all the districts of the state and caters credit facilities for promotion of sustainable and equitable devel-

opment in various sectors of state economy through effective credit support relating to agriculture and allied activities, construction, industries, transport, trade etc. Number of banking branches and its Deposit and advances ratios of scheduled commercial Bank in Arunachal Pradesh are given below as on 31-03-2006.

**NUMBER OF COMMERCIAL BANKING OFFICES IN ARUNACHAL PRADESH,  
AS ON 31-03-2006**

**(In Numbers)**

| District               | Branches of<br>State Bank of<br>India | Branches of<br>Other Banks | Branches of<br>A.P. Rural<br>Bank | Branches of<br>A.P. Co-<br>operative<br>Apex Bank | Total Banks |
|------------------------|---------------------------------------|----------------------------|-----------------------------------|---------------------------------------------------|-------------|
| (1)                    | (2)                                   | (3)                        | (4)                               | (5)                                               | (6)         |
| Tawang                 | 3                                     | -                          | -                                 | 2                                                 | 5           |
| West Kameng            | 7                                     | -                          | -                                 | 1                                                 | 8           |
| East Kameng            | 2                                     | -                          | -                                 | 1                                                 | 3           |
| Papum pare             | 4                                     | 7                          | 3                                 | 6                                                 | 19          |
| Lower Subansiri        | 3                                     | -                          | 1                                 | 2                                                 | 6           |
| Kurung Kumey           | 1                                     | -                          | -                                 | 1                                                 | 2           |
| Upper Subansiri        | 1                                     | -                          | 2                                 | 1                                                 | 4           |
| West Siang             | 3                                     | -                          | 4                                 | 3                                                 | 10          |
| East Siang             | 3                                     | -                          | 6                                 | 0                                                 | 9           |
| Upper Siang            | 1                                     | -                          | 1                                 | 4                                                 | 6           |
| Dibang Valley          | 1                                     | -                          | -                                 | 1                                                 | 2           |
| Lower Dibang<br>Valley | 1                                     | -                          | -                                 | 2                                                 | 3           |
| Lohit                  | 3                                     | 1                          | -                                 | 3                                                 | 8           |
| Anjaw                  | 1                                     | -                          | -                                 | -                                                 | 1           |
| Changlang              | 4                                     | -                          | -                                 | 3                                                 | 7           |
| Tirap                  | 4                                     | -                          | -                                 | 2                                                 | 6           |
| <b>Total for A.P.</b>  | <b>42</b>                             | <b>8</b>                   | <b>17</b>                         | <b>32</b>                                         | <b>99</b>   |

Source: Statistical Abstract of Arunachal Pradesh 2006.

**DEPOSIT AND ADVANCES OF SCHEDULED COMMERCIAL BANKS IN ARUNACHAL PRADESH AS ON 31-3-2004 & 2006\*.**

| SL NO. | Name of Banks              | Number of branches |           | Deposits (Rs. In Lakhs.) |               | Loans and advance (Rs. In Lakhs) |              | Credit Deposit Ratio (In %) |              |
|--------|----------------------------|--------------------|-----------|--------------------------|---------------|----------------------------------|--------------|-----------------------------|--------------|
|        |                            | 2004               | 2006      | 2004                     | 2006          | 2004                             | 2006         | 2004                        | 2006         |
| 1      | 2                          | 3                  | 4         | 5                        | 6             | 7                                | 8            | 9                           | 10           |
| 1.     | State Bank of India        | 42                 | 42        | 79770                    | 109609        | 11459                            | 22405        | 14                          | 20.44        |
| 2.     | Vijaya Bank                | 2                  | 2         | 10844                    | 17248         | 1161                             | 1911         | 11                          | 11.08        |
| 3.     | United Bank of India       | 2                  | 3         | 915                      | 3425          | 186                              | 1111         | 20                          | 32.44        |
| 4.     | Central Bank of India      | 1                  | 1         | 1402                     | 2058          | 245                              | 1340         | 22                          | 16.52        |
| 5.     | U.C.O. Bank                | 2                  | 2         | 9181                     | 11863         | 2311                             | 8562         | 37                          | 12.17        |
| 6.     | A.P. Rural Bank            | 17                 | 17        | 5581                     | 6372          | 3253                             | 2928         | 58                          | 45.95        |
| 7.     | A.P. State Co-op Apex Bank | 31                 | 32        | 19269                    | 18690         | 13125                            | 14880        | 68                          | 79.61        |
|        | <b>Total for A.P</b>       | <b>97</b>          | <b>99</b> | <b>126962</b>            | <b>169265</b> | <b>31740</b>                     | <b>52137</b> | <b>25</b>                   | <b>30.80</b> |

Source: -Statistical Abstract of Arunachal Pradesh 2004 & 2006.



Though the monetization of economy of the state was started with the attainment of independence of India in 1947 and the rapid expansion of administration into interior area of the state but its pace was slow, people were yet to accustom with the economic viability of currency notes and coins as substitute to their aged old practices of barter system. However, opening up of State Bank of India in the state as mentioned earlier formed a landmark as far as monetization and development of banking institution in the state is concern, which was subsequently followed by opening up of numbers of schedule commercial and regional banking institutions in the state contributing spreading and encouraging banking habit of the local people. By considering the late introduction of the modern banking system in the state, the responses of local people to money economy and rapid development of their banking habit is a commendable and it can be seen from the table at pre-page. In 1971 there was only a lone bank in the state with opening of first branch of State Bank of India in the state at Pasighat, by 2006 the number of banks increased to 100 with total deposit of rupees 169265 lakhs and Loan and Advances rupees 31740 in 2004 and 52137 lakhs in 2006 with Credit Deposit Ratio of 25 and 30.80 percent respectively. This feat has been achieved in just three and half decades in the state.

#### Evolution of Regional Banking in Arunachal Pradesh

Bank plays an important role in the development of every modern state. Important function of financial institutions is to mobilize savings of the community and to channelise them for productive purposes. The role of regional bank has been expected to play more active role in all rounds social and economic development of the rural sector as it is direct access to the rural people where nationalized commercial banks failed and also reluctant to opened their branches. Thus, they play important role in capital formation without which economic development cannot be possible. So far as Arunachal is concerned, the state is economically poor and needs sound financing facilities to innovate and invest and thus uplift economic activity, and progress. The nature and status of Arunachal economy indicate that there are plenty of areas and fields, which are yet to be identified and exploited for their faster and balanced growth.

Arunachal Pradesh State Cooperative Apex Bank Ltd (APSCAB) was set up as the Apex institution on 3rd May, 1977, which started functioning from 11th September 1978 with headquarters at Naharlagun. The bank started with only one branch in 1978 with the total working capital of Rs. 26.25 lakhs. The primary objective of this bank is to meet credit requirement of the sister cooperative societies, and to promote rural economy of the state in accordance with cooperative principles. In absence of long-term cooperative credit structure in

the state, state cooperative bank has been looking after both short term (ST) and long term (LT) credit requirements. The bank is catering to the needs of farmers directly as primary credit cooperative societies are very weak. The Arunachal Pradesh State Cooperative Apex Bank has been pioneer in banking in the state and in rendering various public utility services since its inception. The bank has been playing pivotal role in the promotion and strengthening of cooperatives and serving the cause of rural development and targeted groups through the affiliated cooperative societies and its branches spreads all over the state. The bank has launched various attractive deposit schemes to cater to the needs of the general public and has been giving  $\frac{1}{2}$  % to 1.25% more interest than the commercial/public sectors banks with a view to inculcate savings and thrift among the people. The bank has been extending financial assistance for agriculture and allied agriculture, procurement and marketing, consumer goods dealing, handloom and weaving, housing, transport, consumer durable and various approved viable economic activities for improving economic condition of the people and the unemployed youth. Apart from this, the bank has been rendering banking, subsidiary and other useful services to the general public, like collection of cheques and bills, issue of bank drafts, banker's cheques, loan against fixed deposit receipts etc. Arunachal Pradesh Rural Bank (APRB) is the only Regional Rural Bank functioning in Arunachal Pradesh. It was established on 30th November 1983 at Pasighat, the district headquarter of East Siang district in pursuance of the objectives laid down under section 3(i) of RRBs Act, 1976<sup>1</sup>. The APRB was established for resource mobilization in the rural areas and for the development of rural sector by catering to the needs of credit requirements of the rural population in the state. Initially, the bank covered four districts, viz., East Siang, West Siang, Upper Subansiri, Lower Subansiri and Papum Pare. At present, the bank covers 7 (seven) districts out of 16 (sixteen) districts of the state, namely, Lower Subansiri, Upper Subansiri, Papum Pare, East Siang, West Siang, Upper Siang and Kurung Kumey with 18 (eighteen) branch network with its headquarter at Pasighat. The maximum operational area of APRB lies in the mountainous and hilly region of the state. The bank covers around 500 tribal villages of these districts falling in 14 Development Blocks of 12 Sub-divisions. Hence, the villages in mountainous regions lack proper communication and as a result people therein are still traditional bound. Therefore, it is a challenging task for APRB to function properly in its operational areas. The management of APRB is entrusted to the Board of Directors consisting of 8-12 members headed by the Chairman. The Govern-

<sup>1</sup> Tasi Kaye; Role of Regional Rural Bank in Economic Development; Delhi(2006);p:80

Government of India, State Bank of India (sponsoring Bank) and Government of Arunachal Pradesh nominates the members of the Board in the ratio 5:2:2 respectively. As per the Regional Rural Bank (RRB) Act, 1976, every Regional Rural Bank is to be sponsored by the Commercial Bank and accordingly State Bank of India (SBI) sponsors it. The sponsoring bank (SBI), provides assistance to the bank by way of subscribing to its share capital, deputes the managerial and other staff as mutually agreed upon. Like other RRBs, the APRB also receives refinance facilities from National Bank for Agriculture and Rural Development (NABARD). Apart from providing the refinance facility, NABARD undertakes the responsibility of formulation of operational policies and oversees the overall functioning of APRB. Thus, APRB follows the guidelines issued by NABARD from time to time along with the guidelines of Central and State Governments.

Arunachal Pradesh Rural Bank (APRB) has been assigned an important role to play in the State's rural economy as they have to act as alternative agencies to provide institutional credit in rural areas. These banks have been set up with the express objective of developing the rural economy of the state by providing credit and other facilities for agriculture and other productive activities of all kinds in rural areas. The main emphasis of the bank is supposed to be on the provision of such facilities to small and marginal farmers, agricultural labourers, rural artisans, and other small entrepreneurs working in rural areas. The bank, since its inception, has been an active participant in programmes to provide credit assistance to identified beneficiaries under different rural development programmes including IRDP and other special programmes for Schedule Castes & Schedule Tribes. They are also implementing differential rate of interest (DRI) schemes for the weaker sections and physically handicapped person.

#### **Branch Expansion**

The State has currently 49 branches of both APRB and APSCAB as in 2006. At present, of the total branches, APSCAB has 32 branches and APRB has 17 branches spread over the different corners of the State. Since last ten years there has been no branch expansion in the district as per as the State Rural Bank is concern, instead its total numbers has been declined to 17 from 19 due to merging of Kaying branch of West Siang District with Kamba branch and Miren branch of East Siang District with Pasighat in 2004. The main reason for the state of affairs may be attributed to the lack of infrastructure and non receipts of license from RBI. As far as the geographical coverage of both the bank is concerned APCAB shows a favorable position than the APRB as shown in the table given below.

## District wise number of branches of Rural Bank &amp; A.P. Co-op. Apex Bank from last ten years\*.

| Sl. No. | District            | A.P. Rural Bank |           |           |           |           |           |           |           |           | A.P. Co-op. Apex Bank |           |           |           |           |           |           |           |           |
|---------|---------------------|-----------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|
|         |                     | 1995-96         | 1996-97   | 1998-99   | 1999-2000 | 2000-2001 | 2001-2002 | 2002-2003 | 2004-2005 | 2005-2006 | 1995-96               | 1996-97   | 1998-99   | 1999-2000 | 2000-2001 | 2001-2002 | 2002-2003 | 2003-2004 | 2005-2006 |
| 1.      | Tawang              |                 |           |           | -         | -         | -         | -         | -         | -         | 2                     | 2         | 2         | 2         | 2         | 2         | 2         | 2         | 2         |
| 2.      | West Kameng         | -               | -         | -         | -         | -         | -         | -         | -         | -         | 1                     | 1         | 1         | 1         | 1         | 1         | 1         | 1         | 1         |
| 3.      | East Kameng         | -               | -         | -         | -         | -         | -         | -         | -         | -         | 1                     | 1         | 1         | 1         | 1         | 1         | 1         | 1         | 1         |
| 4.      | Papum pare          | 3               | 3         | 3         | 3         | 3         | 3         | 3         | 3         | 3         | 5                     | 5         | 5         | 5         | 5         | 5         | 5         | 6         | 6         |
| 5.      | Lower Subansiri     | 1               | 1         | 1         | 1         | 1         | 1         | 1         | 1         | 1         | 2                     | 2         | 2         | 2         | 2         | 2         | 2         | 2         | 2         |
| 6.      | Upper Subansiri     | 2               | 2         | 2         | 2         | 2         | 2         | 2         | 2         | 2         | 1                     | 1         | 1         | 1         | 1         | 1         | 1         | 1         | 1         |
| 7.      | West Siang          | 5               | 5         | 5         | 5         | 5         | 5         | 5         | 4         | 4         | 3                     | 3         | 3         | 3         | 3         | 3         | 3         | 3         | 3         |
| 8.      | East Siang          | 7               | 7         | 7         | 7         | 7         | 7         | 7         | 6         | 6         | 1                     | 1         | 1         | 1         | 1         | 1         | 1         | 1         | 1         |
| 9.      | Upper Siang         | 1               | 1         | 1         | 1         | 1         | 1         | 1         | 1         | 1         | 3                     | 3         | 3         | 3         | 3         | 3         | 3         | 3         | 1         |
| 10.     | Dibang Valley       | -               | -         | -         | -         | -         | -         | -         | -         | -         | 1                     | 1         | 1         | 1         | 1         | 1         | 1         | 1         | 1         |
| 11.     | Lohit               | -               | -         | -         | -         | -         | -         | -         | -         | -         | 3                     | 3         | 3         | 3         | 3         | 3         | 3         | 3         | 1         |
| 12.     | Changlang           | -               | -         | -         | -         | -         | -         | -         | -         | -         | 3                     | 3         | 3         | 3         | 3         | 3         | 3         | 3         | 3         |
| 13.     | Tirap               | -               | -         | -         | -         | -         | -         | -         | -         | -         | 2                     | 2         | 2         | 2         | 2         | 2         | 2         | 2         | 3         |
| 14.     | Kurung Kumey        | -               | -         | -         | -         | -         | -         | -         | -         | -         | 1                     | 1         | 1         | 1         | 1         | 1         | 1         | 1         | 1         |
|         | Lower Dibang Valley | -               |           | -         | -         | -         | -         | -         | -         | -         | 2                     | 2         | 2         | 2         | 2         | 2         | 2         | 2         | 2         |
| 15.     | Anjaw               | -               | -         | -         | -         | -         | -         | -         | -         | -         | -                     | -         | -         | -         | -         | -         | -         | -         | -         |
|         | <b>Total:</b>       | <b>19</b>       | <b>19</b> | <b>19</b> | <b>19</b> | <b>19</b> | <b>19</b> | <b>19</b> | <b>17</b> | <b>17</b> | <b>31</b>             | <b>31</b> | <b>31</b> | <b>31</b> | <b>31</b> | <b>31</b> | <b>31</b> | <b>32</b> | <b>32</b> |

\*Source: General Manager Arunachal Pradesh Rural Bank Head Office Naharlagun and Office of The Managing Director Arunachal Pradesh State Co-operative Apex Bank Ltd. Naharlagun.

The branches of APCAB covers all the districts of the State except Anjaw District. Whereas, APRB had covered only 6(six) districts till then. The number of APCAB branches in Papum pare district is 5 (16.12%) of the total branches whereas for the rest of districts the distribution of the branches is more or less uniform. On the other hand, maximum number of branches i.e. 10 (63.15%) of APRB is concentrated in two districts namely East Siang and West Siang and rest four districts have a branch of 3 (Papum pare district) 1 (Lower Subansiri), and 1(Upper Siang) respectively. It is significant to note here that about 80 per cent of branches of these banks are concentrated in rural areas of the state.

### Deposit Mobilization

One of the important tasks of the banks is to mobilize the deposits from the public through a massive programme of branch expansion, especially in unbanked rural and semi-urban areas. High amount of deposit help reduce the bank from external borrowing and thereby helps the banks to keep their position on the proper footing and it also enables banks to increase their credit extension. On the other hand the banking habit among the people can be best known by the increases in the bank deposits. Arunachal banks (APSCAB and APRB) with their branch network have mobilized a remarkable amount of deposits over last 9 years while meeting up the credit needs of the rural areas. It can be seen from the following table also.

#### Deposit mobilized by A.P. Rural Bank & A.P. Co-op. Apex Bank, 1995-2006\*

| Sl No. | Name of Banks         | 1994-1995 | 1995-1996 | 1996-1997 | 1997-1998 | 1998-1999 | 1999-2000 | 2000-2001 | 2001-2002 | 2002-2003 | 2003-2004 | 2004-05 | 2005-06 |
|--------|-----------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|---------|---------|
| 1.     | A.P. Rural Bank       | 266.87    | 1223.60   | 1437.66   | 2019.44   | N.A       | 2475.00   | 3088      | 4076      | 4136      | 5581      | 63622   | 6372    |
| 2.     | A.P. Co-op. Apex Bank | 646.00    | 7421.62   | 8337.64   | 9022.93   | N.A       | 7877.00   | 10461     | 14298     | 17077     | 19269     | 20188   | 18690   |
|        | Total                 | 912.82    | 8645.22   | 9775.30   | 11042.37  | N.A       | 10352     | 13549     | 18374     | 21213     | 248860    | 26550   | 25062   |

\*Source: Various issues of Economic Review of Arunachal Pradesh, published by Directorate of Economic and Statistic, Government of Arunachal Pradesh, Itanagar.

The amount of aggregate deposit of APRB which was only Rs. 266.87 lakhs in 1994-95, rose to Rs. 4136 lakhs in 2002-2003 and by 2006 it further rose to 6372 lakhs. Thus, during the same period, aggregate deposits of the bank increased by 15.4 times. On the other hand, APSCAB has also made significant achievement in deposit mobilization, banks deposit has been increased from Rs. 646.00 lakhs in 1994-1995 to Rs. 17077 lakhs in 2002-2003 and till 2006 its aggregate deposit has reached at the tune of Rs.18690 lakhs which is 23.2 times. Total deposits of both the banks have increased from Rs. 912.89 lakhs to Rs. 25062 lakhs during the period, 1996-2006. The average deposit mobilized by APRB was Rs. 684.09 lakhs in 2006 and in case of APSCAB it was Rs. 684.2 lakhs. Thus, the performance of cooperative bank is in better position during last 12 years in comparison to APRB in terms of deposit mobilization.

Loan, Advances and investment are the principle components of bank assets and the main sources of income of the banks. One important function of bank is to arrange smooth, efficient and socially equitable allocation of credit by maintaining their objectives of liquidity and profitability. Thus Banks are plying an increasingly important role in the provision of credit. APRB provides credit and other facilities to the small and marginal farmers, agricultural labourers, artisans and small entrepreneurs in rural areas and help generally in the overall development of the villages in its areas. On the other hand APSCAB has been extending loan and advances to agricultural and non-agricultural sectors and also for implementation of Integrated Rural Development Programme (IRDP) Schemes. It provides both short and medium term loans for all types of agricultural and rural development. The advance made by the banks from 1995-2006 is shown in following table.

**Advances of A.P. Rural Bank & A.P. Co-op. Apex Bank,  
1995-2006 (Rs. in Lakh)<sup>1</sup>**

| Sl. No | Name of Banks         | 1994-1995 | 1995-1996 | 1996-1997 | 1997-1998 | 1998-1999 | 1999-2000 | 2000-2001 | 2001-2002 | 2002-2003 | 2003-2004 | 2004-05 | 2005-06 |
|--------|-----------------------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|-----------|---------|---------|
| 1.     | A.P. Rural Bank       | 69.06     | 321.3     | 774.3     | 774.46    | N.A       | 4771      | 3269      | 3458      | 3269      | 3253      | 4625    | 2928    |
| 2.     | A.P. Co-op. Apex Bank | 278.14    | 1900.49   | 2594.84   | 2778.29   | ...       | 4026      | 4478      | 5413      | 7861      | 13125     | 16082   | 14880   |
|        | Total                 | 347.20    | 2321.79   | 3369.30   | 4513.85   | ...       | 6797      | 7744      | 8841      | 11130     | 16378     | 20707   | 17808   |

<sup>1</sup> Various issues of Economic Review of Arunachal Pradesh, published by Directorate of Economic and Statistics, Government of Arunachal Pradesh, Itanagar.

The advance made by APRB increased by 47 times i.e. from Rs. 69.06 lakhs in 1995 to 3269 lakhs in 2003 and it further rose to Rs.4625 in 2005 but it experienced decline in 2006 the total advances made by APRB is Rs.2928-lakhs. At the same time, loan & advance of APSCAB increased from Rs. 278.14 lakhs in 1995-96 to Rs. 7861 lakhs in 2002-03 that is by 32.03 times and in 2006 its advances is recorded to Rs.14860 lakhs. Thus, during this period the rate of increase in advance made by APRB is comparatively higher than those of APSCAB. As on 31st March'2006 the total amount of credit of both the banks stood to Rs. 17808 lakhs out of which Rs. 2928 lakhs by APRB and Rs. 14880 lakhs by APSCAB. During the period from 1995-2003, the credit per branch of APRB went up to Rs. 172 lakhs in comparison to Rs. 254 lakhs of APSCAB and their credit per branch as in 2006 remained to Rs.163 and Rs.496 lakhs respectively. Thus, per branch performance of APSCAB is far better than APRB.

Bank has been playing an important role in implementation of the ambitious programme of IRDP (Integrated Rural Development Programme) in rural areas and also for all round progress and prosperity of the rural masses. In the implementation of IRDP, it has extended its helping hands in the area of credit for production and developmental purposes undertaking cottages and small scale industries, provision of financial and the assistance to weaker sections of the community.

Loans distributed under IRDP during 1993-99 are presented in following table. Amongst banks, cooperative banks have been providing larger chunks of loans (54.21% and A.P. Rural Bank (45.75%) in 1997-1998. Both the banks together have disbursed a loan amount to the tune of Rs. 502.43 lakhs in 1997-1998. The ratio between bank loans and subsidy varied from 0.20 to 0.74. Therefore, banking has to come forward to identify variable projects and keep constant monitoring on the performance of the assets provided.

**Bank-wise distribution of loans under IRDP, 1991-1999<sup>1</sup>**

| Year      | Subsidy<br>(Rs. In Lakhs) | Bank-wise credit disbursed<br>(Rs. In lakhs) |       | Total<br>(Rs. in lakhs) |
|-----------|---------------------------|----------------------------------------------|-------|-------------------------|
| 1992-1993 | 247.95                    | 35.59                                        | 19.72 | 55.51                   |
| 1993-1994 | 308.81                    | 48.57                                        | 19.65 | 68.22                   |
| 1994-1995 | 386.36                    | 26.37                                        | 21.55 | 47.92                   |
| 1995-1996 | 329.45                    | 41.04                                        | 30.98 | 72.02                   |
| 1996-1997 | 341.08                    | 45.32                                        | 48.05 | 93.37                   |
| 1997-1998 | 409.71                    | 75.48                                        | 89.91 | 165.39                  |

<sup>1</sup> Records of the office of Director of (Rural Development) Govt. of A.P.

### Credit Deposit Ratio

Credit-Deposit Ratio (C/D ratio) is considered as one of the important indicators of credit flow. The C/D ratio of the Arunachal banks (APRB & APSCAB) during the last 9 years as shown in the table.

#### Credit deposit ratio of A.P. Co-op Apex Bank and A.P. Rural Bank 1995-2006<sup>1</sup>

(In percent)

| Sl No. | Name of Banks         | Year      |           |           |           |           |           |         |         |         |         |         |         |
|--------|-----------------------|-----------|-----------|-----------|-----------|-----------|-----------|---------|---------|---------|---------|---------|---------|
|        |                       | 1994-1995 | 1995-1996 | 1996-1997 | 1997-1998 | 1998-1999 | 1999-2000 | 2000-01 | 2001-02 | 2002-03 | 2003-04 | 2004-05 | 2005-06 |
| 1.     | A.P. Rural Bank       | 25.87     | 34.43     | 33.87     | 85.94     | N.A.      | 112.00    | 107.00  | 84.83   | 79.03   | N.A.    | 73.00   | 45.95   |
| 2.     | A.P. Co-op. Apex Bank | 43.05     | 25.61     | 31.12     | 30.79     | 31.12     | 51.11     | 43.00   | 37.85   | 46.03   | 31.12   | 80.00   | 79.61   |
| 3.     | Total                 | 38.03     | 26.86     | 34.47     | 40.88     | 31.12     | 65.66     | 57.00   | 48.29   | 52.56   | 31.12   | 78.00   | 71.05   |

From the above table it is clear that the CD ratios of both the banks have not experienced constant increase but increased spirally during the last 12 (twelve) years from 1995-2006. CD ratio of APRB which was 25.87% in 1995 increased to 79.03% in 2003. However it declined to 45.95 in 2006. On the other hand, CD ratio of APCRB in spite of up and down in some years have also increased from 43.05% to 79.61% and combined C/D ratio of the two banks was range within (38.03% to 78.00%) during 1995-2006. however, it is significant to note that the CD ratio of APRB were quite better in comparison to APCAB over the years. The reason for such low CD ratio in the state are many such as poor recovery and write off of bad loans by banks, absence of land record, improper identification of borrowers and lack of monitoring, lack of bankable feasible schemes, lower level of utilization and misutilization of advances etc.

<sup>1</sup> Various issues of Economic Review of Arunachal Pradesh, published by Directorate of Economic and Statistic, Government of Arunachal Pradesh, Itanagar.



### APRB & APSCAB and National Banks

As on 31st March 2006, the state has a total member of 99 different branches, out of which 50 belongs to nationalized banks, 32 APSCAB and 17 are APRB. Out of 99 total branches in the state 59 (59.5%) branches are located in rural areas. An average population served by each bank in the state is 11078. The total amount of deposit mobilized by nationalized banks was Rs. 144203 lakhs (78.73%) of the total deposits and Arunachal banks (APRB & APSCAB) together Rs. 25062 (21.26%) in 2002-2006 as shown in the table.

#### Status of Nationalized and Arunachal Pradesh Rural/Co-op. Apex Bank, A.P. Rural Banks as on 31-03-2006.

(Rs. In lakhs)

| Banks                    | No. of branches | Total Deposit | Advantages granted | Credit deposit ratio (%) |
|--------------------------|-----------------|---------------|--------------------|--------------------------|
| <b>Nationalized Bank</b> | 42              | 109609        | 24405              | 20.44                    |
| SBI                      |                 |               |                    |                          |
| UBI                      | 3               | 3425          | 1111               | 32.44                    |
| UCO                      | 2               | 11863         | 8562               | 12.17                    |
| Vijaya                   | 2               | 17248         | 1911               | 11.08                    |
| CBI                      | 1               | 2058          | 1340               | 16.52                    |
| Sub Total                | 50              | 144203        | 35329              | 24.50                    |
| <b>Arunachal Banks</b>   |                 |               |                    |                          |
| APRB                     | 17              | 6372          | 2928               | 45.95                    |
| A.P. Co-op Apex Bank     | 32              | 18690         | 14880              | 79.61                    |
| Sub Total                | 49              | 25062         | 17808              | 71.05                    |
| <b>Grand Total</b>       | <b>99</b>       | <b>169265</b> | <b>52137</b>       | <b>31.39</b>             |

Sources: Statistical Abstract of Arunachal Pradesh 2006

The amount of loans and advances by the banks was Rs. 22546 lakhs in 2006 out of which Rs. 11416 (50.63%) is by nationalized banks and Rs. 11130 lakhs (49.36%) by Arunachal banks (APRB & APSCAB). However, the overall CD ratio of the banks in the state is not satisfactory. The CD ratio was recorded only 22.60% and 31.39% in 2003 and 2006 respectively. The CD ratio is extremely poor in case of nationalized banks being only 14.53% in 2003 and 20.50% in 2006. Whereas in case of APRB & APSCAB, the ratio is 52.46% in 2003 and 71.05% by 2006. Thus, combined CD ratio of Arunachal banks (APRB & APSCAB) is quite impressive in comparison to nationalized banks. The nationalized banks have to endeavor for improving the CD ratio for due services to the state. This required serious attention of the banks as well as of the government in policy making.

The banking outlook of Arunachal Pradesh is not very developed. There are around 69 bank offices with an average of 9.07 offices per lakh population

in 2001. There are very few nationalized banks which have their branches in the state. The SBI has around 42 branches accounting for nearly 60.80% of the total number of branches in the year 2001. Itanagar and Naharlagun town (capital of the state) of Papum pare district can only avail of the banking facilities offered by other commercial banks like Vijaya bank, Central Bank of India, Syndicate Bank, UCO bank etc. At the same time, the credit deposit ratio of Arunachal Pradesh is the lowest among the states of North East India, which is only 20.89%. The low credit deposit ratio signifies that the bank have not been able to support sufficient investment opportunities in the State. The recovery ratio in industrial sector is only 30% which is a matter of grave concern. It shows that the loans forwarded by the bank is either consumed or invested in unviable capital stock. The reason behind this poor recovery rate is the predominance of central scheme loans over other commercial loans. Instead of all deficiencies mentioned above the banking and financial institutions has been playing a pivotal role in resource mobilizations and developmental activities in all sectors of the State economy.

#### **Small Saving**

The Small Savings Scheme also plays an important role in inculcating the habit of savings amongst the people particularly in the rural sector. It plays a pivotal role in mobilizing dormant capital for utilization in planning and development without causing undue hardship to the participants. It is a national programme and various issues are Central Government securities. The State Government role is confined to publicity, propaganda and organization of special campaigns for ensuring maximum collection.

The Department of Small Savings is entrusted with the works of implementing various Small Saving Schemes in the State of Arunachal Pradesh as introduced by the Government of India from time to time through the department of Posts. Both State Government and public sectors enjoy the benefits derived out of the performances of the small saving. The Government of Arunachal Pradesh receive financial loan from the Govt. of India to the tune of 100% of monthly "Net collection" under the Small Savings Schemes throughout the State. This Department flourishes opportunities for self employment amongst the unemployed youths in general and the women in particular.

The Department appoints three types of Agents – (1) Standardized Agency System (SAS) Agents (2) Mahila Pradhan Kshetriya Bachat Yojna

(MPKBY) Agents and (3) Public Provident Fund (PPF) Agents from time to time for collecting funds under the Small Savings Schemes throughout the State. The Agents canvass the benefits under the Schemes and get more and more investors. The money is collected by the Agents of (1) & (2) above and deposited to concerned Post Offices. PPF agents are not permitted to carry cash of deposited to Post Office/Bank. For this work, agents are getting commissions at source as per rules. The Director of Small Savings is authorized to function as the Appointing Authority for all the categories of agencies. However, the Deputy Commissioners of the District (other than Papum pare) have been delegated the power to function as the appointing authority for SAS agency under their jurisdiction. The Treasury Officers/Sub-Treasury Officers function as Ex-officio District Savings Officers of this Department for respective Districts.

At present, there are eight schemes in existence as shown below.

- |                                  |                                 |
|----------------------------------|---------------------------------|
| 1. Kishan Vikash Patra           | 2. National Savings Certificate |
| 3. Public Provident Fund         | 4. Monthly Income Scheme        |
| 5. Time Deposit                  | 6. Savings Bank                 |
| 7. Senior Citizen Savings Scheme | 8. Recurring Deposit            |

**TARGET & ACHIEVEMENT OF SMALL SAVINGS FROM  
2001- 2006<sup>1</sup> ARE INDICATED BELOW**

(Figures in lakh)

| YEAR      | Target of Small Savings Collection |      | Achievement |      | Loan received from Govt. of India. |
|-----------|------------------------------------|------|-------------|------|------------------------------------|
|           | Gross                              | Net  | Gross       | Net  |                                    |
| 2001-2002 | 2500                               | 1500 | 3166        | 1300 | 1090                               |
| 2002-2003 | 2500                               | 1500 | 4116        | 1669 | 1833                               |
| 2003-2004 | 2500                               | 1500 | 5662        | 2380 | 1755                               |
| 2004-2005 | 2500                               | 1500 | 6835        | 2739 | 2783                               |
| 2005-2006 | 3000                               | 2000 | 10527       | 4678 | 3872                               |

<sup>1</sup> Small Saving Deptt. Govt. of Arunachal Pradesh Naharlagun.

## Trade and Commerce

**Early trade relation:** For the reconstruction of history of pre-colonial Arunachal Pradesh is rather a difficult task in want of reliable sources which are very scarce. But recently, the perceptions about the tribes of Arunachal Pradesh met with considerable qualitative improvement, which initiated a revolutionary change in the researches on the socio-political and economic formations, with a genuine urge to know their past, especially the pre-colonial period, free from any bias and prejudices. It does so by utilizing legendary, archival and ethnographic materials and field studies of current or extinct social institutions and thrown some light toward the reconstruction of the economic history of Arunachal Pradesh of pre-colonial period.

The *Atharvavedic* references to the Kirata girls who dig the drug on the high ridges of the mountains should also be recalled here. Their acquaintance with medicinal herbs of forest regions made it possible to supply such items as *tailaparnika* of the *Arthasastra*\*. Land routes connecting China and Bactria through India proper and through Central Asia also facilitated this trading activity, in which the Indian merchants played an important role. It can safely be assumed from the notice of Chang-Kien, the Chinese ambassador to Bactria, that some of these routes were active in the second century B.C. too. Chang-Kien who was surprised to find Chinese bamboo's in Bactria, which are supposed to have come through North Eastern India along the 'Grand Route' to Bactria<sup>1</sup>. The *Mahabharatha* also knew the *Malechha* kings, living near the Lauhitya river to be rich in gems of various types particularly rubies and lapis lazuli. Through some scholars identified Thinae with Theinni of Upper Burma, it is usually placed in the 'State of Ts' in the north-west China' Buck of this trade, in the heyday of Chinese-silk trade, went on foot through different routes of Central Asia leading to Bactria, but the people of north eastern India also seem to have carried on part of this trade via Chumbi valley of Tibet or the Bhamo valley of Burma and these goods were exported from the port of the Ganges.

Paddy in excess of consumption must have been medium of exchange in trades. Even at much later period large quantities of rice were exported to Tibet in exchange of rock salt. In the Tirap district of Arunachal Pradesh there

\* The *Atharveda*, 10.4.14: and for details on KIRATAS see, G.P. Singh, "The North East India Tribal Races as Described in Literary and Classical Sources", PNEIHA, Shillong session, 1980 and T.B. Subba, *Politics of Culture: A study of Three Kiratas Communities in the Eastern Himalayas*, Chennai, 1999.

<sup>1</sup> M. Chandra, *Trade and Trade Routes in Ancient India*, New Delhi, 1977, p.2

are springheads, which are sources of salt-water. People of the plains exchanged their goods for this salt. In the inscription of Vanamaladeva the water of the river Lauhitya is described as being polluted with the mud of gold, which comes from the huge gold-rock of the Mount Kailasa.<sup>1</sup> Gold washing was an important industry in Assam from which the government earned considerable revenue even in later days. According to the Chinese account gold was an item of export from Tien-chu even during this phase. We know, horses came to this region from Tibet. According to *Tabaqari-Nasiri* there were thirty-five passes between Kamrup and Tibet through which horses were brought.<sup>2</sup>

The references to trade are casual in the ancient and early medieval sources. Apart from sporadic references to traders these records cannot help to draw the pattern of commerce that was going on during those periods. It can thus be argued that the people of Arunachal Pradesh seem to have participated in foreign trade in costly articles and in internal trade of various types of goods. However, the trade by itself did not bring significant economic and social changes in the life of the people. The importance of this region in the general economic development of India, however, was gradually understood and so the people of this region attracted the foreigners like the authors of the *Periplus* and scholars like Ptolemy.

There existed in early times a regular intercourse of trade between various tribes of Arunachal Pradesh, and the trading communities of Assam and Tibet. There was also an internal inter-tribal trade relationship. The trade relation and the goods exchanged were determined by age-old customs and traditions. The traders from various tribal groups traditionally bartered their goods with their counterparts, and for this purpose they traversed great distances as and when necessary along old trade routes to obtain the necessities of life required by individuals, families or villages. When we look back over centuries and ponder over the realities of hard life led by the people of these rugged mountainous regions the ventures of these traders appear to us, to be as great as those of great explorers. The journeys undertaken by them without aids of transport and road communications and often at enormous risks are admirable indeed. The tracks opened by the early migratory tribes were followed by successive generations. The traders, who were themselves pathfinders, must have used these tracks as trade routes. Their trading ventures paved the way for cultural intercourse between different groups of people.

<sup>1</sup> M.M. Sharma, (ed) *Inscriptions of Ancient Assam*, Guwahati, 1978, p. 116.

<sup>2</sup> Elliot & Dowson, (ed). *History of India as told by its own Historians*. Vol. II p. 331.

There were trade and caravan routes suitable for pack-animals, which linked the present West Kameng and Tawang districts with Tibet as well as the plains of Assam. A regular trade was carried on along these trans-Himalaya routes until the transborder trade with Tibet was stopped in 1962. The annual trading caravans of the Tibetan merchants from Lhasa used to pass through these districts on their way to Assam. Loads of goods were brought annually by the traders of Assam and Tibet to some established marts. The goods from Assam were rice, coarse silk, iron, lac, skins, buffalo horns, pearls, and coral (first imported from Bengal). The imports from Tibet were among other things, woolen, gold dust, salt, musk, horses' cowries and Chinese silks. In 1809, the trade amounted in value to two lakhs of rupees despite the fact that Assam was then in a State of turmoil. The continued disturbances and disorder in Assam in the early nineteenth century had eventually affected the trade, but even in the year before the Burmese invasion of Assam (1816-24), the merchants from Lhasa were said to have brought down gold amounting in value to Rs. 70,000. The annual fair came to a stop for a time due to the Burmese occupation. In 1833, a successful attempt was made by Lt. Rutherford who was then in charge of Darrang in Assam, to revive the trade. The principal channel of this trade was the Keriapara duar or pass. An annual fair was then held at Udalguri in the Darrang district, where traders from Lhasa and all other parts of Tibet used to come in large numbers with their ponies carrying goods.

The institutions of slavery in Arunachal Pradesh were very popular and have significantly influenced the mechanism of trade on two counts. Firstly they were themselves the item of trade and secondly, the slaves served as the load carriers. Verrier Elwin has rightly expressed that "The institution of slavery is largely a business matter, with its investments in human lives, its divided in human toil. The results of this is that some of the tribes are very keen traders"<sup>1</sup> Besides the inland trade of slaves in Arunachal Pradesh, the slaves of Arunachal Pradesh were sold to neighbouring countries mainly to Burma and Tibet. During the pre-colonial period this Singphos and Khamptis raided in Assam frequently; and "The number of captives carried off amounted to many thousands. Of these, the great part were sold to the hill Singphos, Khamptis, Shans etc. ...."<sup>2</sup> The practice has also caught the attention of many of the visitors of the area of nineteenth century and scholar working on Burma. Now, it has been renamed as Myanmar.

<sup>1</sup> V. Elwin, *A Philosophy for NEFA*, Itanagar 1988 (1957) p.9.

<sup>2</sup> The report upon the subject of Slavery, Indian Law Commission, January 151841, p. 154.

Frontier people, particularly the Singphos, had also developed a lucrative trade in rubber and opium with the Burmese. There were a number of agents operating in and around the frontier, in places such as Bisa, Nigru, Samon, etc., from where rubber was collected. Another important item of the trade of the Singphos was opium of which they are very fond of. The opium trade was mainly carried out with the Kachins of Upper Burma. Apart from rubber and opium, frontier tribes of present Tirap and Changlang district of Arunachal Pradesh used to go to Bhamo to procure Burma daos, iron implements, fishing net, spear, knives and Burmese garments in exchange their handloom products, tea leaves, salt, beads etc. It may be interesting to note that in the last part of the nineteenth century and the early part of this century some of the Singpho villages, where conditions for trade and commerce were a little better, were renowned for rubber tapped from jungles and from the Longloi-Tarun basin and traders from as far as Bengal came to buy it. The rubber was sold at Rs. 50/- per maund at the Bismarket.

Wilcox's survey report of 1825-28 informs the use of Chinese, Tibetan and Burmese goods by the Khamptis and the buffer role in Burma trade of some of the tribes bordering the eastern part of the frontier in relation to their counterparts in the foothills and also the people of Assam. He also reported a Mishmi chief who was in the habit of trading with the Khampti country on the Irrawaddy. Twenty five main articles that the Mishmi used to export was daos. These knives were reported to have been made by the Khamongs, dependents of the Khamptis, who then sold them to the Singphos in its naïve form. The latter used to pass them to the Miju Mishmi after fitting the handles and sheaths in exchange for cloth, musk pods and opium. The Mijus then brought these knives, inter alia, to the Borkhampti land in Burma by ascending the valley of the Ghalum Ti and crossing the snow covered mountains of the watershed in the basin of western Irrawaddy<sup>1</sup>. In 1840 a Christian missionary, Miles Bronson, reported extensive trading contacts of the Noctes with the Burmese and Chinese\*. The Khamptis are inveterate traders, and to their industry the people of neighbouring areas of Assam and Arunachal Pradesh are much indebted for good quality rice and vegetables, especially potatoes which were supplied by them. The Khamptis traded with the people of Assam and other neighbouring tribes. The Khampti women made elaborately worked bags for sale. The Khampti chiefs

<sup>1</sup> R. Wilcox, "Memoir of a Survey of Assam and the Neighbouring Countries, Executed in 1825-27-8" G. Das, Tribes of Arunachal Pradesh in Transition, New Delhi, 1995, p. 43

\* Assam Secretariat Records, File No. 1735, Tribal Areas records, 1886.

were fond of making various articles of metal and wood. Articles of ivory were brought down by the Singphos to Sadiya. Their daos were highly valued all over the frontier for their temper and durability. The Longlai basin was great rubber collecting centre of the Singphos. The demand for opium in the Singpho area was also an incentive to the growth of barter trade in this region.

Tribes living in the eastern most part of Arunachal Pradesh developed trade relations with the people of Burma across the Patkai range. The common racial affinities and history of the Singphos and Khamptis living on both sides of the Patkai range worked behind this development of mutual trade across the present India-Burma border. Though the extent of pre-colonial cross-country trade across the Patkai range was not as voluminous as trade with Tibet, the trade route connecting Sadiya, Hookang valley, Mounjong and Bhamo went upto Ava and Yunan in Southwest China. Beyond Sadiya, all these Burmese trade centres in general and Bhamo in particular were regularly visited by the Chinese traders.

Besides, before the sealing of international border with the Tibet region of China in 1961-62, the people from the Upper Subansiri valley went to the adjacent areas of Tibet across the border for trade. The articles carried by them were mainly hides, skins, musk, rice, salt, Assam silk etc. In exchange for these exports, the traders from Tibet brought down wool, blankets, bronze or brass vessels, bells and cymbals, beads, ponies, bee-war, baskets, chillies etc. The people of Apa Tani valley also had an old trade link with Tibet. They bartered Tibetan rock-salt, swords and other articles of Tibetan manufacture.

Migyitun was a small trade centre in Tibet close to the international border, where the Tagins of Upper Subansiri and also of the Selu and Hema valleys went to barter their goods. The people of Mara, Agla Mara or Nima Mara in the Upper Subansiri district were regular visitors to Tibet. The border trade between these groups of people and the Tibetans went on for generations. Hides, skins and furs, cane, millet, maize, chills and ginger, bamboo tubes, musk etc. were exported to Tibet and Large vessels made of bronze or brass called dachang, bells, cymbals, daos, ear-rings, beads, silver spoons, woolen cloths etc. were imported from Tibet.

The Hill Miris of the Tamen and Gocham areas, the Nishis particularly of the foothill region and the Apa Tanis traded with the plains of Assam. They brought to the trade centre in Assam Chillies, ginger, bamboo shoots and other products of the jungle, namely rubber, red dye called *madder* or *maniheet* etc.



and in exchange took home metal bowls, plates, spoons, beads, *daos* and axes, cloths-particularly *endi* and silk pieces, black marking and other such articles of daily use. The value of the imported articles was much more than what they exported. But they made up the difference by working occasionally as day labourers on wage basis. They visited the markets in the plains and from there they purchase goats, pigs and even cows. The most important commodity purchased was the much-needed salt. Loads of salt were brought and carried by the traders to their villagers in the hills for local consumption and also for sale to the people of the upper regions.

The Adis, the largest group of the central part of Arunachal Pradesh used to visit Tibet for exchange in substantial group of 80 to 100 persons to cope with any eventualities. Almost a common rate for exchanging Tibetan salt was one packet of madder-dye for one tee of salt. Among the Adis, the Gallong group of the tribesmen used to conduct trade trips to Tibet significantly. They used to take their cattle, spears, chillies etc., to exchange generally for salt, stone beads, brass bowls and warm coats. It is evinced that even slaves were used to perform as medium of exchange. "Previously, the Adis of the region below Pangin used to come down as far as Sadiya to barter whatever little they had." Due to the proximity of their area to Tibet, the Boris mainly have trade relations across the border and pass through Gastreng, paying, Komteng, Dobeng Niging, Mangu, Dele, Tungkur Lego Pass and Elling to a market in Tibet, called Nayi Lube. Their main articles of barter are raw hides, chillies, and in exchange, they bring down rock salt, woolen cloth, raw wool, Tibetan swords, Tibetan vessels, ear-rings, and brass bangles. They also bring down especially salt, iron and utensils in exchange and barter these with the other groups of the Adis. Like the Boris, the Bokars have trade relations beyond the border. They find market for their surplus chillies, butter, hides and *tamen* (a creeper used for dying), and in exchange, bring down cattle (zomos), sheep and goats, swords and woolen goods. A regular trade relation on barter basis between the Adi tribal groups and the Tibetans was in existence until the international border was sealed in 1961-62.

The Gallongs (Galos) traded with the Tibetans. They obtained from them salt, beads, brass bowls and coats and in exchange they gave them cattle, spears and chillies.

There had been a long intercourse of trade between the Adis and the people living in the adjacent plains of Assam. Sadiya and Saikhowa in Assam were the two great trade centres where the people of the plains and the hills

met together.

"The Sadiya bazaar during the cold weather months teams with hill men come down to sell their produce. The chief imports are cloths, yarn salt, utensils and agricultural implements. The exports in addition to the hill produce of 'teeta' musk and wax and *gur* and potatoes and Abor rugs (*gadus*)"<sup>1</sup>. The Adis brought to the Assam markets musk, musk deer skins, warz, manjeet (madder), ginger, white cotton cloth, ivory and also a few copper pots, which they obtained from the Tibetans. They exchanged their goods for salt, iron, brass cooking pots, glass beads, silver ornaments, eri cloths etc. The Adis are also said to have frequented the markets at North Lakhimpur, Tinsukia and Dibrugarh.

During the British period, an agreement was made with Minyong group of the Adis in 1862 to the effect, *inter alia* that:

"The communication across the frontier will be free, both for the Moyong Abors and for any persons, Britain subjects, going to the Moyong villages for the purpose of trading, or other friendly dealing."

"The Moyong Abors shall have access to markets and places of trade which they may think fit to resort to, and on such occasions they engage not to come armed with their spears and bows and arrows, but merely to carry their *daos*"<sup>2</sup>.

The old trade relations neither do nor exist today as they were, but the tradition has not died out in the passage of time. We may still find that the Adi villagers bringing down their agricultural produce and other articles to the nearby markets in Assam and buying things which they did not have. "With the opening of Administrative centres all over the division, the Adis from both the upper and lower regions have started to come down to Along, Pasighat and Panging, and barter or sell and purchase from shops, salt, yarn, raw wool and cotton, blankets, and little luxuries, such as hurricane lanterns, electric torches, thermos flasks, beads, and tin boxes.

The Membas and the Khambas played a significant role in the trade of the central region of Arunachal Pradesh. They had trade relations with the Tibetans to the north on the one hand and the neighbouring tribes to the south on the other. They used to obtain various commodities from the Ramos, Pailibos,

<sup>1</sup> Assam District Gazetteers (Vol. XI), The Sadiya and Balipara Frontier Tract Gazetteers, Part I & II (Shillong, 1928) P. 33 f.

<sup>2</sup> Captain St. John F. Michell, The North-East Frontier of India (Reprint, Delhi, 1973), pp.57-59.

Bokars and the Tagins and barter these with the Tibetans. Likewise, the goods brought from Tibet were exchanged with the Tribal traders as well as individual consumers or neighbouring areas. The Membas obtained dyes, hides, cane and chillies from the Tagins and the Ramos while Endi silk cloth reached them through thus obtained were taken by Membas to Tibet to tender in exchange for salt and wool, the two chillies, bamboo, hides, dyes, silk cloth and butter. The imported commodities from Tibet included wool and woolen cloth, salt, tea leaves, various iron weapons and implements, copper and brass vessels, sweets, fruits like walnut and peaches, churpi (dried cheese) dry meat, religious manuscripts, tankas (painted scrolls) images, gold and silver ornaments, precious stones, etc.

Like the Membas and Khambas the participation of the Bangros and Nas in the trading activities of the central zone of Arunachal Pradesh has been very important. Haimendrof has noted that the Bangros and Nas also acted as intermediaries in Tibetan trade and the trade with their neighbours in Arunachal Pradesh. Tibetan goods used to pass through them to the Nishis, Hill Miris and other tribes in the Kamla and Sipi valleys. Tribes of those valleys used to exchange hides, cane ropes, madder and other dyes for Tibetan clothes, ornaments, Bu-metal plates swords and salts.<sup>1</sup>

The trading activities in the western zone was also influenced with the inter-village and inter-tribe trade as well as the trade with Tibet and Assam; however the differences in the role played by different tribes can also be observed here. The Akas are famous for inter-village trade within the area too. This inter village trade used to be mainly in food grains, the way of conducting the inter-village trade in the midst of favorable atmosphere was also peculiar. The villages surplus in the production of food grains used to ventilate their desire to the deficit neighboring village that they were prepared to exchange.\*\* Having come to know about the decision of the former villages, the later villages, used to respond and fix-up time, date and place after bilateral consultation. While deciding a place for barter exchange, the mutual safety and convenience were invariable borne in mind. In addition to the food grains under the inter-village trade, animal hides, herbs and other indigenous produces also figured. The most significant item of exchange under inter-village trade among the Nyishis, Mijis and the Akas was the slave. The Akas used to exchange their produces, mithun and other valuable articles for slave from their Nyishi counterparts.

<sup>1</sup> C.F. Haimendrof, *Highlanders of Arunachal Pradesh*, New Delhi, 1982, pp. 54-58.

\*\* In case of one village surplus in paddy and maize and the other in millet and sweet potato used to be suitable parties for better exchange. Because paddy and maize were staple food grains on the one hand and millet was preferred for preparing home beer.

The Akas and Sherdukpens have, for generations, traded with plains of Assam. The Akas procured from Assam iron, salts, cotton and silk. "In their trade with the people in the plains, they have to deal essentially in cash. The occasions for the later kind of trade arise only when they go down to the plains and when they take the local produce, in which fowls figure prominently, for sale there. With the money they get in return for their commodities they usually purchase things of their necessity like cloth, silver ornaments and utensils. Their trade with the plains has introduced good deal of currency among them. It has, however, neither affected their inter-village trade nor their indigenous barter"<sup>1</sup>. The Akas exchange goods by barter in their inter-village trade and also in trading with the neighbouring Bangnis. For the purpose of trade with Assam, the Akas have been traditionally following the common route from their village Jamiri to Bhalukpong which is connected by road with Charduar.

Besides, the Akas had trade relation with Bhutan and purchased articles like clothes, warm blankets *daos*, swords and silver ornaments etc. from them and rupees they earned by selling rubber in the plains of Assam were given in exchange.

In the past, the Monpas had a flourishing trade with Tibet, along the trans-Himalayan trade routes, religious and cultural elements of Tibet percolated into Tawang and West-Kameng inhabited by the Monpas. The influence of Tibet and Bhutan is clearly noticeable in the Monpa textiles and ornaments, architecture and iconography.

The Monpas of Tawang are keen traders. Apart from Tibet, they also traded with Bhutan and the Dirang region of West Kameng. They attend the annual Udalguri fair, and some of them even go, it is said, as far as Calcutta to sell their goods consisting of Musk, blankets, walnut etc., and purchase clothes, umbrella, aluminum utensils and other essential articles of daily use.

The Monpas of Dirang traded with their neighbours, the Tawang Monpas to the north, the Mijis to the east, the Sherdukpens to the south and the Bhutias to the west. They had also a barter trade with Assam. They exchanged with the plains people their cows, horses, goats, blankets and chilies for metal utensils, eri-cloth, thread etc.

The Monpas and the Sherdukpens also played a significant role in the

---

<sup>1</sup> Raghuvir Sinha, *The Akas*, (Shillong, 1962), pp. 48-49/C.

trade of pre-colonial Arunachal Pradesh. They played an important role of intermediaries in trade between Assam and Tibet too. While they used to go to Tibetan trading marts during the summers, they usually visited the Assam plains during winter. Produce like chillies, vegetables, dyes such as madder, peaches, hand made paper, and husked rice traded for Tibetan salt, wool and churpi.

As the trade items of the Monpas, masks, animal hide, chillies etc., were also important to be exchanged with Tibetan rock salt, wool, woolen clothes and Tibetan dao resembling sword. Besides these, the local produces like madder, red dye, tobacco, herbs and madder dye were taken to Tibet in exchange for symbols, Tibetan religious bell and white shell, beads too.

The Sherdukpens are also known for conducting trade among tribes of Arunachal Pradesh as well as with the people of Assam. In this regard, the annual migration of the Sherdukpens during winter to Doimara, a place now located in Assam is worth mentioning which, it is believed, influenced them towards trade. They used to take their cattle, poultry, chillies, dried radishes, jabrang (local pepper), daos, woven bags to Doimara for sale in the markets. They used to purchase Assamese *endi* clothes, salt, rice, beads, bangles and metal utensils. Within Arunachal Pradesh, the Sherdukpens used to exchange cows, Assamese *endi*-clothes, mithuns and animal-skins with the Monpas for butter, coats, shoes, carpets, blankets, mask and yak-caps, and with the Khowas-cloth, salt, and betel-nut for other indigenous goods.

“In the old days the Sherdukpens played an important role in the trade between Tibet and Assam, but recent political events have deprived them of their role as middle-men in this trade, though they continue to have some trading relations with both Tawang and Assam. In Assam, they sell chillies, oilseeds and radishes, and buy rice and cloth. They sometimes sell ponies to Monpas of Tawang and maintain a cattle trade with Bhutan. They crossbreed between mithun and ordinary cattle from the Bangnis (now officially known as Nyishi) of the Seppa area and sell some of these to Bhutan.”<sup>1</sup>

The Sherdukpens are good businessmen. Like the Monpas, they have tradition of continued involvement in long-distance trade. They come down to Doimara in the foothills every winter to trade with the plains. The commodities they sell are cattle, poultry, chillies, dried radish, the *jabrang* spice, *daos* and woven bags. From the markets there they buy *endi* silk, mill-made cloth, salt,

---

<sup>1</sup> C. Vonn Haimendorf, *Highlanders of Arunachal Pradesh*, (New Delhi.1982). p.175

rice, beads, bangles and cooking utensils made of metal.

“The Pailibos carry on their trade through intermediaries who happen to be the Ramos, the Bokars and the Membas. The Ramos has long been in contact with the Bokars and the Membas and from them they get cattle by barter against their local dye known as *tamon*, raw hides and chilies.”

“The Shimongs export cotton to their neighbours. Both the Shimongs and the Ashings produce a surplus of cloth, they take this warm, durable and dignified cloth to Tibet and exchange for salt, beads and other articles.”

“There is a relatively less important trade route through the Mishmi country, coming down the Aborka Pass to as far as Karko. The main items of merchandise are Mishmi coats, in which the Adis are trading for hundreds of years. These they sell or barter for mithuns or different varieties of rice.”

“From January to July, the Tibetans beyond Gelling come down through the Kepang La Pass with rock salt, iron, warm durable, aesthetically pleasing hand woven cloth, swords musk, imitation turquoise necklaces, blue porcelain beads yarn of different colours, snuff, small quantities of China silver and wooden bowls, and metal pots, and start exchanging their merchandise from the Ashing area and come down as far as Pasighat. In exchange, they carry back mithuns, raw hides, deers horns, white and red rice”.<sup>1</sup>

The transborder trade was carried on mainly by the Boris, Bokars, Paillibos, Shimongs and Ashings living near the Indo Tibetan border. Some of the traders amongst them also acted as intermediaries for other tribal groups of Siang. The Boris and the Bokars bartered their goods, chiefly raw hides and chilies, and obtaining from the Tibetan beads, ear-rings, brass bangles, bells, *daos*, rock salt, raw wool, woolen cloth, metal dishes, vessels, swords, cattle, sheep and goats. The Pailibos brought from Tibet salt, wool, woolen garments, butter and weapons. The Shimongs and Ashing as stated earlier exchanged their cloth for sale and other necessities. The Tibetans in their turn, as already mentioned, came from across the border to lower Siang up to Pasighat to barter their goods.

Besides, the indirect trade between Assam and Tibet through the frontier tribes, there has also been some direct trade and communication between them. In 1837 M' Cosh reported that during the flourishing period of the Assam

<sup>1</sup> Sachin Roy, Aspects of Padam-Minyong culture (Shillong, 1966), pp.32-33.

dynasty, the kings of Assam were in the habit of sending presents to Grand Lama: and that a caravan consisting of about 20 people annually resorted from Lassa to the Assam frontier; and transacted merchandise to a very considerable amount with the Assamese, at Geganshur, a few miles distant from it the trade at the former consisted of silver in billion to nearly a lakh of rupees and a large quality of rock salt. This they exchanged with the Assamese for rice, silk, lac and other produce of Bengal<sup>1</sup>.

Unlike Tibetan trade, the trade with Bhutan appears to have been limited some pockets of the Western part of Arunachal Pradesh alone. Bhutanese trades mostly consisted of articles of Tibetan origin. Since the people of Western Arunachal Pradesh not only had direct access to Tibetan market but also shared ethnic religious affinities with the Tibetans in large measures, the Bhutanese trade never figured prominently in Arunachal Frontier. It has been found during field studies that a few articles of Bhutanese origin having popularity among the frontier tribes rather found their entry into Arunachal through Tibet-especially the Tonga, a coarse woolen cloth.

Mishmis are keen traders. Every man among them is in a way a petty trader. They were aptly described as great travellers about their own country. They were regular visitors to the nearby market centre in the plains of Assam and bartered musk pods, musk-deer skins, honey, the medicinal herb known as Mishmi 'teeta' (coptis teeta, which contains valuable alkaloid berberin), a kind of poison much in demand for its pleasant smell cane and clothes, yarn, salt, tools, utensils, cigarette, bidi glass-beads of which they were very fond. Prior to 1952, the Mishmi of even the remote areas used to undertake journeys in the winter every year to the markets at Sadiya and Saikhowa.

The Taraons (Digaru Mishmis) inhabited the hills from near the Brahma Kund to as far as the eastern regions of the district bordering Tibet. The Digura River was considered to be the boundary between them and the Idus. They traded with the bordering areas of Tibet. The goods they carried were musk pods, aconite (poison), hides, skins, furs, Mishmi coats and loin cloths, various kinds of barks and roots for dyes or drugs such as *getheon* (an ororiferous root), *manjeet* (madder) and Mishmi teeta. They brought from Tibet cattle, brass-pipes, gongs, woolen goods, copper vessels and beads for ornaments.

The Kamans (Miju mishmis), inhabiting the upper belt of Lohit Valley.

---

<sup>1</sup> J.M. Cosh, Topography of Assam, Delhi (1837), p. 66.

They are enterprising traders, carrying on trade with the Zayul District of Tibet. Their merchandise was the same as that of the Taraons. The Kamans and the Taraons went across the Indo-Tibetans border in groups from time to time.

The Idus like the other sections of the Mishmis, Taraons and Kamans, are also trading people. Large groups of the Idus were reported to have regularly visited Tibet for trade. They even sent their wives if they could not go themselves. On the eve of their journey to Tibet, they moved from village to village in their area collecting from the villagers skin, hides, Mishmi teeta, musk and roots for dyes and drugs on promise of repayments by barter. From Tibet they would bring home woolen goods, raw wool, brass gongs, bead ornaments etc. Money was also used as medium of exchange. Coins from Tibet were brought and used for further trade or ornaments.

Before the borders were sealed and the bilateral trade between India and Tibet was stopped, the Tibetans also regularly visited the villages of this district for purchasing, selling and bartering articles with the Mishmis, Zakhirings and Meyors. The Zakhirings and Meyors who inhabit the remote parts of the Lohit Valley near the international border were regular buyers of yaks, slat and butter from the Tibetans. An account of the Indo-Tibetan trade conducted through the Kibithoo-Rima trade route is appended below:<sup>1</sup>

|                                                                        | 1958      | 1959       | 1960      |
|------------------------------------------------------------------------|-----------|------------|-----------|
| 1. Number of Indian traders who crossed the border                     | 184       | 319        | 259       |
| 2. Number of Tibetan traders who crossed the border                    | 243       | 414        | 217       |
| 3. Value of merchandise taken out of India by the Indian traders.      | Rs. 2,144 | Rs. 9,030  | Rs. 6,763 |
| 4. Value of merchandise taken into Indian side by the Tibetan traders. | Rs. 3,754 | Rs. 11,034 | Rs. 7,523 |

With the opening of administrative centres, border shops and markets, development of communications and introduction of a monetized economy, the whole system of internal and external trade has now changed. The transborder

<sup>1</sup> The Office of the Deputy Commissioner, Lohit District, Tezu.



trade has halted after the sealing of the international border.

Although there is no regular trade and commercial intercourse between the people of Burma (Mayanmar) and those of this district, an early trade relation existed between the two. The kachins of Upper Burma and the Khamptis and Singphos of Lohit traded in ivory, elephants and opium. The Kamans also carried on a trade with the people of Hkamti-long in Burma and visited the place through the old routes.

Old relations between the people of Tirap and Changlang districts and those of Upper Burma existed for centuries. Bhamo, a great centre on the Irrawaddy River, attracted a large number of traders from this district, who carried their merchandise for exchange or sale through the passes across the Patkai ranges which they used as trade routes. In exchange for handloom products, tea leaves, salt, beads etc., the people of this district imported from Burma *daos*, iron implements, fishing nets, spears, penknives and also Burmese garments. One of the principal items of trade was opium. This trade was carried mainly between the Singphos of this district and the Kachins of upper Burma. Illicit trade in the contraband articles, such as opium, was going on for a long time across the international border running along this district. Sometimes the smugglers used elephant-tracks to cross the border at great risk of life only to avoid arrest. With the extension of regular administration in this region, the clandestine movement for transborder trade was brought under control.

The people of these two districts had trade relations also with Ahom. But no detailed account of the early trade is available. Some of the Ahom *Buranjis* refer to the people of the present Tirap District trading with the Assamese. Salt was regularly supplied by the Noctes to the people of Assam until the commercial activities of the East India Company extended to the Brahmaputra Valley. As a matter of fact, Tirap was one of the important sources of salt for the people of the Brahmaputra Valley before it was regularly supplied by the merchants of the Company through Bengal. Moreover, there are some references in the *Buranjis* to the supply of raw coal and crude kerosene oil to the people of the plains by the Wanchos, which they dug out from the pits in the hills.

Udalguri, a railway station in the Darrang District of Assam about 32 km north of Mangaldai, was a famous trade centre. During the 19th century, a

grand fair was held annually at this place, which was attended by traders from various tribal communities, namely the Monpas, Akas, Nyishis and others for commercial transactions. Caravans of traders from even remote Tibet, as already stated, brought down yearly their valuable merchandise to the fair. The Bhutias also came to Udalguri in batches along the Doimara – Amtola – Bhairabkunda route. The imports from Bhutan were, among other things, cattle, sheep, ponies, musk, woolen blankets etc. Rubber was brought by the Akas and Nishis. In 1876 about 3,600 tribesmen were present at the Udalguri fair.

Doimara in the foothill region of West Kameng District near the plains of Assam hums with a lot of activities in the winter when the Sherdukpens migrate to this place for several months every year and do a brisk trade. A large quantity of goods, as described earlier, are purchased and sold between them and the plains people of Assam.

Amartoi or Amtola in the lower region of West Kameng District adjacent to Assam is another such trade centre where the Monpas from the Kalaktang area come down every winter for trade with the plains.

Sadiya and Saikhowa in Assam were two important trade centres for a number of tribes of Arunachal Pradesh. E.T. Dalton wrote in 1872 about the Saikhowa market that "It was very interesting to watch the barter that took place there between these suspicious, excitable (Idus) and the cool, wily traders of the plains. The former took salt chiefly in exchange for the commodities they brought down....."<sup>1</sup>. The need for salt was so great in the hills that the Dibang valley route along which the people traveled to the markets came to be known as the salt route.

"The Sadiya bazaar during the cold weather months teems with hill men who come down to sell their produce or in the case of the Digaru and Miju Mishmis to work at jungles clearing, cane cutting etc. With the development of Upper Burma and the Hkamtilong and the opening up of the Hukawng Valley from the southern end, the Khampis and Kachins of the area south of the Dapha ranges are not often seen in Sadiya now days.

"The chief imports are cloths, yarn, salt, utensils and agricultural implements. The exports in addition to the hill produce of 'teeta', musk and wax are gur and potatoes and Abor rugs (gadus). The sale-totals of the past eight years

---

<sup>1</sup> E.T. Dalton, Tribal History of Eastern India (Descriptive Ethology of Bengal), (Delhi, 1973), p. 20.

show that the tribesmen's imports of hill produce average well over Rs. 50,000 a year of which probably not more than twenty percent is spent in local purchases. The balance being expended on the purchase of domesticated mythan for festive occasions or else re-invested for further trade in hill produce, since the actual vendor is more often than not a middleman and not the actual collector. Hill produce is sold in public auction over which the Political Officer presides and payments were personally made by him to the vendors to secure them a fair price. Ten per cent of all prices realised is paid by the vendors and credited to the Sadiya Local Fund.

"The Sadiya Local Fund is in a prosperous financial condition owing its own markets and bazaars at Sadiya, Saikhowa and Pasighat. The threat of erosion to Sadiya town and headquarters is however, an ever-present anxiety and the actual site of Sadiya market are seriously threatened. Sadiya is a daily market, while those at Saikhowa ghat and Pasighat are held twice weekly.... Musk pods, wax and Mishmi 'teeta' are brought in by the tribesmen, to the total value of some Rs. 70,000 yearly, between the months of November and February inclusive and are sold by the Political Officer and his Assistants in open auction; all finds its way to the Calcutta market. Mishmi teeta (teeta Coptis) is of two qualities, the thick variety being the superior and having just doubled the value of the thin. It is found wild and is cultivated in the Mishmi hills by the tribesmen.

The Dibang Valley supply being found and cultivated at high altitudes is all first class, the Lohit and its subsidiary valleys supplying the second quality. The first class fetches nowadays Rs. 500.00 to Rs. 600.00 per maund and is brought for export to China, via Calcutta. It is a small stem less herb with perennial rootstock met with in the temperate regions of the Mishmi hills of Assam. The plants are said to grow on the ground among the moss around the stems of trees. Its uses, etc., are described at the length in the *Commercial Products of India* (Watt). The supplies available yearly in the Sadiya market are some 100 maunds of first class teeta, 40 maunds of second class, 70 to 80 maunds of wax and 400 tolas of musk"<sup>1</sup>. Although after the flood of 1952 Sadiya lost much of its important trade centre, it is still a market place for the hills as well as plains people.

North Lakhimpur, Charduar and Lokra in Assam were also important

---

<sup>1</sup> Assam District Gazetteer (Vol.XI), The Sadiya and Balipara Frontier Tract Gazetteer, Part I & II, (Shillong, 1928), pp.33-35.

trading places for the tribal people of Arunachal Pradesh. Gohpur, Harmuti near Itanagar, the State capital of Arunachal Pradesh also served there as markets. Silapather in Assam close to Likabali is another such market centre visited by the Gallongs (Galos).

There were small marts mainly for rubber in the Singpho area of the Tirap district. A chain of markets gradually sprang up in the adjacent plains of Assam. These markets are visited regularly by the tribal traders and a brisk business is carried on in a number of articles. The markets at Ledo, Lekhapani and Margherita are visited by the Singphos and Tangsas, Margherita, Jaipur, Naharkatiya and Namrup by the Noctes, and Barhat, Namrup and Sonari by the Wanchos. Some of these places are connected by roads and railways.

New market centres for all sorts of consumer and other goods and services have now been established in the Itanagar capital complex and at almost all the district and sub-divisional headquarters in Arunachal Pradesh. Till 1990's, the trade items in the state was only 49 and that were also confined mostly to consumer goods. With passing of years, it numbers has increased sharply. At present, the total trade items in the State is 233 viz Agriculture Products and Agro Based Industries/Activities 23, Forest Based Industries (forest products) 17, Mineral Ore and Mineral Based Products 18, Entertainment Service 11, Professional and Institute 36, General Trades 116 and Miscellaneous Trade 12<sup>1</sup>.

### **Development of Trade and Commerce**

The Department of Trade & Commerce was created and came into being in the state of Arunachal Pradesh during 1998. The Department is, at present headed by Secretary, Trade & Commerce, Govt. of Arunachal Pradesh under the Trade & Commerce Ministry. The Department has no regular official establishment in the district till now. The main functions of the Department as per the Business of Allocation notified by the Govt. of Arunachal Pradesh are: Issue of trade license, facilities to border trade & foreign trade, development and expansion of export production particular in plantation of crops, orchids, flowers and handlooms and handicrafts and creation of export commodities including export processing zones etc.

The Department of Trade & Commerce is the nodal department for

---

<sup>1</sup> Gazette Notification No.DTC/TL-25/99-2000(pt)/1071-1175 dt.17th June 2008.

issue of trade licenses. However, all the respective Deputy Commissioner/ ADCs of the Districts have been empowered to issue trade licenses up to Rs. 10 lakhs. Trade licenses involving more than Rs. 10 lakhs are also issued by the respective DCs after thorough examination by the Department of Trade & Commerce and subsequent approval of the Government. Normally, Trade Licenses are issued to Arunachal Pradesh Scheduled Tribe (APST) entrepreneurs only. However, in exceptional cases where there is no APST entrepreneur forthcoming; Non-APST entrepreneur are also issued license to establish industrial unit as per Arunachal Pradesh Industrial Policy Resolution, 2001.

The state government is earning huge revenue from the trading licenses fees and its subsequent renewal fees. The revenue collected during the year 2004-2005 to 2006-07 are as under:-

| Sl. No. | Year    | Revenue earned in Rupees |
|---------|---------|--------------------------|
| i.      | 2004-05 | Rs. 39,37,287/-          |
| ii.     | 2005-06 | Rs. 53,89,195/-          |
| iii.    | 2006-07 | Rs. 56,78,629/-          |

The above figure is not exhaustive and the actual figure could have been much more as many of the DCs/ADCs have not submitted the revenue receipts.

By the advent of globalization and economic liberalization, the Government of India has given more emphasis on the development of Border Trade & Foreign Trade with the neighbouring countries for over all economic development of the state in particular and country in general. As a result, the Government of Arunachal Pradesh has taken up some ambitious proposals for re-opening of border trade with the neighbouring countries i.e. Bhutan, Myanmar & China. In the past, the people of the state residing in the border areas have been maintaining trade relations with the neighbouring countries though in traditional and unregulated manner. People inhabiting in the border areas with Bhutan and Myanmar have been maintaining unregulated trade relation till today though trade relation with China was discontinued after Sino-Indian conflict in 1962. The Government of Arunachal Pradesh has identified the following border trade points and further developement of infrastructure is under active process in Indo-Myanmar and Indo-Bhutan sector.

Pangsu Pass (Nampong) in Changlang District (Indo-Myanmar Border), Bleting (Namtsering) in Tawang District (Indo-Bhutan Border), Dongsh-

engmang and Bongkhar in Tawang District (Indo-Bhutan Border), Kenzamani (Zemithang) in Tawang District (Indo-China Border), Bumla in Tawang District (Indo-China Border), Gelling (Kepangla Pass) in Upper Siang District (Indo-China Border), Kibithoo in Anjaw District (Indo-China Border), Mechuka (Lolla Pass) in West Siang District and Monigong (Dumla Pass) in West Siang District.

#### 1. Pangsung Pass (Nampong)

Nampong Land Custom Station (LCS) which was approved by Government of India way back in August, 1951 is located in Changlang District of Arunachal Pradesh. The actual distance from Nampong to Pangsung Pass (Indo-Myanmar border) Pillar No. 173 is 12 km only. Nampong is connected by all weather metal roads with NH-153. The distance of Nampong from Dibrugarh (Assam) is 158 kms and it passes through important towns of Assam viz, Tinsukia, Digboi, Margherita, Ledo (starting point of the Second World War fame 'Stilwell Road'), Lekhapani (Railhead) and Jairampur in Arunachal Pradesh. The nearest railway head (Lekhapani in Assam) from Nampong is 40 kms and then nearest Air Traffic Runway (ATR) is Ledo and the nearest airport, Mohanbari (Dibrugarh) Assam is 143 kms.

The volumes of informal trade activities in Pangsung Pass have increased manifold recently due to conversion of the erstwhile Stilwell Road into NH-153. The Second World War Fame 'Stilwell Road' which passes through Myanmar from Nampong & Jairampur, Arunachal Pradesh (India) to China via Myanmar is being used every 15th and 30th of the month in the form of Melas or Bazaar under the supervision of district administration and the Paramilitary forces. The local population of both sides has close proximity with each other in terms of racial, social, cultural, lingual and religion etc which helps and encourages for congenial development of trade and commerce activities in the region.

#### Export/Import of Trade items in the area<sup>1</sup>.

Following are the items of Export from India to Myanmar.

- i. Medicine
- ii. Medicinal equipment
- iii. Consumer goods.

<sup>1</sup> Trade & Commerce Deptt. Govt. of Arunachal Pradesh Itanagar.

- iv. Textiles and various types of yarn.
- v. Machinery equipments for Industries including spare parts.
- vi. Building materials like cement, CGI sheets and electrical items.
- vii. Various types of motor Vehicles.
- viii. Motor cycle and bicycle and its spare parts.
- ix. Stationary and printing materials.
- x. Agriculture and Horticulture.
- xi. Tractor.
- xii. Fertilizer and Chemical etc.
- xiii. Trained Manpower.

**The items of Import from Myanmar to India (via Kolkota Dock)**

- i. Timber especially teak wood.
- ii. Cane Bamboo.
- iii. Tin
- iv. Zinc
- v. Gold and Silver
- vi. Coal
- vii. Bauxite
- viii. Dolomite
- ix. Precious stone Burmese ruby, Sapphire and jade etc.

In pursuance of the 'Look East Policy' by the centre and with the introduction of South Asian Free Trade Association (SAFTA), the Central Government is giving more emphasis for proper infrastructure development of the border trade point in the region.

The infrastructure created by the Government so far, for the development of Trade Centre under Indo-Myanmar sector are constructions of RCC double storied multi-facility Trade Centre with stay facilities and shopping complex at Nampong, repairing and renovation of Land Custom Station Building including construction of boundary wall and retaining wall at Nampong, low cost Border Hat marketing complex at Pangsu pass, SPT weighing bridge station and a godown for land custom at Nampong, retaining wall/protection work at custom residential for land custom at Nampong, approach road (black top) to residential building for custom at Nampong, construction of custom office building at Nampong, construction of Residential building for custom at Nampong, Type - IV I unit, residential build-

ing for custom at Nampong, Type-III 2 units, residential building for custom at Nampong Type-II 3 units and C/O residential building for custom at Nampong Type-I 3.

## **2. Bleething & Namstering under Indo-Bhutan Sector**

Bleething/Dongshengmang and Namstering are situated at the distance of 65 KM from the district headquarter Tawang and 23 KM from Tashi goan (Bhutan) which is the shortest distance with Bhutan border in Tawang district.

Trade intercourse in between the local people of both Bhutan and Tawang and West Kameng has been carried on in traditional way since time immemorial. However, in order to facilitate the traders of both side and to boost the Trade & Commerce activities, an agreement was signed in between the Royal Kingdom of Bhutan and the Government of Republic of India on 28<sup>th</sup> February, 1995 which identified 12 more trade route as Free Trade Routes. Most of our local people inhabiting in the border areas of Indo-China border generally prefer to go to Bhutan for shopping to meet their daily requirements instead of coming to Tawang due to distant factor. The Cultural, social, racial and religions affinity of both the local people of Bhutan and Tawang and West Kameng (India) help social intercourse and intermingling which directly encourage for growth and development of Trade and Commerce activities in the region. During TORGYA and GORSAM festivals, thousands of Bhutanese pay visit to Tawang Monastery every year and similarly, thousands of our local people also pay visit to Bhutan during CHURTEM KORA and GOMBEY KORA as Buddhism is followed in both sides.

**Following are the items Export from India to Bhutan.**

- i. Rice
- ii. Salt
- iii. Mustard oil
- iv. Rapeseed oil
- v. Wooden containers
- vi. Bamboo mate
- vii. Ropes
- viii. Carpet
- ix. Wooden mask
- x. Tanka painting
- xi. Wooden wool



- xii. Chokey
- xiii. Furniture etc.

**The items import to India from Bhutan**

- i. Animal fats
- ii. Ghee
- iii. Dry vegetable
- iv. Millet
- v. Soya bean
- vi. Orange
- vii. Peanuts
- viii. Red chilies
- ix. Bhutanese Rum
- x. Blanket
- xi. Gold
- xii. Turquoise
- xiii. Card pear etc

**Infrastructure development in the area.**

The Government has taken up promising schemes under ASIDE (Central Assistance for Developing Export infrastructure) funded under 100 per cent Central Assistance by the Ministry of Trade & Commerce, Govt. of India for development of infrastructures in the area.

Various infrastructures created by the Government so far for the development of Trade Centre/point under Indo-Bhutan sector are constructions of road formation cutting at Dongshemang (01 km ), residential building at Dongshemang T-III one unit, residential building at Dongshemang bachelor barrack, residential building at Bongkhar barrack 5 units, residential building at Dongshemang, Type-II 01 unit, residential building at Dongshemang, Type-IV 01 unit, residential building at Bongkhar, Type-III 02 unit, residential building at Bongkhar, Type-II 01 unit, residential building at Bongkhar, Type-I 02 units and Bailey bridge (30.M span) over the Tawangcho river for connecting to trade point.

**3. Trade activities under Indo-China sector**

The traditional or informal trade relation in between the local people of the state and Tibet province of China has been carried on since time immemorial which was discontinued after the Sino-India conflict in 1962. However, the Union Govt. of India with its all out efforts, has actively been pursued for re-

establishment of the past trade points under Indo-China sector. Up till now, no LCS could be approved by the Union Govt, under Indo-China Trade Points due to want of clearance at the bilateral levels. The past flourishing trade points under the Indo-China sector are as under:-

**i. Kenzamane**

Kenzamane is located in the historical and beautiful valley of Pancham Valley under Zemithang administrative Circle of Tawang district. The actual distance from Kenzamane to Zeminthang is 13 kms only. Out of this, 4 kms have already been constructed by state PWD Department. His Holiness, the 14th Dalai Lama used this road when he fled from Tibet to enter India. As a result, this road is treated as the most sacred road by the Buddhist people.

**ii. Bumla Trade point (Indo-China)**

Bumla is 37 kms away from Tawang. From Tawang to Y-junction is 22 kms which is metalled and the rest 15 kms is graveled which opens for 5-6 months in a year, i.e. June to October and from November to May the road communication remains cut off due to heavy snowfall. This road is one of the shortest connectivity points to china from Tawang (India). In the Chinese side, the geographical terrain and landscape is far better than Indian side. Shyo (China) is 3 kms, Kachin-5 kms, Dengding 6 kms and Nyagdo 8 kms from Bumla. The nearest major town of Chinese side, Tsonajong is 43 kms from Bumla border post. It is a district HQ town as well as Brigade HQ connecting Gordung-Lhasa-Beijing trunk Highway. It is connected by all weather metalled road to Tsethang (district HQ in Tibet, China) by a distance of 508 kms from Bumla (India). Once the border trade agreement is made between India and China, the border trade could be operationalised and very easy from this point.

**iii. Gelling (Kepangla Pass) Trade point**

Kepangla Pass is located 4 kms away from Gelling Administrative Circle under Tuting Sub-Division (ADC HQ) of Upper Siang district. Construction of road from Gelling to Tuting is almost completed. Before 1962 Sino-India conflict, the barter trade was prevalent and flourished through this trade point in between the local people of Siang and the people of erstwhile Tibet.

**iv. Mechuka (Lolla Pass)**

Lolla Pass is located in the Mechuka sub-division (ADC HQ) West

Siang district. The actual distance from Lolla Pass to Mechuka is 35 kms out of which 14 kms up to Yorlung has been black topped and is in all weather road condition. The further construction of the remaining portion is being undertaken by BRTF on a war footing. There is one ALG (Aircraft Landing Ground) available in Mechuka. Barter trade was also once flourished through this Pass before 1962 Sino-India conflict, however, after discontinuation of trade in 1962 war, the Memba tribe, who are basically a skilled business tribe, have been reduced to small time farmers which do not suit to them.

**v. Monigong (Dumla Pass)**

Dumla Pass is located in the Monigong Circle under Mechuka Sub-Division of West Siang district Arunachal Pradesh. The actual distance from Dumla Pass to Monigong is 40-45 kms. Border Trade is quite feasible in Dumla Pass since Saplegong, one of the major town in Tibet Province of china is about 45-47 kms from this Pass.

**vi. Kibithoo**

Kibithoo is one of the remotest easternmost administrative circle of Arunachal Pradesh under Anjaw district. It is very close to Indo-China border which is only 7 kms from Line of Control (LOC). Kibithoo is connected by all weather metalled road from Tezu (Distt HQ) of Lohit district. Mule/Porter track exists up to interior parts of China which is still used by the local people and defense personnel of both the sides. Before 1962, Kibithoo was one of the most popular transit camp for traders.

The records collected by the Department of Trade and Commerce indicated that during 1958 to 1960, 702 Indian traders had crossed over border while 874 Chinese traders had come over to India. The value of merchandise traded by Indian traders during that period stood at Rs 17,937/- while it was Rs 22,311/- by their counterpart. However, unrecorded volume of trade may be much higher than the recorded.

**Items of export/importable from India to China**

- i. Food grain items
- ii. Chitrana oil, Pulse and tea.
- iii. Seasonal green vegetables
- iv. Garlic
- v. Onion

- vi. Dehydrated vegetable (Reddish, Turnip, Carrot and cauliflower etc)
- vii. Mushroom (both moist and dry)
- viii. Green chilies and capsicum (in fact whole of Tibet province fully dependent for chilies imported from Tawang.
- ix. Spices
- x. Fodder for cattle
- xi. Medicinal Plants (Herbs and shrub)
- xii. Raw materials for making incense sticks.
- xiii. Clay pottery items.
- xiv. Handicrafts items
- xv. Barbets
- xvi. Wooden furniture
- xvii. Bamboo and bamboo products
- xviii. Woolen carpet
- xix. Apple
- xx. Kiwi
- xxi. Wooden mask
- xxii. Thangka painting
- xxiii. Mineral salt
- xxiv. Computer software etc.

**Items of export/importable from China to India**

- i. Milk and milk products
- ii. Yak and sheep wool including pashmeena
- iii. Silk
- iv. Walnut
- v. Gold, silver, precious stones & gems
- vi. Articles of religious importance
- vii. Stone utensil
- viii. Mineral salt
- ix. Fish
- x. China blanket
- xi. Thermo plastic
- xii. Electric goods
- xiii. China clay bowl.
- xiv. Dry meat etc.

Since no LCS under this sector could be approved by the government due to want of bilateral clearance from the Govt. of India and China. As such, it could not be taken up any proposal for development of infrastructural under this sector till today.

#### **Scope of trade activities under this sector**

The once flourishing trade in between the local people of our state and the people of erstwhile Tibet now province of china was discontinued abruptly after 1962 Sino-India conflict due to certain bilateral compulsion with the neighboring country. But recently its has resumed to some extent as bilateral relation with China has been improving and likely to develop further by looking current dialogue going on boundary issues between two countries. Moreover, the geographical condition of Tibet province of China is Arid Zone, and the province is very far away from their mainland, therefore, the export of Agriculture and Horticulture products is immensely potential to meet up their demands and needs.

#### **Export Development Fund (EDF)**

Following the announcement of the Prime Minister on June, 21-22, 2000 at Shillong, an Export Development Fund (EDF) has been set up for promotion of the export development in the North Eastern Region including Sikkim. The fund was set up initially with a corpus of Rs. 5 crore and thereafter further contribution to the fund is to be provided by the Ministry of Commerce & Industry from any other budgetary or non budgetary sources of the government which to be managed by the Agriculture & Processed Food Products Export Development Authority (APEDA) under the instruction of the Department of Commerce.

The Ministry of Commerce, Govt. of India is implementing a central scheme, 'Central Assistance to States for Developing Export Infrastructure and Other Allied Activities' (ASIDE) for promotion and facilitation of export commodities and creation of necessary infrastructure in the state in order to maintain lower cost of production so as to make the exports internally competitive. The objective of the scheme is to involve the state in the export effort by providing assistance to the state government for creating appropriate infrastructure for the development and growth of exports as the states do not often have adequate resources.

Exports have come to be regarded as an engine of economic growth in the wake of liberalization and structural reforms in the economy. A sustained

growth in exports is, however, not possible in the absence of proper and adequate infrastructure as adequate and reliable infrastructure is essential to facilitate unhindered production, cut down the cost of production and make our exports internationally competitive.

While the responsibility for promotion of exports and creating the necessary specialized infrastructure has largely been undertaken by the central Government so far, it is increasingly felt that the states have to play an equally important role in this endeavor. The role of the State Government is critical from the point of view of boosting production of exportable surplus, providing the infrastructural facilities such as land, power, water, roads, connectivity, pollution control measures and a conducive regulatory environment for production of goods and services. It is, therefore, felt that coordinated efforts by the Central Government in cooperation with the State Governments are necessary for development of infrastructure for exports promotion.

Department of Trade and Commerce currently implements, through its agencies, schemes for promotion and facilitation of export commodities and creation of infrastructure attendant thereto. The Export Promotion Industrial Parks Scheme (EPIP), Export Promotion Zones scheme (EPZ), and the Critical Infrastructure Balancing Scheme (CIB) are also implemented to help create infrastructure for exports in specific locations and to met specific objectives. However, the general needs of infrastructure improvement for exports are not met by such schemes. With a view, therefore, to optimizing the utilization of resources and to achieve the objectives of export growth through a coordinated effort of the Central Government and the States this scheme has been drawn up.

For effective implementation of the ASIDE scheme in the state and also as required under the guideline for ASIDE, a state Level Export Promotion Committee (SLEPC) has been constituted under the chairmanship of the Chief Secretary of the state. The committee examines, prioritizes and sanctions the various proposals under the scheme. The composition of the committee is as under:-

|      |                                                   |                  |
|------|---------------------------------------------------|------------------|
| i.   | Chief Secretary, Govt. of A.P., Itanagar          | Chairman         |
| ii.  | Secretary Trade & Commerce                        | Member           |
| iii. | Joint Director General of Foreign Trade, Guwahati | Member           |
| iv.  | Addl. Commissioner Custom, NER, Shillong          | Member           |
| v.   | Director Trade & Commerce                         | Member Secretary |

As the funds under the scheme are disbursed directly to a State Level Nodal Agency nominated by the state government as required under the guidelines for ASIDE, the Department of Trade and Commerce has formed an NGO in the name and style of 'Arunachal Pradesh Exports Infrastructures Development Agency (APEIDA) which has been registered under the Societies Registration Act, 1860, (as modified by the Societies Registration Extension to Arunachal Pradesh Act, 1970). The society is managed by a Board of Management which is headed by the Minister-In-Charge of the Department as Chairman, Secretary, Trade and Commerce as Vice Chairman, Joint Director, Trade and Commerce as member, Finance and Accounts Officer of the department as member and the Director, Trade and Commerce as Member Secretary.

### **Weights and Measures**

**Old Time Practice:** Formally, business transaction in this area were carried out through barter or exchange of articles according to the needs of the people, as described earlier in detail, and for this purpose there were some conventional barter rates. The trade relations remained virtually unchanged until about 1947. After independence, a wind of change began to blow over the whole area leading to all-round developments and monetization of tribal economy. The barter rates were gradually replaced by standard values in terms of money. The tribal people living near the plains were generally familiar with the systems of weights and measures followed in Assam. But the situation was different in the interior areas, where barter trade was carried on until recently, and may be in some remote isolated pockets and in inter-village trade it is still being practiced.

**Metric System:** The Metric System of weights and measures has been introduced in India in accordance with the standards of Weights and Measures Act, 1956. By this Act the old, diverse and bewildering methods and practices of weights and measures, which were in vogue, were sought to be replaced by a Legal Metrology to maintain uniformity and discipline in business and economic relations. In 1964, unit of weight and measures was created in the Industries Department for implementation of the metric system in this territory as provided in the Act of 1956. On March 18, 1975, this unit became a full-fledged department. In 1976, another Act was enforced to extend the application of the standards of weights and measures to cover a wider range of economic activities so as to regulate the inter-state trade and commerce as well as sell or distribution of goods by weight and measures number; or any

matter connected therewith or incidental thereto. The packaged Commodities Rule of 1977 has also been brought into force in Arunachal Pradesh.

In pursuance of the Arunachal Pradesh Weights and Measures (Enforcement) Act, 1976 and the Rules framed under the provisions of this Act, the Weights and Measures Department was renamed as the Department of Legal Metrology on September 21, 1982. The name of the department was again amended a Legal Metrology and Consumer Affairs on 3rd March, 2008\*.

The Department ensures protections to the right and interest of every single consumer or citizen of this state by undertaking verification of almost all Weights & Measures, weighing & measuring instruments, being used in the State in all sphere of commercial transactions. The interest of common people is safeguarded, even when consumer's products being sold in packaged form are regulated to maintain quality, quantity and number.

Also, the department acts as a key nodal agency of the Government in implementation of the Consumer Protection Act and Rules in true letter and spirit. Aggrieved consumers at grass-root level are getting their grievances redressed by the quasi-judicial machineries viz District Consumer Disputes Redressal Forum and the State Consumer Disputes Redressal Commission with the assistance provided by the department. For effective implementation of the consumer rights the Government has set up State Consumer Forum and District Consumer Forum.

The department functions as the nodal department for Bureau of Indian Standards and monitors the standardization activities & implementing the quality control order etc. in the State, and thereby confirms availability of quality products to the people.

The department of Legal Metrology & Consumer Affairs is basically responsible for enforcing & implementing the following Acts & Rules in this State.

1. The Standards of Weights & Measures Act, 1976.
2. The Standards of Weights & Measures (Enforcement) Act, 1985.
3. The Standards of Weights & Measures (General) Act, 1987.
4. The Standards of Weights & Measures (Packaged Commodities) Rules, 1977.

---

\* Vide Notification No. GA(A) 25/ 98 (Vol-I) dt 3/3/2008.



5. The Arunachal Pradesh standards of Weights & Measures (Enforcement) Rules, 2000.
6. The Arunachal Pradesh State Consumer Protection Rules, 1987.
7. The Consumer Protection Act, 1986.
8. The Bureau of Indian Standards Act, 1986 & the Rule framed there under.

Significant achievement during 2005-2006 under Weights & Measures Laws is as follows:

- |      |                                                                                                   |                        |
|------|---------------------------------------------------------------------------------------------------|------------------------|
| i.   | Revenue collection from verification & stamping :                                                 | Rs. 13,09,426/-        |
| ii.  | No. of cases detected for violation of packaged<br>Commodities Rules, and Weights & Measures Act: | Rs. 350 cases.         |
| iii. | Compounding fine realized :                                                                       | Rs. 1,83,595/-         |
| iv.  | Action/Sale proceeds of seized items :                                                            | Rs. 6,709/-            |
| v.   | Revenue collection from issue of packer licenses :                                                | Rs. 13,220/-           |
|      | <b>Total collection of revenue from all :</b>                                                     | <b>Rs. 15,13,300/-</b> |
- (Rupees Fifteen lakhs thirteen thousand three hundred) only.

#### **Consumer Protection Act and Rules during 2004-2005.**

The State Commission along with 13 district forums are functioning all over the State for redressal of consumer's grievances. One State Consumer Council and 13 District consumer Councils have been constituted and made operational for suggesting ways and means for better implementation of consumer Law.

The achievements made so far in redressal of grievances are as follows<sup>1</sup>:-

- |                     |                                          |
|---------------------|------------------------------------------|
| i) State Commission | (a) No. of cases received -33 Nos.       |
|                     | (b) No. of cases disposed off -22 Nos.   |
| ii) District Forum  | (a) No. of cases received - 260 Nos.     |
|                     | (b) No. of cases disposed off - 229 Nos. |

Zonal officers and District Level officers of the nodal department have been declared as ex-officio Zonal Consumer Protection Officer and District Consumer Officer respectively. National Consumer Day and World Consumer

<sup>1</sup> Legal Metrology Department, Government of Arunachal Pradesh.

Right Day are being regularly celebrated on 24th December and 15th March every year.

The enforcement of the metric system in the district has been successful and beneficial in many ways. It has not only simplified the business transactions and facilitated fixation of the prices of commodities, but also secured consumers protection to great extent.

### **Public Distribution System (PDS)**

A Public Distribution System has been functioning in Arunachal Pradesh for regular supply of essential commodities to all administrative centres by road and air transport and also by head load. The commodities are procured through the food corporation of India and sold to the public at fair and reasonable price. To remote and inaccessible area having no road link or road transport, essential foodstuffs and other necessities are supplied by air dropping or head load.

The Food and Civil Supplies Department of State (till recently it was known as Civil Supply Department) is responsible for planning and obtaining of food grains from Government of India. The Department also ensures for timely procurement, transportation, stocking and distribution of various PDS commodities including SKO, LPG cylinders and other petroleum product through FPS and other authorized outlets to meet the requirement of the people in the State.

This Department is entrusted to regular supply of essential commodities to the customers at a uniform price through appointed wholesale nominees and carriage contractors. There are 1494 Nos. of Fair Price Shops in the State up to 2004-05, out of which 277 Nos. are in Cooperative Sector and remaining 1217 Nos. are in Private Sector. By 2006, the numbers of Fair price Shop has been rise to 1515 and maximum numbers of its branches have been opened in rural areas as majority of targeted sections of population are living in these areas. There are 35 Nos. of POL outlets, 32 SKO outlets and 22 LPG outlets throughout the State. PDS activities in the districts are managed by the District Supply Officers with supporting staff under the overall supervision of Deputy Commissioners of the respective districts.

The Food and Civil Supplies Department is entrusted with the works as under:

- (1) To ensure availability of all essential commodities at reasonable price

to all sections of the people particularly to the vulnerable section of the society both in urban and rural area throughout the year at place near to their respective residing location.

- (2) Enforcement of various provisions of essential Commodities Act and other control order issued by both central and State Government from time to time.
- (3) Procurement and equitable distribution of food grains, Levy Sugar, Iodized Salt, S.K. oil and other essential commodities listed and declared as PDS by the Government of India.
- (4) To issue Licensing and control order, exercise close and constant Vigil on the dealers of essential commodities. Fair Price Shops and POL outlets as well as upon the aspect of price structure.
- (5) To check malpractices and hoarding of essential commodities under essential Commodities Act by Organizing checking and raids at regular interval.
- (6) To protect the consumers interest.
- (7) To evolve an effective monitoring system throughout the State in availability and pricing of essential commodities.
- (8) To ensure adequate availability of POL produce including LPG etc. throughout the State by opening retail outlets, dealership and distributionship of above petroleum products at all important location in the State.
- (9) To maintain close and constant liaison with the Central Agencies like Food Corporation of India, Railway Boards and Salt Commissioner etc for better and efficient functioning of Public Distribution System in the State, through Liaison Officer functioning at different important location like Shillong, Guwahati, Kolkata, New Delhi, Tezpur, Lilabari and Mohanbari.
- (10) To ensure proper utilization of various types of transport subsidy prevailing in the State for lifting listed items of food grains and other essential commodities.
- (11) Augmentation of storage accommodation facilities in the State for maintaining buffer stock.

Besides the work listed above, the department is also entrusted with the duty for proper implementation of central schemes as direct from the centre from time to time. Food grains and Levy Sugar are distributed to consumers under the following Schemes:

(1) ***Above Poverty Line (APC) and Below Poverty Line (BPL) families***

Under Targeted Public Distribution System (TPDS) introduced w.e.f. 01/06/1997 (before it was RPDS), all BPL families are entitled to get 35 kg of rice or wheat per family per month @ Rs. 6.15 (rice) and Rs. 4.65 (wheat) per kg. Whereas, all above Poverty Line Families are entitled to get 35 kg of rice or wheat per family per month @ Rs. 8.80 (rice) and Rs. 5.60 (wheat) per kg. Total numbers of BPL beneficiaries are 60771.

(2) ***Antyodaya Anna Yojana***

This scheme was launched w.e.f. 01/01/02 by Government of India to extend benefit of 35 kg of rice @ Rs. 3/- per month per family to the poorest of the poor BPL families. Presently 30,100 poorest of the poor families are covered under this scheme. Another 7900 poorest of the poor BPL families have been included under Antyodaya Anna Yojana scheme from the existing BPL families w.e.f. June/2006, to raise the number to 38,000.

(3) ***Annapurna Scheme***

Under this scheme, 10 kg of rice are distributed free of cost to Old indigent Citizens of 65 years and above who are not getting benefit under National Old Age Pension Scheme (now renamed as Rajiv Gandhi National Old Age Pension Scheme). The Scheme was launched from December'01 and 4771 persons are presently benefited under this scheme.

(4) ***Welfare Scheme for Hostel Boarders and Welfare Institution.***

Under the scheme hostel and other welfare institutional boarders are getting the benefit of 15 kg of rice @ Rs. 6.15 kg w.e.f. April'02. Presently, 9800 beneficiaries are covered under this scheme.

| RICE  |      |      | WHEAT |     | L/SUGAR | I/SALT | SKO    |
|-------|------|------|-------|-----|---------|--------|--------|
| APL   | BPL  | AAY  | APL   | BPL | 842.56  | 5300   | 992 KL |
| 44740 | 1871 | 1331 | 530   | 250 |         |        |        |

**Achievement upto 9th Plan (31<sup>st</sup> March 2002), Target for tenth & achievement of 2002-2003, 2003-2004, 2004-2005 and target for annual plan 2005-2006 are given below:-**

| Sl. No   | Item (Scheme wise)                           | Unit     | Achievement Up to 9 <sup>th</sup> plan 1997-2002. | Target 10 <sup>th</sup> plan 2002-2007. | 2002 - 2003 |          | 2003 - 2004 |          | 2004 - 2005 |           | Target 2005-2006. | Remarks   |
|----------|----------------------------------------------|----------|---------------------------------------------------|-----------------------------------------|-------------|----------|-------------|----------|-------------|-----------|-------------------|-----------|
|          |                                              |          |                                                   |                                         | Target      | Achieve  | Target      | Achieve  | Target      | Achieve   |                   |           |
| <b>1</b> | <b>2</b>                                     | <b>3</b> | <b>4</b>                                          | <b>5</b>                                | <b>6</b>    | <b>7</b> | <b>8</b>    | <b>9</b> | <b>10</b>   | <b>11</b> | <b>12</b>         | <b>13</b> |
| 1        | Fair Price Shops                             | Nos.     | 309                                               | 250                                     | 60          | 60       | 60          | 60       | 50          | 50        | 50                |           |
|          | Co-Operative                                 | Nos.     | 4                                                 | 10                                      | 10          | 10       | 10          | 10       | Nil         | Nil       |                   |           |
|          | Private                                      | Nos.     | 305                                               | 240                                     | 50          | 50       | 50          | 50       | 50          | 50        | 50                |           |
|          | Total:                                       |          | 309                                               | 250                                     | 60          | 60       | 60          | 60       | 50          | 50        | 50                |           |
| 2        | GODOWN                                       |          |                                                   |                                         |             |          |             |          |             |           |                   |           |
|          | Capacity created (cum)                       | MT       | 4600 MT                                           | 600 MT                                  | -           | -        | -           | -        | -           | -         | -                 |           |
| 3        | Residential/ Non Residential                 | Nos.     | 44 nos.                                           | 35 nos.                                 | -           | -        | -           | -        | -           | -         | -                 |           |
| 4        | Non-residential building (Official Building) | Nos.     | -                                                 | -                                       | -           | -        | -           | -        | -           | -         | -                 |           |
| 5        | Population covered                           | Nos.     | 1,54,500                                          | 1,75,000                                | 30,000      | 30,000   | 30,000      | 30,000   | 50,000      | 50,000    | 25,000            |           |

*Sources: - Annual Operating Plan of Directorate of Food and Civil Supplies Naharlagun. Government of Arunachal Pradesh.*

### Co-operative Movement

Co-operation is the essence of tribal social relations. Tribes are generally organized in cohesive society based on kinship and locality, where collective efforts are essential for survival and progress. Mutual help in primary needs, which is largely absent in urban societies, is a moral obligation for them. The corporate village life of the tribes of Arunachal Pradesh is an expression of the principles of co-operation. Their *jhum* cultivation is very much of a co-operative endeavour. Their village councils, house building, hunting or fishing expeditions are co-operative enterprises. Their socio-political institutions are democratic in the real sense of the term. The nature of co-operations of the tribes was primarily based on moral and mutuality.

The co-operative societies Act, 1912 was extended to the North East Frontiers by the Governor of Assam in the year 1949 by promulgation of the Assam North East Frontiers (Abor Hills, Mishmi Hills, Balipara, Tirap and Lakhimpur) Tracks Co-operative Societies Regulation 1949. Then in the year 1978, The Arunachal Pradesh Co-operative Societies Act, 1978 was passed by the Legislative Assembly of the Union Territory of Arunachal Pradesh, which received assent of the Lieutenant Governor of Arunachal Pradesh on 30th June 1979 and became UT/State Act in replacement of the Central Act. The Arunachal Pradesh Co-operative Act 1978 has since been amended several times to meet the requirements of the State.

The co-operative movement in this state has made an appreciable progress since the seventies. The Tribal people have largely associated themselves with the co-operative Societies working in various fields of development for mutual benefits. Indeed, the co-operative movement in this tribal area has a vital role to play in improving the socio-economic condition of the people. Till 1956 the Co-operative movement in Arunachal Pradesh was mainly confined to the field of consumer goods. Later, it rapidly spread to other fields like transport, Agricultural marketing/processing, Industry, Credit and other functional spheres to achieve the objective of economic growth and social change in the area specially since the year 1978. The movement plays a significant role in the social and economic development since the economy of Arunachal Pradesh is predominantly rural in character. The state had four hundred thirty eight societies with 432 membership around 73.71 thousand at the end of the year 2004-2005 as against 60 societies with a membership of ten thousand at the end of the year 1964-1965 and 192 co-operative societies with a membership of thirty six thousand in the year 1986.

The growth and achievement of cooperative societies in the State over past few years are depicted in following tables:-

**FUNCTIONING OF CO-OPERATIVE APEX BANK IN ARUNACHAL PRADESH,  
DURING THE YEAR**

**(Rs. In lakhs)**

| Year      | Number of Banks | Number of Branches | Member-ship<br>(1000) | Held by Govt.<br>(Rs. In lakhs) | Held by Others<br>(Rs. In lakhs) | Owned Fund (Rs. In lakhs) | Working Capital (Rs. In<br>lakhs) | Deposit (Rs. In lakhs) | Borrowing outstanding (Rs.<br>In lakhs) | Loans advanced during the<br>year. (Rs. In lakhs) | Loans outstanding at the<br>end of the year | Percentage of over-dues to<br>demand | No. of Branches running in<br>profit | Amount in profit | No. of Branches running in<br>loss | Amount of loss | Accumulated loss |
|-----------|-----------------|--------------------|-----------------------|---------------------------------|----------------------------------|---------------------------|-----------------------------------|------------------------|-----------------------------------------|---------------------------------------------------|---------------------------------------------|--------------------------------------|--------------------------------------|------------------|------------------------------------|----------------|------------------|
| 1         | 2               | 3                  | 4                     | 5                               | 6                                | 7                         | 8                                 | 9                      | 10                                      | 11                                                | 12                                          | 13                                   | 14                                   | 15               | 16                                 | 17             | 18               |
| 1994-95   | 1               | 30                 | 68                    | 83.05                           | 19.09                            | 389.49                    | 7857.66                           | 5832.02                | 556.93                                  | 556.93                                            | 1433.05                                     | 66.10                                | 16                                   | 7.56             | 14                                 | -              | -                |
| 1995-96   | 1               | 30                 | 68                    | 104.05                          | 20.71                            | 567.49                    | 11216.79                          | 7222.19                | 432.60                                  | 823.37                                            | 1699.59                                     | 305.76                               | 1                                    | 15.23            | -                                  | -              | -                |
| 1996-97   | 1               | 30                 | 76                    | 114.05                          | 23.78                            | 588.66                    | 11058.41                          | 8702.56                | 765.82                                  | 904.41                                            | 2431.21                                     | 651.50                               | 1                                    | 7.00             | -                                  | -              | 978.32           |
| 1997-98   | 1               | 31                 | 72                    | 126.80                          | 24.93                            | 588.66                    | 11383.88                          | 8760.96                | 968.31                                  | 707.60                                            | 2876.34                                     | 67.07                                | -                                    | -                | 1                                  | -              | 1256.32          |
| 1998-99   | 1               | 31                 | 72                    | 126.80                          | 24.93                            | 588.66                    | 11383.88                          | 8760.96                | 968.31                                  | 707.60                                            | 2876.34                                     | 67.07                                | -                                    | -                | -                                  | -              | 1889.19          |
| 1999-2000 | 1               | 31                 | 80                    | 134.80                          | 28.60                            | 325.63                    | 15082.24                          | 9415.00                | 817.32                                  | 412.36                                            | 4499.85                                     | 70%                                  | 19                                   | 240.22           | 12                                 | 1098.67        | 2747.65          |
| 2000-2001 | 1               | 31                 | 80                    | 612.79                          | 67.00                            | 679.79                    | 16797.69                          | 10703.72               | 5251.93                                 | 243.34                                            | 4743.19                                     | 72                                   | 19                                   | 240.22           | 12                                 | 99.61          | 2648.04          |
| 2001-2002 | 1               | 31                 | 85                    | 134.80                          | 31.83                            | 266.97                    | 15371.16                          | 13952.16               | 533.22                                  | 466.15                                            | 2322.78                                     | 64                                   | (-) 44.70                            | 75.70            | -                                  | 2648.04        | (-) 44.70        |
| 2002-2003 | NA              | NA                 | NA                    | NA                              | NA                               | NA                        | NA                                | NA                     | NA                                      | NA                                                | NA                                          | NA                                   | NA                                   | NA               | NA                                 | NA             | NA               |
| 2003-2004 | NA              | NA                 | NA                    | NA                              | NA                               | NA                        | NA                                | NA                     | NA                                      | NA                                                | NA                                          | NA                                   | NA                                   | NA               | NA                                 | NA             | NA               |
| 2004-2005 | NA              | NA                 | NA                    | NA                              | NA                               | NA                        | NA                                | NA                     | NA                                      | NA                                                | NA                                          | NA                                   | NA                                   | NA               | NA                                 | NA             | NA               |

*Source: Various of Statistical Abstract of A.P.*

**CO-OPERATIVE SOCIETIES AND BANKS CLASSIFIED BY TYPES IN A.P. AS ON 31-03-2005**  
(in number)

| District              | Apex Societies | State and Central Bank Union | Central land Mortgage Banks | Agricultural Credit Societies (LAMPS) | Non-Credit Co-operative Societies |                        |                   |             |                   |                    |                   |                   |                 |            |                                    |            |
|-----------------------|----------------|------------------------------|-----------------------------|---------------------------------------|-----------------------------------|------------------------|-------------------|-------------|-------------------|--------------------|-------------------|-------------------|-----------------|------------|------------------------------------|------------|
|                       |                |                              |                             |                                       | Primary land Mortgage Banks       | Marketing & Processing | Sugar cane supply | Milk Supply | Weaving Societies | Consumer Societies | Housing Societies | Farming Societies | Women Societies | Other      | Societies Placed Under Liquidation | Total      |
| 1                     | 2              | 3                            | 4                           | 5                                     | 6                                 | 7                      | 8                 | 9           | 10                | 11                 | 12                | 13                | 14              | 15         | 16                                 | 17         |
| Tawang                | -              | -                            | -                           | 2                                     | -                                 | -                      | -                 | 1           | 1                 | 2                  | -                 | -                 | -               | 2          | -                                  | 8          |
| W/Kameng              | -              | -                            | -                           | 4                                     | -                                 | -                      | -                 | 1           | 2                 | 10                 | -                 | 1                 | 1               | 13         | -                                  | 32         |
| E/Kameng              | -              | -                            | -                           | 1                                     | -                                 | -                      | -                 | -           | -                 | 3                  | -                 | 1                 | -               | 4          | -                                  | 9          |
| Papumpare             | 4              | 1                            | -                           | 2                                     | -                                 | -                      | -                 | 3           | 9                 | 9                  | -                 | 5                 | 2               | 80         | -                                  | 114        |
| L/Subansiri           | -              | -                            | -                           | 3                                     | -                                 | 1                      | -                 | 2           | 7                 | 7                  | 1                 | 1                 | -               | 49         | -                                  | 71         |
| K. Kumey              | -              | -                            | -                           | -                                     | -                                 | -                      | -                 | -           | -                 | -                  | -                 | -                 | -               | -          | -                                  | -          |
| U/Subansiri           | -              | -                            | -                           | 1                                     | -                                 | -                      | -                 | 2           | 1                 | 3                  | -                 | 1                 | -               | 8          | -                                  | 16         |
| W/Siang               | -              | -                            | -                           | 3                                     | -                                 | -                      | -                 | 2           | 2                 | 12                 | -                 | 3                 | -               | 22         | -                                  | 43         |
| E/Siang               | -              | -                            | -                           | 3                                     | -                                 | -                      | -                 | 4           | 5                 | 5                  | -                 | -                 | -               | 14         | -                                  | 32         |
| U/Siang               | -              | -                            | -                           | 1                                     | -                                 | -                      | -                 | -           | 1                 | 2                  | -                 | -                 | -               | 2          | -                                  | 6          |
| D/Valley              | -              | -                            | -                           | 3                                     | -                                 | 1                      | -                 | -           | 3                 | 2                  | -                 | 3                 | -               | 5          | -                                  | 17         |
| Lohit                 | -              | -                            | -                           | 4                                     | -                                 | -                      | -                 | 1           | -                 | -                  | -                 | -                 | -               | -          | -                                  | -          |
| Anjaw                 | -              | -                            | -                           | -                                     | -                                 | -                      | -                 | -           | 3                 | 6                  | -                 | 3                 | -               | 9          | -                                  | 26         |
| Changlang             | -              | -                            | -                           | 4                                     | -                                 | 1                      | -                 | -           | -                 | 4                  | -                 | -                 | -               | 6          | -                                  | 15         |
| Tirap                 | -              | -                            | -                           | 2                                     | -                                 | -                      | -                 | 1           | 2                 | 7                  | -                 | -                 | -               | 11         | -                                  | 23         |
| <b>Total for A.P.</b> | <b>4</b>       | <b>1</b>                     | <b>-</b>                    | <b>33</b>                             | <b>-</b>                          | <b>3</b>               | <b>-</b>          | <b>17</b>   | <b>36</b>         | <b>72</b>          | <b>1</b>          | <b>18</b>         | <b>3</b>        | <b>225</b> |                                    | <b>412</b> |

Source: Statistical Abstract of A.P. 2006.



**DISTRICT WISE NUMBER OF FAIR PRICE SHOPS IN ARUNACHAL PRADESH,  
AS ON 31-03-2006**

*(in number)*

| District              | RURAL       |             |             | URBAN       |            |            | TOTAL       |             |             |
|-----------------------|-------------|-------------|-------------|-------------|------------|------------|-------------|-------------|-------------|
|                       | Cooperative | Others      | Total       | Cooperative | Others     | Total      | Cooperative | Others      | Total       |
| 1                     | 2           | 3           | 4           | 5           | 6          | 7          | 8           | 9           | 10          |
| Tawang                | 30          | 34          | 64          | 5           | 3          | 8          | 35          | 37          | 72          |
| W/Kameng              | 34          | 41          | 75          | 3           | 3          | 6          | 37          | 44          | 81          |
| E/Kameng              | 20          | 50          | 70          | 4           | 7          | 11         | 24          | 57          | 81          |
| Papumpare             | 14          | 68          | 82          | 6           | 67         | 73         | 20          | 135         | 155         |
| L/Subansiri           | 6           | 77          | 83          | 7           | 12         | 21         | 13          | 91          | 104         |
| K. Kumey              | 3           | 98          | 101         | -           | -          | -          | 3           | 98          | 101         |
| U/Subansiri           | 10          | 164         | 174         | -           | -          | -          | 10          | 164         | 174         |
| W/Siang               | 2           | 144         | 146         | 1           | 47         | 48         | 3           | 191         | 194         |
| E/Siang               | 6           | 74          | 80          | 3           | 17         | 20         | 9           | 91          | 100         |
| U/Siang               | -           | 52          | 52          | 5           | 3          | 8          | 5           | 55          | 60          |
| L/Dibang Valley       | 6           | 30          | 36          | 3           | 4          | 7          | 9           | 34          | 43          |
| Lohit                 | 15          | 25          | 40          | 11          | 5          | 16         | 26          | 30          | 56          |
| Changlang             | 12          | 106         | 118         | -           | -          | -          | 12          | 106         | 118         |
| Tirap                 | 6           | 81          | 87          | 7           | 24         | 31         | 13          | 106         | 118         |
| Dibang Valley         | 2           | 25          | 27          | -           | -          | -          | 2           | 25          | 27          |
| Anjaw                 | 6           | 19          | 24          | 3           | 4          | 7          | 8           | 23          | 31          |
| <b>Total for A.P.</b> | <b>171</b>  | <b>1088</b> | <b>1259</b> | <b>58</b>   | <b>198</b> | <b>256</b> | <b>229</b>  | <b>1286</b> | <b>1515</b> |

Source: Statistical Abstract of A.P. 2006.

### SELECTED STATISTICS OF PRIMARY AGRICULTURAL CREDIT SOCIETIES IN ARUNACHAL PRADESH

| Year      | Societies<br>(no) | Membership<br>(Lakhs) | Share<br>capital<br>(Lakhs) | Owned<br>capital<br>(Lakhs) | Working<br>capital<br>(Lakhs) | Deposits<br>(Lakhs) | Borrowing<br>&<br>Outstanding<br>(Lakhs) | Loans<br>arranged<br>during<br>the year<br>(Lakhs) | Loans<br>recovered<br>during<br>the year<br>(Lakhs) | Loans<br>outstanding<br>at the end<br>of the year<br>(Lakhs) | Over-dues<br>as<br>percentage<br>of<br>outstanding<br>loans (%) | Societies<br>showing<br>profit<br>(no) |
|-----------|-------------------|-----------------------|-----------------------------|-----------------------------|-------------------------------|---------------------|------------------------------------------|----------------------------------------------------|-----------------------------------------------------|--------------------------------------------------------------|-----------------------------------------------------------------|----------------------------------------|
| 1         | 2                 | 3                     | 4                           | 5                           | 6                             | 7                   | 8                                        | 9                                                  | 10                                                  | 11                                                           | 12                                                              | 13                                     |
| 1994-95   | 31                | 0.17                  | 76.73                       | 406.76                      | 1200.00                       | NIL                 | 134.50                                   | 114.95                                             | 13.72                                               | 122.55                                                       | 27.50                                                           | 18                                     |
| 1995-96   | 31                | 0.16                  | 100.31                      | 392.65                      | 1766.62                       | NIL                 | 129.15                                   | 77.46                                              | 5.95                                                | 146.81                                                       | 26.81                                                           | 20                                     |
| 1996-97   | 31                | 0.17                  | 119.80                      | 491.85                      | 1658.83                       | NIL                 | 161.61                                   | 69.13                                              | 5.40                                                | 144.90                                                       | 64.00                                                           | 20                                     |
| 1997-98   | 32                | 0.21                  | 130.96                      | 516.26                      | 1717.56                       | NIL                 | 173.08                                   | 49.13                                              | 5.40                                                | 100.08                                                       | 47.51                                                           | 19                                     |
| 1998-99   | 32                | 0.22                  | 138.09                      | 556.02                      | 1909.29                       | NIL                 | 144.67                                   | 3.50                                               | 13.58                                               | 194.81                                                       | 29.50                                                           | 17                                     |
| 1999-2000 | NA                | NA                    | NA                          | NA                          | NA                            | NA                  | NA                                       | NA                                                 | NA                                                  | NA                                                           | NA                                                              | NA                                     |
| 2000-2001 | 32                | NA                    | NA                          | NA                          | NA                            | NA                  | NA                                       | NA                                                 | NA                                                  | NA                                                           | NA                                                              | NA                                     |
| 2001-2002 | *338              | 0.70                  | 534.85                      | 153.29                      | 1484.76                       | NA                  | 2322.78                                  | 188.00                                             | 29.71                                               | 353.19                                                       | 64                                                              | 118                                    |
| 2002-2003 | NA                | NA                    | NA                          | NA                          | NA                            | NA                  | NA                                       | NA                                                 | NA                                                  | NA                                                           | NA                                                              | NA                                     |
| 2003-2004 | 388               | 0.70                  | 384.61                      | 2946.93                     | 2683.48                       | 13952.16            | 533.22                                   | NA                                                 | NA                                                  | 7866.00                                                      | NA                                                              | 2401.42<br>(Net loss)                  |
| 2004-2005 | 33                | 0.18                  | 198.24                      | 475.30                      | 1585.96                       | -                   | 222.70                                   | -                                                  | -                                                   | -                                                            | -                                                               | 10                                     |

Source: Statistical Abstract of A.P. from 1994 - 2006.

# **PROCUREMENT OF SELECTED COMMODITIES BY AGENCIES IN A.P. DURING 2005-2006**

| District              | Rice (M.T.) |                  |        |                  | Wheat (M.T.) |                 |        |                 | Sugar (M.T.) |                 |        |                 | SK. Oil<br>(KL)<br>IOC<br>AOD &<br>MD |
|-----------------------|-------------|------------------|--------|------------------|--------------|-----------------|--------|-----------------|--------------|-----------------|--------|-----------------|---------------------------------------|
|                       | State       | FCI              | Others | Total            | State        | FCI             | Others | Total           | State        | FCI             | Others | Total           |                                       |
| 1                     | 2           | 3                | 4      | 5                | 6            | 7               | 8      | 9               | 10           | 11              | 12     | 13              | 14                                    |
| Tawang                | -           | 4016.391         | -      | 4016.391         | -            | 356.700         | -      | 356.700         | -            | 270.000         | -      | 270.000         | 432                                   |
| West Kameng           | -           | 4918.421         | -      | 4918.421         | -            | 473.000         | -      | 473.000         | -            | 451.000         | -      | 451.000         | 1089                                  |
| East Kameng           | -           | 4490.555         | -      | 4490.555         | -            | 391.850         | -      | 391.850         | -            | 165.100         | -      | 165.100         | 448                                   |
| Papumpare             | -           | 7311.090         | -      | 7311.090         | -            | 253.900         | -      | 253.900         | -            | 45.807          | -      | 45.807          | 1711                                  |
| Lower Subansiri       | -           | 2616.685         | -      | 2616.685         | -            | 201.800         | -      | 201.800         | -            | Nil             | -      | Nil             | 804                                   |
| Kurung Kumey          | -           | 4261.625         | -      | 4261.625         | -            | 481.200         | -      | 481.200         | -            | 337.000         | -      | 337.000         | 698                                   |
| Upper Subansiri       | -           | 4524.207         | -      | 4524.207         | -            | 422.200         | -      | 422.200         | -            | 372.500         | -      | 372.500         | 654                                   |
| West Siang            | -           | 5397.816         | -      | 5397.816         | -            | 622.000         | -      | 622.000         | -            | 227.500         | -      | 227.500         | 1229                                  |
| East Siang            | -           | 4524.207         | -      | 4524.207         | -            | 492.000         | -      | 492.000         | -            | 287.100         | -      | 287.100         | 1272                                  |
| Upper Siang           | -           | 3379.942         | -      | 3379.942         | -            | 206.400         | -      | 206.400         | -            | 163.000         | -      | 163.000         | 372                                   |
| Lower Dibang Valley   | -           | 3736.200         | -      | 3736.200         | -            | 485.000         | -      | 485.000         | -            | 247.500         | -      | 247.500         | 314                                   |
| Lohit                 | -           | 7904.920         | -      | 7904.920         | -            | 1278.900        | -      | 1278.900        | -            | 668.400         | -      | 668.400         | 828                                   |
| Changlang             | -           | 8260.051         | -      | 8260.051         | -            | 415.700         | -      | 415.700         | -            | 332.200         | -      | 332.200         | 1177                                  |
| Tirap                 | -           | 8675.641         | -      | 8675.641         | -            | 626.400         | -      | 626.400         | -            | 670.100         | -      | 670.100         | 850                                   |
| DST. Org              | -           | 1481.042         | -      | 1481.042         | -            | 37.025          | -      | 37.025          | -            | 38.000          | -      | 38.000          | 9                                     |
| Anjaw                 | -           | 2407.800         | -      | 2407.800         | -            | 198.300         | -      | 198.300         | -            | 103.000         | -      | 103.000         | 120                                   |
| <b>Total for A.P.</b> | -           | <b>77906.593</b> | -      | <b>77906.593</b> | -            | <b>6942.375</b> | -      | <b>6942.375</b> | -            | <b>4378.207</b> | -      | <b>4378.207</b> | <b>12007</b>                          |

Source: Statistical Abstract of A.P. 2006.

The Arunachal Pradesh Cooperative Apex Bank Ltd. established in 1977 is assuming increasing importance in the field of deposits and credit mobilization. With expansion of branches it is significantly contributing in the development process. As of now, there are 32 branches with membership of 79000 members while its working capital stood at Rs. 16193.85 lakhs during the year. The volume of deposits with the bank was Rs. 17099.46 lakhs in 2003-2004. The total volume of loan outstanding at the end of the year (2003-2004) was Rs. 7866.00 lakh. The accumulated loss incurred by the bank as on March, 2004 was Rs. 2401.47 lakh and on account of mismanagement of institution and mounting outstanding loan brought the bank almost to the brink of total collapse. As mentioned earlier in detail, the State Government is well aware of importance and necessity of sound functioning of the Apex Cooperatives Bank of the State which plays a significant role in all areas of economic life of the State especially in rural areas. Hence, the State Government has sanctioned Rupees 250(Two hundred fifty) crores only for revival of APSCAB. and stringent recovery process has been also began on outstanding loan. Until now, the bank has almost fully recovered from the banking sickness with earnest support from the Government. As an unscrupulous sanctioning of loan and internal weaknesses of administration was the major causes of its sickness, the Government has introduce necessary financial as well as administrative corrective measures such as appointment of non-political person in the post of chairman etc. so that the bank may not face the same fate again in future.

Large Size Multipurpose Societies (LAMPS) play significant role in the economic development of the State. There are 33 LAMPS in the state through which the Apex Bank provides agricultural loans to the farmers. LAMPS also undertake marketing of agriculture products. In shorts, LAMPS provides all sorts of assistance to the agriculturist and also function as main agent of Public Distribution System (PDS).

In addition to Large Size Multipurpose Societies, some consumer co-operatives are also involves in PDS. Co-operatives shoulder the principle responsibility for the success of PDS in the state both as wholesaler as well as retailer. The involvement of the societies in the system is so deep that it is difficult to draw any distinguishing line between the Co-operative and Public Distribution System. As on 31-3-2003 there are 273 Retail (Fair Price Shop) which are also being run by the co-operatives.

The focus of cooperative activities during 10th Five Year Plan are as under:-

1. Open more branches of Apex Banks.
2. Implement development plan formulated by National Federation of State cooperative banks.
3. Strengthening marketing societies/LAMPS for arranging marketing of Agriculture/ Horticulture products to benefit growers.
4. Encourage and strengthen the functional societies to generate employments.
5. Encouraging plantation of cane, bamboo, medicinal and aromatic plants and also encourage their manufacturing and processing unit and thereby create employment avenues.
6. Organize District Cooperative Union in the districts.

~~~~~

## **CHAPTER – VI**

# **COMMUNICATIONS**

### **Introduction**

The communication system plays a vital role and is an indisputable link in all walks of life. Communication in the modern sense comprise the roadways, waterways, airways, railways, post and telegraph, Telecommunication, Radio, Wireless station and Television, Information Technology, news paper, etc. Economic development of particular areas depends to a great extent upon these means of communication. Of all these modes of communication, roads are the most universal. This is perhaps the oldest mode of communication too. Roads are described as the circulatory system of a country's activities, the foundation of commerce, and the social well-being and of a development of thought. A good network of roads is of great importance from the economic, military, administrative, cultural and social point of view.

### **Old Time Trade Routes**

From time immemorial Arunachal Pradesh has been traversed by hordes of migratory tribes who came in successive waves from the neighboring regions and settled where they are today. In course of their movement through mountain passes and hilly tracks, they opened vistas of communication with the adjoining areas. With the passage of time they established trade relations with Tibet, Bhutan and the plains of Asom as well as between themselves. The routes opened by the early traders were followed by successive generations. Some of these routes are clearly traceable even to this day. In retrospect, the ventures of these traders appear to us to be as great as those of

great pathfinders and explorers. The long-distance journey undertaken by those against many hazards, without the aid of regular road communications as transport and other facilities are admirable indeed. Their trading ventures also paved the way for cultural intercourse between groups of people living within and outside the territory now known as Arunachal Pradesh.

In those olden days, trade between the Arunachal tribes and their neighbours in Tibet and Asom as also amongst them was based on a system of barter trade.

The tribes living close to the international border with the Tibet region of China had close trade relations with that country. Across the Himalayan trade routes used by the Monpas, Nyishi (Bangnis), Galos and the Adis groups, namely Bokars, Boris, Pailibos and Ramos, Mishmis, Membas, Khambas as well as Tibetans from early times, a brisk trade continued to flourish until the transporter movement was stopped in 1962. The annual trading caravans of the Tibetan merchants from Lhasa passed through the present Tawang and West Kameng districts on their way to Asom. On this trade route there was a place called Chouna, two month's journey from Lhasa, where a mart was established. A similar corresponding mart in Asom was known as Geegunshur, four miles away from Chouna, "an annual caravan repairs from Lhasa to Chouna conducted by about 20 persons, conveying silver bullion to the amount of about one lakh rupees, and a considerable quantity of rock salt for sale to the Asom merchants at Gegunshur, to which place the latter bring rice, which is imported into Tibet from Asom in large quantities..."<sup>1</sup> The annual Udalguri fair held during the last century was attended by traders from all parts of Tibet. By the Lhasa-Udalguri trade route they came in large numbers, many of them with families. They brought their goods on hunters of sturdy ponies. The fair was also attended by the Bhutias, who came by the Doimara-Amtola-Bhairabkunda route.

There was a number of mountain Duars or passes to the north of the present Darrang and Sonitpur Districts of Asom, which led to Bhutan and the interior parts of West Kameng District. The trade between Asom and Tibet was channels and through these passes of the Kuriapara duar was the principal channel.

The trade route to Asom, which the Akas have been following for a

---

<sup>1</sup> Alexander Mackenzie, the North East Frontier of India, (reprinted, 1979), p. 15

long time, is from their village Jamiri to Bhalukpong at the foothills a point linked with Charduar in Sonitpur by road.

The Sherdukpens living mainly in the two villages of Rupa and Shergaon in the Bomdila Subdivision undertakes a winter voyage every year to Doimara at the foothills and they stay for several months to trade with the plain peoples.

In the Subansiri region there were a number of trade routes to Tibet. Some routes originated from lower Na settlements of Taksing leading several Tibetan villages. An important trade route leading from Mara in the linking area followed the course of the Tsari Chu (the Gelen River). There were two routes along the Medi and Kodup rivers which were used by the traders. Regular trade routes also existed from the Kamla and Khru valleys, of which one was from Ruba. Ruba is a Nyishi (Bangni) village situated down the confluence of the Kamla and the Tapa. There was another route along the head water of the Khru River from the village of Pisa.

#### **Internal Trade Routes**

The lower Na Kamla valley route was the most important of all internal trade routes. It was a regular track passing through Furak and Ruba to the villages of the middle Kamla valley. The traders from the Tali area followed this route to reach Taksing. This route remained open from May to September. During the winter months it was covered by snow. From the Tali area there was another route to Mara which was used during the months from April to October. It took about four days for the Soreng Lippu of the Selu and Hema valleys to reach Mara by this route. One could also reach Soreng Lippu by a route following the course of the Kojir river. This route remains opened from March to September. The people around Taliha and Sipi valley also used a route leading up to the Menga river in order to reach Gadu.

In the adjoining area now known as West Siang district, some routes used by the Galos and the Tibetans for trade between them passed through the areas of other tribes inhabiting the upper regions.

"These trading expeditions often led to inter tribes' feuds, as the people, who were living between the Galos and the Tibetans, did not want the traders to go via their country, as in that case, their trade would have sustained losses. They acted as a sort of broker between the two. This brought them a little benefit. To avoid such extra burden, the Galos used to go to Tibet by rivers and streams, unnoticed by other villagers, but were at times detected and thus trouble



ensued. Since 1947, there has been considerable retardation in such barter trades with the Tibetans"<sup>1</sup>

There existed two principal trade routes from Tibet to the Bokar and Bori countries via Gelling. A brisk trade from the north was current in the areas beyond Riga on the right bank of the river Siang and beyond Damro on the left bank of the Yamne. Below this region, the Adis came down to Aalo, Pangin or Pasighat for trade. The Adis living further below went as far as the market at Sadiya in Asom which was not only a great trade-centre, but also a meeting place of various tribes of the northeast frontier tracts. Different tracks were probably used by various groups of the Adis for their journey to and fro Sadiya to barter their goods.

The trade routes of the Pailibos across the northern border passed through the country of the Bokars. Their other trade routes led to places in the west and the south over high mountains, and along the river Siyom. Some of the trade routes were<sup>2</sup>

- 1) From Yapik to Lipo and across the Jomyi-Ego range to Herong in the Bokar area on to Lungte.
- 2) From Yapik, Irgo, Lipo, Tadogito, Yapu, Tagur across the Mobuk-Ego to Taliha in Daporijo area.
- 3) From Tato and Tagur (over the Kina-Siyam bridge) to Herong and further.
- 4) From Irgo/Yapu across the Jomyi-Ego range to Herong.
- 5) From Tato across Rutu-Ego to Doyi in Daporijo area.
- 6) From Tato/Yapik via Kaying to Doke, Gaddi, Yomsa, Yonggam, Raksap, Liromoba, Poyom and Gensi and
- 7) From Tato across Mobuk-Ego to Doyi, Moso, Singkom, Singiyom, Ebba and Ningno in Daporijo area.

The Ramos living close to the Indo-Tibetan border often visits Tibet for barter trade. They had trade relations also with the neighbouring tribes such as the Bokars, Pailibos, Tagins and Boris. They at times went up to the Liromoba village in the Galo country following the Tato-Yaptuik-Shikar route through the Bier hills.

<sup>1</sup> L.R.N. Srivastava, *the Gallongs*, (Shillong, 1962), p. 10

<sup>2</sup> *The Pailibos* (Shillong, 1979) by K. Kumar, pp. 14-15

The Boris had trade relations across the border. They had to go to a market in Tibet called Nayi Lube. Some important routes used by the Boris for trade with their near and distant neighbours are as follows:<sup>1</sup>

- 1) Gasheng – Mishing-Tuting route was used for trading with the upper Ashings, Tangams and Shimongs.
- 2) Tumbin – Kaying-Keak route was used for trade with the Galos.
- 3) Gameng – Lishing route was used for trade with the Mingyongs.
- 4) Along the left bank of Siyom they reached the Minyong area through Mega via Bogne.
- 5) Traders are known to have gone far to the south right up to Bame, Basar, Liromoba and still farther to Gusar in the Daporijo area for trade with the Galos.

As the other tribes had once trade link with Tibet, Burma and the state of Asom. Idu-Mishmi also had a trade link with them. A number of trade routes to Tibet were familiar among the elderly Idu-Mishmi. Gikala Pass, Andrale Pass, Epi Pass, Eyangpla Pass of Mathun Valley through Mipi area. Kaya Pass of Tanga valley through Malini area and Aguya pass of Dri valley were some of the exit points of the Idu-Mishmi traders in ancient time. These people used to venture for such an arduous journey along the hills and jungles primarily to meet the need of salt and some other essential commodities which were not locally available. It was not only the Idu-Mishmis but the Tibetans too used to come to this valley crossing the hills for procuring necessary items.

They traversed the mountainous terrain and reached the border areas of Tibet with articles such as 'Mishmi teeta' a herbal sheet, aconite, musk, bear skin etc. and exchanged in lieu of salt, bead necklace, copper vessels long ornamented sword, wool etc.

The Idu-Mishmi trade was just not confined to the northward direction. In the reports left by the British explorers like E.A. Rowlatt and J. Butter and others foreign explorers, it has been found that the Idu-Mishmi had also trade link with Sadiya and Saikhowa areas of Asom and Myanmar traveling through the chaukang route of present Tinsukia district in the primitive days.

---

<sup>1</sup> The Boris, (Shillong, 1979) by K. Kumar, p. 20

An important feature of their trade was that the transportation of goods was made by human themselves. As per the general norm since the ancient time man has taken help of some domestic animals such as mule, horse etc. to transport the commodities for such purpose.

An old route connecting Asom with Tibet is believed to have existed along the Lohit River in early times. There is recorded mention of two main route frequented by the Mishmi traders as well as the Tibetans runs through the Deraï (Delai) valley and connects Galai village in Zayul in Tibet near the border between India and Tibet. In the recent past the Idu Mishmis used this path for going to Galai village through the Tiding valley along the courses of Katze and Phuphu. There was another route from the Dau (Dou) valley to the upper Lohit valley, following the river of Tho Chu right from its origin runs up to the neighbouring of Kibithoo that is near the international border. This route leads to Lamai village.

A number of trade routes from the present Anjaw district to Myanmar also existed. A route connects Kibitho parallel along the river Dichu in the upper Lohit valley to the Irrawady basin in north Myanmar. Another route along Ghalum led to the Putao district of north Myanmar. A path along the Lati River led to Myanmar through the Lohit valley. This route was used by the Khamtis. There was yet another route from the Kamlang valley and Khamti area to Changkhari Dakhru, wherefrom the route followed the courses of Lam and Twang River. Formerly, the traders from the Lohit and Dibang Valleys could travel through the present Tirap district by the Chaukang route to reach some market places on their way to Myanmar.

Towards the south-west there are a number of passages descending from the Mishmi hills to the open plains of Asom. Although it is difficult to make a journey to Asom during the rains, for the streams and rivers become turbulent and impassable, it is easy for the hill people to come down to the plains in the winter. From early times the Mishmis, Khamtis and the Singphos have trade relations with Asom. The market at Sadiya and Saikhowa were visited regularly during the winter by the tribesmen inhabiting the Mishmis hills. Some of them took a month or more to reach the markets in the plains traversing dense forests and ever since their early settlement in India. The old time trade routes descending from the hills into the plains, of Asom passed through dense forests, passes and rivers. The Khamtis crossed the rivers by boat. They formed caravans and journeyed in the direction of Asom markets following one of these routes.

A good number of old track and paths connected the district of Tirap and Changlang with the plains of Asom and the important marts of the adjoining areas on the other side of the border. These tracks and paths also served the purpose of trade routes, and the articles for trade were carried to different marts by porters. Due to the contiguity of this area with Myanmar, the people had close trade relations across the border. They went to the marts in Myanmar through the passes traversing the Patkai ranges. There are a number of passes across the Patkai through which a trade routes connecting the district with the markets in Myanmar. During the Japanese invasion of Myanmar, the refugees, who came to India through this district, followed these routes. But these tracks and paths were not regular means of a standard road communication; they could not be used in all weathers in the hazardous mountainous terrains.

#### **Communication during the British Days**

Very limited endeavours were made by the British to develop road communications in this region. There were only two motorable roads, toward the Lohit valley road from Sadiya to Denning constructed in 1912 and the Stillwell road, about 56 km in length, constructed around 1943, in the Tirap-Myanmar border area during the Second World War for movement of troops and supplies of necessary items. The Lohit valley road was largely damaged in the great earthquake of 1950.

Besides these two roads, old path and tracks were the only means of surface communications when the British annexed Assam in the first half of the nineteenth century. Along these paths and tracks the people moved from place to place for inter-tribal communications, trade and hunting or fishing expeditions. But, not all these paths could be used throughout the year, for traces of many routes were obliterated in the rainy season.

"The British Officers followed the existing routes for tours, expeditions and survey operations. Some of the difficult routes were used as mule paths and porter tracks. In their attempt to maintain law and order, the British Officers sometimes went deep into the interior and remote areas and in the process they discovered unknown paths, the British records contain valuable accounts of the early explorers and writer, who obtained valuable information about the country and the people as well as the means of transport and communications in those days. Indeed their daring explorations paved the way for future development"<sup>1</sup>

<sup>1</sup> For readers inquisitive to know the details of old routes, two books are suggested -1) Captain St. John F. Michell, *the North-east Frontier of India* (Delhi, reprinted 19730 and 2) Verrier Elwin (ed), *India's North East Frontier in the nineteenth Century* (London, 1962).

There was hardly any development of the existing communication or construction of new roads during the British rule. As the government endeavours were mainly directed towards exercising a political control over the area, the questions of law and order engaged most of their attention. But, the later British records dating particularly from the second decade of the present century are indicative of a closer contact with the tribal people, a better appreciation of their problems, the need for development of road communications and medical aids. The Chief Commissioner of Asom, it may be noted, wrote in 1914 that 'this frontier awaited a more advanced from the government for proper development'. The annual administration reports for 1924-25 and 1927-28, Captain Nevill, Political Officer, stressed the need for construction of a road in the Aka Hills and stated, "Good roads exist from Jamiri to Rupa and Shergoan, easy for ponies... The road to Jamiri is now under construction."<sup>1</sup>

#### **Development of Transport and Communication after Independence**

As already stated, there was hardly any motorable road and regular transport and communication in this state prior to 1947. 'The traffic was restricted to known or newly explored route, porter tracks, passes and bridle paths. The movement of goods was either by porters or pack-animals.' After independence it was keenly felt that no all-round development of this mountainous areas and the welfare of its people by breaking the barriers of their age-old isolation was possible without constructing a network of trunk and lateral roads and bridges to link the remote interior areas with the district head-quarter to the plains of Asom and the way with the rest of the country. Such roads were also essential for an effective and efficient administration. With the expansion of administrative activities, the need for transportation of goods to the interior areas also assumed a great importance. The magnitude of the problems of supply and transport in a mountainous terrain where great distances were traversed on foot can be imagined. To meet these problems, food and other necessities were supplied to the government servants by means of air-drops. A system of portage and animal transport for carrying of load and provisions was also introduced. But, it was not possible to meet the growing requirements of the administration and develop the area without road communications. Air dropping of supplies besides being extremely expensive had its limitation. It was, therefore, obvious that the problems could be solved only by

<sup>1</sup> Sir Robert Reid, *History of the Frontier Areas Bordering on Assam* (Delhi, Reprinted 1983), pp. 191- 293.

constructing roads, a fact which received increasing emphasis under the development programmes taken by the government in different phases since independence. As a matter of fact, high priority has been laid on roads in all the Five Year Plans of the territory since 1951.

But construction of roads in this rugged, terrain having primeval forests, torrential rivers and heavy rainfall was easier said than done. To cover a distance of few kilometers may mean here crossing over an altitudinal variation of hundreds of metres. Indeed, it was extremely difficult to construct roads through the formidable hills and mountains and make bridges over turbulent rivers. The existing tracks and bridges were often washed away during the monsoon when the rivers are in spate and river-banks are eroded. It was therefore, a great challenge to the engineers to implement the scheme of road construction. Besides this, the available man power and material resources were far from being adequate for the purpose. At the outset endeavours were, therefore, made to construct bridle paths and porter tracks.

An infrastructure of communications is vital for development of any area. Therefore, despite great difficulties and natural obstacles, the task of road building was undertaken in the fifties with great zeal and determination. A remarkable network of bridle-paths and foot-tracts over a wide area of the interior was constructed. Considerable progress was also achieved in building of major roads. At this time Dr Elwin made an observation that the road to Bomdila, the headquarters of the present West Kameng district, at a height of 9,000 feet, would, when complete, be one of the great roads of India, a marvel of engineering skill.

Late Dr. D. Ering, the then Union Deputy Minister, who was from Siang, wrote on this phase of road construction in the erstwhile NEFA as follows:

“Road building in NEFA has made commendable progress in the last six years. All the five district headquarters are connected by black-top roads, so also three sub-divisional headquarters. One is connected presently by a rail-cum-road link with Assam on the north bank of Brahmaputra. A number of lateral roads have been completed and more are under construction. A lion's share of this contribution to NEFA is of the Border Roads Organization (BRO). The CPWD too with their small resources has contributed to the development of roads. They have very rightly given priority to road building over building construction in their plan of work in NEFA. Communication with the rest of the

country will go a long way in the development of this strategic border area, where the pace of development in the present situation has to be fast enough.”<sup>1</sup>

A major break-through in the work for connecting the remote and interior areas by construction of good roads was achieved with the efforts of the Border Road Development Board (BRDB). The construction of 608 km road networks along the Indo-China border straightly from Ladakh to Diphu-La in Arunachal Pradesh is under consideration of India.

In recent times Arunachal Pradesh has an excellent network of regular motorable roads with better developed new road which connects its entire district headquarters and to all the Additional Deputy Commissioner, Sub-Divisional and Circle Headquarters and many important and remote places. For the people of Mechuka in West Siang district, where the road communication was a distant dream has also been connected with all weather road from Aalo. A good number of major bridges have also come up. As a result of the establishment of link-road with the plains of Asom, almost the entire area is now easily accessible. Itanagar, the state capital, is on the National Highway (NH No. 52 A) which is a lateral road from Banderdewa diverted from the National Highway No. 52 in Asom.

‘To improve the connectivity to rural areas, in all 1,502 KM road has been constructed benefiting a total of 294 villages under the Central Sponsor Scheme called Pradhan Mantri Gram Sadak Yojna (PMGSY)’<sup>2</sup>.

The historic announcement by the Prime Minister Dr. Manmohan Singh on 31st January 2008 at Indira Gandhi Park, Itanagar, on his two days visit to Arunachal Pradesh ‘for the development of 1,840 Km long two-lane Trans-Arunachal Pradesh highway running right through the middle of the state to connect all the districts. The Highway will be constructed on a priority basis at a cost of Rs. 5,500 crores and will pass through important towns of Nechipu, Bomdila, Seppa, Sagalee, Ziro, Daporijo, Aalo, Pasighat, Roing, Tezu, Mahadevpur, Namchik, Changlang, Khonsa and Kanubari near the Nagaland border’<sup>3</sup>.

In pursuance to the announcement of the Trans-Arunachal Highway for Arunachal Pradesh by Prime Minister Dr. Manmohan Singh at Indira Gandhi

<sup>1</sup> D.Ering, the North-East Frontier Agency, published in Tribal Situation in India edited by K. Suresh Singh, (Simla, 1972), pp. 67-68

<sup>2</sup> Arunachal Pradesh on the move. Published by DIPRP, No IPR (PUB) 102/3000/2008.

<sup>3</sup> Arunachal Front, dated 1st February 2008, front page.

Park Itanagar on 31st January 2008, the centre has announced new National Highway in Arunachal Pradesh vide Gazette of India No. 668 which is shown in the table below.

	New National Highway No.	Description
1	NH No. 229	Tawang-Nechipu-Seppa-Sagalee-Ziro-Daporijo-Aalo-Pasighat
2	NH No. 52B	Mahadevpur-Namchik-Manmao-Changlang-Khonsa-Longding-Kanubari-to terminate near Dibrugarh (Asom)
3	Extension of NH No. 37	Saikhowaghat (Asom) to join NH-52 near Roing.

At the initial stage Arunachal Pradesh Public Works Department (APPWD) constructed the road within Arunachal Pradesh. Gradually with the demand of road in quality and quantity the road construction agencies like Border Road Task Force's (BRTF) Project Vartak and Project Udayak also started to constructing the major road in the state. The Arunachal Pradesh Rural Works Department (APRWD) and Forest Department has also taken step in construction of the rural area like Link Road and village road.

The total length of roads in Arunachal Pradesh as on 31st March 2006 is 14193.257 KMs including the National Highway and District roads constructed by the APPWD, BRTF (Project Vartak and Udayak ), RWD and Forest department and the percentage of surface roads and road density (200), Distance from bus stop (percentage of villages) -1991, Road connectivity status of villages as in 1997, Road connectivity status of villages on the basis of population-1997, Percentage of villages connected by road, Road connectivity status of different circles -1997 and Road density of different blocks (1999) in Arunachal Pradesh is given below in tables A(1), A(2), A(3), A(4), A(5), A(6), A(7), A(8), A(9), A(10), A(11), A(12) & A(13) for details regarding the road development in the State since independence.



**DISTRICT WISE LENGTH OF ROADS IN ARUNACHAL  
PRADESH AS ON 31-03-2006**

**Table A (1)**

Construction Agency	National Highway	District Roads				Station colony	Total length of roads
		Black topped	Water bound macadam	Graveled	Un-surfaced		
1	2	3	4	5	6	7	8
APPWD	32.522	2081.122	1693.691	-	2916.805	-	6724.140
BRTF Project vartak	51.870	2329.970	203.180	10.000	246.310	-	2841.330
BRTF Project Udayak	-	1138.626	-	-	30.174	-	1168.800
RWD	-	59.050	284.730	-	2002.550	-	2346.330
Forest	-	44.773	13.554	1007.424	45.830	1.076	1112.657
Total for A.P	84.392	5653.541	2195.155	1017.424	5241.669	1.076	14193.257

*Source: Statistical Abstract of Arunachal Pradesh 2006, published by Directorate of Economics & statistics, p-81*

**DISTRICTWISE LENGTH OF ROADS UNDER APPWD IN  
ARUNACHAL PRADESH AS ON 31-03-2006 IS AS UNDER**

**Table-A(2)**

**(in Kms)**

District	Geography area (in sq.km.)	National Highway	Type of District Road			Total length of roads
			Black topped	Water bound macadam	Un-surfaced	
1	2	3	4	5	6	7
Tawang	2172	-	36.667	37.342	66.750	140.759
W/Kameng	7422	-	140.713	137.720	188.662	467.095
E/Kameng	4134	-	123.450	181.430	131.420	436.300
P/Pare	2875	-	360.675	103.399	89.694	553.768
L/subansiri	1317	-	67.728	70.482	243.736	381.946
K/Kumey	8818	-	23.500	4.500	96.260	124.260
U/subansiri	7032	-	37.550	135.617	413.302	586.469
W/Siang	7643	-	117.580	185.370	453.434	756.384
E/Siang	4687	-	258.240	123.327	269.552	651.119
U/Siang	6188	-	85.025	105.640	232.539	423.204
D/Valley & Lower D/Valley	13029	-	101.095	90.095	162.540	353.730

Lohit + Anjaw	11402	-	235.617	83.663	105.034	424.314
Changlang	4663	32.522	320.877	228.593	247.120	829.112
Tirap	2361	-	172.405	206.513	216.762	595.680
Total for A.P.	83743	32.522	2081.122	1693.691	2916.805	6724.140

Source: Statistical Abstract of Arunachal Pradesh 2006, published by Directorate of economics & statistics, p-76

**DISTRICTWISE LENGTH OF ROADS UNDER PROJECT VARTAK  
IN ARUNACHAL PRADESH AS ON 31-03-2005 IS AS UNDER**

Table A(3)

(in kms)

District	National Highway	Type of roads				Station Colony	Total length of roads (in km)
		Black topped	Black topped	Water bound macadam	Un-surfaced		
1	2	3	4	5	6	7	8
Tawang	-	995.98	140.13	-	85.22	-	1221.33
W/Kameng	-	-	-	-	-	-	-
E/Kameng	-	-	-	-	-	-	51.87
P/Pare	51.87	293.00	11.00	7.00	5.00	-	316.00
L/subansiri	-	52.00	9.00	3.00	34.00	-	98.00
K/Kumey	-	269.54	-	-	46.66	-	316.20
U/subansiri	-	469.65	43.05	-	-	-	588.13
W/Siang	-	-	-	-	-	-	-
E/Siang	-	249.80	-	-	-	-	249.80
U/Siang	-	-	-	-	-	-	-
D/Valley & Lower D/Valley	-	-	-	-	-	-	-
Lohit + Anjaw	-	-	-	-	-	-	-
Changlang	-	-	-	-	-	-	-
Tirap	-	-	-	-	-	-	-
Total for A.P.	51.87	2329.97	203.18	10.00	246.31	-	2841.33

Source: Statistical Abstract of Arunachal Pradesh 2006, published by Directorate of economics & statistics, p-77

**DISTRICTWISE LENGTH OF ROADS UNDER PROJECT UDAYAK  
IN ARUNACHAL PRADESH AS ON 31-03-2006 IS AS UNDER**

**Table A(4)**

**(in kms)**

District	National Highway	District roads				Station Colony	Total length of roads (in km)	Remarks
		Black topped	Water bound macadam	Graveled	Un-surfaced			
1	2	3	4	5	6	7	8	9
Tawang	-	-	-	-	-	-	-	Lohit Dist-Tezu
W/Kameng	-	-	-	-	-	-	-	
E/Kameng	-	-	-	-	-	-	-	Anjaw-Hayuliang
P/Pare	-	-	-	-	-	-	-	East Siang-
L/subansiri	-	-	-	-	-	-	-	Ruksin, Sile,
K/Kumey	-	-	-	-	-	-	-	Pasighat, Aying,
U/subansiri	-	-	-	-	-	-	-	Mebo, Selluk,
W/Siang	-	-	-	-	-	-	-	Aholi, Dambuk.
E/Siang	-	99.283	-	-	3.124	-	102.407	
U/Siang	-	-	-	-	-	-	-	
D/Valley	-	167.410	-	-	-	-	-167.410	Irap- Tupi,
L Dibang Valley	-	187.700	-	-	-	-	187.700	Longo. Kappu,
Lohit	-	255.670	-	-	6.070	-	-261.740	Tissa, Sinua,
Anjaw	-	217.410	-	-	20.980	-	238.390	Longding, Nussa,
Changlang	-	-	-	-	-	-	-	Mingchong,
Tirap	-	211.153	-	-	-	-	-211.153	Longpong,
Total for A.P.	-	1138.626	-	-	30.174	-	1168.800	Bonia, Wakka,
								Nginu, Kanu,
								Pongchua,
								Konsa, Trinsa,
								Pongkong

*Source: Statistical Abstract of Arunachal Pradesh 2006, published by Directorate of economics & statistics, p-78*

**DISTRICTWISE LENGTH OF ROADS UNDER RURAL WORKS  
DEPARTMENT IN ARUNACHAL PRADESH AS ON 31-03-2006 IS  
AS UNDER**

**Table-A(5)**

**(in km)**

District	National Highway	Type of roads				Station Colony	Total length of roads (in km)
		Black topped	Water bound macadam	Graveled	Un-surfaced		
1	2	3	4	5	6	7	8
Tawang	-	-	11.98	-	102.22	-	114.20
W/Kameng	-	5.03	24.68	-	128.46	-	158.17
E/Kameng	-	0.50	11.10	-	177.52	-	189.12
P/Pare	-	9.48	8.70	-	131.10	-	149.28
L/subansiri	-	-	7.14	-	123.21	-	130.35
K/Kumey	-	-	-	-	1.00	-	1.00

U/subansiri	-	1.00	7.09	-	157.67	-	165.76
W/Siang	-	1.05	11.27	-	272.22	-	284.54
E/Siang	-	0.50	46.62	-	133.97	-	181.09
U/Siang	-	4.61	8.01	-	118.13	-	130.75
D/Valley	-	16.78	41.70	-	94.76	-	153.24
L/Debang Valley	-	-	-	-	-	-	-
Lohit	-	13.10	-	-	189.64	-	259.58
Anjaw	-	-	56.84	-	-	-	-
Changlang	-	6.65	41.75	-	197.60	-	246.00
Tirap	-	0.35	7.85	-	175.05	-	183.25
Total for A.P.	-	59.05	284.73	-	2002.55	-	2346.30

Source: Statistical Abstract of Arunachal Pradesh 2006, publish by Directorate of economics & statistics, p-80

**DISTRICTWISE LENGTH OF ROADS UNDER FOREST IN ARUNACHAL PRADESH AS ON 31-03-2006 is as under:**

**Table-A(6)**

(in kms)

District	National Highway	Type of roads				Station Colony	Total length of roads (in km)
		Black topped	Water bound macadam	Graveled	Un-surfaced		
1	2	3	4	5	6	7	8
Tawang	-	0.650	-	-	-	-	0.650
W/Kameng	-	1.884	0.060	265.854	-	-	267.798
E/Kameng	-	0.854	-	13.400	-	0.500	14.754
P/Pare	-	3.861	-	58.768	-	0.161	62.790
L/subansiri	-	6.010	-	6.990	-	-	13.000
K/Kumey	-	-	-	-	-	-	-
U/subansiri	-	-	-	9.550	-	-	9.550
W/Siang	-	20.500	0.100	54.090	-	-0.125	74.815
E/Siang	-	0.300	--	73.00	20.000	-	93.815
U/Siang	-	3.248	0.710	16.588	--	-	93.300
D/Valley	-	-	-	0.020	--	-	20.546
L/D/Valley	-	2.538	-	130.874	5.830	-	0.020
Lohit + Anjaw	-	3.020	11.100	14.100	-	-	28.220
Changlang	-	0.980	0.265	229.180	20.000	0.290	250.715
Tirap	-	0.928	1.319	135.010	-	-	137.257
Total for A.P.	-	44.773	13.554	1007.424	45.830	1.076	1112.857

Source: Statistical Abstract of Arunachal Pradesh 2006, published by Directorate of economics & statistics, p-79

Percentage of surface roads and road density (2001) is as under

Table A(7)

District/state	Percentage of surfaced road	Road density (km per 100 sq km)
Tawang	30.56	48.75
West Kameng	44.05	23.23
East kameng	52.69	19.83
Papum Pare	58.70	35.48
Lower Subansirsi	38.25	12.82
Upper Subansiri	41.43	14.32
West Siang	46.06	17.51
Upper Siang	22.18	10.07
East Siang	67.04	30.15
DibangValley (old)	62.83	6.32
Lohit	65.50	9.63
Changlang	59.59	21.99
Tirap	51.14	54.83
Arunachal Pradesh	49.63	17.36

Source: Arunachal Pradesh Human Development Report 2005, p 279

Distance from bus stop (percentage of villages) (1991)

Table A(8)

District/state	< 0 km	0-5 km	5-10 km	> 10 km
Tawang	6.75	25.15	22.09	46.01
West Kameng	17.65	11.76	8.09	62.50
East Kameng	9.46	10.18	8.36	72.00
Papum Pare	6.08	16.35	17.49	60.08
Lower Subansirsi	44.03	2.69	1.18	52.10
Upper Subansiri	6.17	4.69	8.64	80.50
West Siang	9.56	12.99	7.35	70.10

Upper Siang	NA	NA	NA	NA
East Siang	22.55	12.27	11.76	52.94
Dibang Valley (old)	16.39	10.50	7.98	65.13
Lohit	9.65	15.81	6.78	67.76
Changlang	11.58	11.58	13.33	54.74
Tirap	28.21	7.69	8.97	55.13
Arunachal Pradesh	16.96	11.46	8.72	62.86

Source: *Arunachal Pradesh Human Development Report 2005, p 280*

The above table A(8) states that more than 62% of villages in Arunachal Pradesh are located at the distance of more than 10 km. This fact is due to the fact that most of the bus stops are located at township areas.

Road connectivity status of villages as in 1997 as follows:

**Table A(9)**

Districts	% of villages connected	% of villages not connected
Tawang	25.66	74.34
West Kameng	46.97	52.03
East kameng	26.52	73.48
Papum Pare	43.02	56.98
Lower Subansiri	33.17	66.83
Upper Subansiri	28.18	71.82
West Siang	45.72	54.28
Upper Siang	56.00	44.00
East Siang	73.68	26.32
Lower Dibang Valley	66.96	33.04
Dibang Valley (new)	23.58	76.42
Kurung Kumey	7.47	92.53
Lohit	40.70	59.30

Changlang	59.57	40.43
Tirap	57.23	42.43
Arunachal Pradesh	38.53	61.47

Source: Arunachal Pradesh Human Development Report 2005, p 281

The above table A(9) shows the status of road connectivity to the villages in Arunachal Pradesh it is imperative that more emphasis is required in this sector as most of the villages in the state are still not connected by road. The East Siang has 73.68% of its villages connected by a road which is the highest in the state. The Kurung Kumey district lacks connectivity which accounts for 92.53% of its villages still not been connected by road.

#### Road connectivity status of villages on the basis of population-1997

Table A(10)

Districts	% of total rural population of districts connected by Pucca Road	% of total rural population of districts connected by Kutcha road	% of total population of district not connected by any road
Tawang	20.10	27.78	52.12
West Kameng	49.13	29.89	20.98
East kameng	27.19	20.28	52.53
Papum Pare	64.90	16.59	18.51
Lower Subansiri	78.37	2.68	18.95
Upper Subansiri	38.19	19.57	42.24
West Siang	45.77	30.33	23.90
Upper Siang	4.66	81.51	13.83
East Siang	47.22	44.24	8.54
Lower Dibang Valley	66.21	27.11	6.68
Dibang Valley (New)	0.16	62.26	37.58
Kurung Kumey	1.35	21.89	76.76
Lohit	60.24	23.92	15.84
Changlang	34.26	32.79	32.95
Tirap	46.67	27.79	24.54
Arunachal Pradesh	46.51	26.93	26.56

Source: Arunachal Pradesh Human Development Report 2005, p 282

**Road connectivity at village level -1997**  
**(Percentage of villages connected by road)**

**Table A(11)**

Districts	Village with population less than 500	Village with population between 500 to 1000	Village with population above 1000
Tawang	23.85	66.67	100.00
West Kameng	87.24	98.80	100.00
East kameng	25.19	83.33	100.00
Papum Pare	41.01	100.00	100.00
Lower Subansirsi	27.29	100.00	100.00
Upper Subansiri	27.11	100.00	100.00
West Siang	42.67	86.96	100.00
Upper Siang	41.67	90.00	100.00
East Siang	83.52	96.29	100.00
Lower DibangValley	16.61	100.00	100.00
Dibang Valley (New)	22.95	0.00	100.00
Kurung Kumey	6.10	100.00	100.00
Lohit	36.10	83.21	92.86
Changlang	57.33	80.77	58.83
Tirap	52.38	66.66	68.18
Arunachal Pradesh	34.98	87.64	93.96

*Source: Arunachal Pradesh Human Development Report 2005, p 283*



## Road connectivity status of different circles (1997)

Table A(12)

Status of Road	Areas
<b>Very High (80-100%)</b>	1. Bhalukpong (West kameng), 2. Sejosa (East Kameng), 3. Itanagar (Papum Pare), 4. Naharlagun (Papum Pare), 5. Geku (Upper Siang), 6. Jengging (Upper Siang), 7. Mariyang (Upper Siang), 8. Bilat (East Siang), 9. Mebo (East Siang), 10. Nari (East (East Siang), 11. Pasighat (East Siang), 12. Ruksin (East Siang), 13. Basar (West Siang), 14. Tirbin (West Siang), 15. Dambuk (Dibang Valley), 16. Roing (Dibang Valley), 17. Tezu (Lohit), 18. Namsai (Lohit), 19. Sunpura (Lohit), 20. Bordumsa (Changlang), 21. Changlang (Changlang), 22. Longding (Tirap).
<b>High (50-80%)</b>	1. Mukto (Tawang), 2. Kalaktang (West Kameng), 3. Trizino (West Kameng), 4. Doimukh (Papum Pare), 5. Sagalee (Papum Pare), 6. Baririjo (Upper Subansiri), 7. Daporijo (Upper Subansiri), 8. Aalo (West Siang), 9. Gensi (West Siang), 10. Tato (West Siang), 11. Yomcha (West Siang), 12. Wakro (Lohit), 13. Mahadevpur (Lohit), 14. Kibithoo (Anjaw), 15. Diyun (Changlang), 16. Miao (Changlang), 17. Kanubari (Tirap), 18. Khonsa (Tirap), 19. Namsang (Tirap).
<b>Medium (30-50%)</b>	1. Tawang (Tawang), 2. Dirang (West Kameng), 3. Seppa (East Kameng), 4. Balijan (Papum Pare), 5. Raga (Lower Subansiri), 6. Zero (Lower Subansiri), 7. Dumptorijo (Upper Subansiri), 8. Taliha (Upper Subansiri), 9. Boleng (East Siang), 10. Pangin (East Siang), 11. Darak (West Siang), 12. Kaying (West Siang), 13. Likabali (West Siang), 14. Payum (West Siang), 15. Rumgong (West Siang), 16. Hunli (Dibang Valley), 17. Anini (Dibang Valley), 18. Chongkham (Lohit), 19. Walong (Anjaw), 20. Khimiyong (Changlang), 21. Manmao (Changlang), 22. Nampong (Changlang), 23. Lazu (Tirap), 24. Pongchau (Tirap).
<b>Low (10-30%)</b>	1. Lumla (Tawang), 2. Nafra (West kameng), 3. Bameng (East Siang), 4. Chayantajo (East Kameng), 5. Khenowa (East Kameng), 6. Pake-Kesang (East Kameng), 7. Pipudipu (East Kameng), 8. Kimin (Papum Pare), 9. Giba (Upper Subansiri), 10. Nacho (Upper Subansiri), 11. Palin (Lower Subansiri), 12. Sangram (Lower Subansiri), 13. Palling (Upper Siang), 14. Koyu (East Siang), 15. Mechuka (West Siang), 16. Desali (Dibang Valley), 17. Etalin (Dibang Valley), 18. Konoru (Dibang Valley), 19. Hayuliang (Anjaw), 20. Pumao (Tirap), 21. Wakka (Tirap).
<b>Very low (Below - 10%)</b>	1. Thingbu (Tawang), 2. Lada (East Kameng), 3. Mengio (Papum Pare), 4. Limeking (Upper Subansiri), 5. Siyum (Upper Subansiri), 6. Taksing (Upper Subansiri), 7. Chambang (Lower Subansiri), 8. Damin (Lower Subansiri), 9. Koloriang (Lower Subansiri), 10. Nyapin (Lower Subansiri), 11. Sarli (Lower Subansiri), 12. Tali (Lower Subansiri), 13. Gelling (Upper Siang), 14. Singa (Upper Siang), 15. Liromoba (West Siang), 16. Monigong (West Siang), 17. Anelih (Dibang Valley), 18. Mipi (Dibang Valley), 19. Changlagam (Lohit), 20. Goliang (Lohit).

Source : Arunachal Pradesh Human development Report 2005, p 284

**Road density of different blocks (1999)****Table A(13)**

Density of road	Areas
<b>Very High (More than 100km)</b>	1. Tawang (Tawang)
<b>High (50-100km)</b>	1. Niauxa (Tirap)
<b>Medium (30-50km)</b>	1. Lumla (Tawang), 2. Aalo (West Siang), 3. Kaying-Payum (West Siang), 4. Dirang (West Kameng), 5. Kalatang (West Kameng), 6. Daporijo (Upper Subansiri), 7. Taliha (Upper Subansiri), 8. Liromoba (West Siang), 9. Mebo (East Siang), 10. Ramle-Banggo (East-Siang), 11. Namsang (Tirap).
<b>Low (10-30km)</b>	1. Mukto Tawang, 2. Nafra-Buragaon (West Kameng), 3. Seppa (East Kameng), 4. Pake-Kesang (East Kameng), 5. Doimukh-Kimin (Papum Pare), 6. Sgalee (Papum Pare), 7. Ziro (Lower Subansiri), 8. Yachuli (Lower Subansiri), 9. Palin (Lower Subansiri), 10. Nyapin (Lower Subansiri), 11. Rungong (West Siang), 12. Basar (West Siang), 13. Gensi (West Siang), 14. Pasighat (East Siang), 15. Pangin-Boleng (East-Siang), 16. Mariyang (Upper Siang), 17. Yingkiong (Upper Siang), 18. Hunli-Kronli (Dibang Valley), 19. Roing-Dambuk (Dibang Valley), 20. Tezu (Lohit), 21. Namsai (Lohit), 22. Changlang (Changlang), 23. Nampong-Manmao (Changlang), 24. Khagam-Miao (Changlang), 25. Bordumsa-Diyun (Changlang).
<b>Very Low (below 10 km)</b>	1. Bameng (E/Kameng), 2. Chayangtajo (E/Kameng), 3. Chambang (Lower Subansiri), 4. Koloriang (Lower Subansiri), 5. Damin (Lower Subansiri), 6. Tali (Lower Subansiri), 7. Raga (Lower Subansiri), 8. Giba (Upper Subansiri), 9. Dumporijo (Upper Subansiri), 10. Nacho-Siyum (Upper Subaniri), 11. Mechuka (West Siang), 12. Jengging (Upper Siang), 13. Tuting (Upper Siang), 14. Anini-Italin (Dibang Valley), 15. Hayuliang (Lohit), 16. Hawai (Anjaw), 17. Wakro (Lohit), 18. Pongchau-Wakka (Tirap).

Source: *Arunachal Pradesh Human Development Report 2005*, p 285

**Vehicles and Conveyances**

Pack-animal, such as mules and horses, are used in some parts of this mountainous region for transport. In the Tawang and West Kameng districts some breeds of Yak also serve as animal transport in addition to mules. The number of such transport is, however, very limited and localized. Pony-cart, bullock or buffalo-cart is not in use due to inexpitable hilly terrain.

Bicycle is commonly used on the flat patches of land, particularly in the town. It is becoming increasingly popular among the students, government employees, shopkeepers working class and others in their daily life. Of late, scooter, motor cycles and cars has caught the imagination of the people and is

growing popularly in the urban areas.

The use of automobiles is steadily increasing, small cars of various manufacturing companies like of Tata, Maruti Suzuki, Mahindra, Hyundai etc. are used for personal, official and commercial purposes. People in this part of the country are using cars not as a luxury but as a necessity for its rugged topography which is un-conducive for plying of non-fuel conveyance. The total number of the vehicles of all types registered in the state during 2003-2004 was 5703 (excluding Dibang Valley) as against 3586 vehicles registered during 1999-2000 showing an increase of 55 per cent over years. Among the vehicles registered, two wheelers account for 72.5% followed by Light Motor Vehicles. The total number of vehicles registered during 2003-2004 is given below in the table B (1). Most of these vehicles belong to the government. There is no regular taxi service except a few taxi-cabs available in the capital complex and others urban areas. The Arunachal Pradesh State Transport Corporation, formed in 1975, runs regular bus services on 148 routes (as in 2003-04) with a fleet strength of 236 buses. Besides this, buses belonging to the Anchal Samitis, co-operative Societies and private buses provide passenger buses and goods services on various routes. In pursuance of the reciprocal transport agreement concluded between the Government of Arunachal Pradesh and that of Asom and Meghalaya for inter-state transports ply across these neighboring states. Apart from the state transport, some private bus services of Blue Hill, Network, Baba Shivam, Green Valley, SylvanDe, Air Bus etc. are providing regular inter-state services on some important trunk route between Meghalaya, Asom, Nagaland and Arunachal Pradesh.

**District-wise registration of motor vehicles in A.P. during the year 2003-2004.**

**Table B(1)**

Districts	Motor cycles/scooter /moped etc	Auto rickshaw	Cars/ jeeps/ Gypsy/ van/ Tata sumo etc	Taxis	Buses	Goods Vehicles	Tractors	Road rollers	Fire engine	Other vehicles	Grand total
1	2	3	4	5	6	7	8	9	10	11	12
Tawang	26	-	29	26	-	4	-	-	-	-	85
West Kameng	165	-	109	32	2	44	1	1	1	-	355
East Kameng	61	7	35	-	-	2	1	1	-	-	106
Papum Pare	1816	55	253	-	37	104	6	6	-	-	2273
Lower Subansiri	154	6	99	-	5	20	1	1	-	-	285
Kurung Kumey	-	-	-	-	-	-	-	-	-	-	-
Upper Subansiri	90	2	43	-	5	-	1	1	-	-	141
West Siang	434	13	166	-	1	39	17	17	-	1	672
East Siang	451	8	78	17	5	4	9	9	-	-	572
Upper Siang	84	6	8	-	1	-	4	4	-	-	103
Dibang Valley	-	-	-	-	-	-	-	-	-	-	-
L/Dibang Valley	144	20	35	1	2	-	8	8	-	8	218
Lohit	428	20	77	-	8	10	13	13	-	2	548
Anjaw	-	-	-	-	-	-	-	-	-	-	-
Changlang	141	5	44	-	-	7	-	-	-	-	197
Tirap	113	1	25	-	1	6	-	-	-	2	148
Arunachal Pradesh	4107	133	1001	76	67	240	61	04	01	13	5703

Source: Statistical abstract of Arunachal Pradesh 2003-04, p.86

The registration of the motor vehicles in Arunachal Pradesh as shown in the table B-1 above indicates that the highest number of registration of vehicles in the year 2003-2004 was recorded at 2273 done in Papum Pare district, of Itanagar, the capital of Arunachal Pradesh whereas the lowest number of registration was recorded during that year in Tawang district where only 85 numbers have been recorded.

### **Waterways**

Arunachal Pradesh is intersected by countless rivers descending from high hills and mountains. Most of these rivers are not navigable for the greater part of their course because of innumerable rapids and falls.

Ferry services are provided at some place. Some of which are state managed and others privately owned. Pasighat, the headquarters of the East Siang district, is on the right bank of the Siang river, which is crossable by ferries in this area. Ferry service is available in Dholaghat (near Saikhowa in Asom to Sadiya en route to Roing and Tezu). Ferry-boats are also made available at Digaru ghat (10 km ahead of Tezu) during summer season, when the river is at its spate. Digaru river is also known as Pagla river (mad river) for it rises un-proportionately during summer causing massive floods in the lower ridge.

With the opening up of bridges over Noa-Dihing river in Namsai and Parsuramkund Bridge over Lohit river near Wakro the surface communication to Tezu in Lohit and Anjaw district has improved a lot. Earlier, Tezu – the district headquarters of Lohit – remains always cut off for at least six months in a year due to absence of bridges over Lohit river. The incidences of loss of human lives in boat capsize which was a regular affair during summer season in Noa-Dihing and Digaru-Lohit-Kamlang River has become a matter of past.

### **Transport by Air**

With the extension of regular administration to the remote and inaccessible part of the region, the question of supplying essential commodities to the government employees stationed at far-flung outposts assumed more and more importance. In the absence of road communication, recourse was taken to air dropping of supplies. For this purpose, some dropping zones were selected, and from the fifties onwards a number of landing ground or airstrips were built. At the initial stage, transportation of goods by air was carried out by the Kalinga Airlines according to an agreement. The aircrafts operated by

them were also utilized at times for movement of a VVIP, VIP and officials. But, as this restricted air communication was quite inadequate to meet the requirements of the increasing administrative and developmental activities, it became imperative that the system of air transport should be improved so that besides supply of foodstuff it might be capable of carrying passengers, medicines, mail and amenities of life. Under the five year plans from 1961, existing airstrips have been improved and a number of new airstrips constructed. The state government introduced passenger flight services by a 9 seater from December 1995, under 15% subsidy scheme of Ministry of Home Affairs, Government of India. In view of increasing demand of public, the State Government acquired another helicopter of MI-172 type (23 seater) of Pawan Hans Helicopter Ltd. in September 2002. Currently Jagson Airlines Service, Dauphin PHHL Service is extending air service through helicopter in various locations of the state. The MI-17 Helicopters of Indian Air Force has been supplying ration items, in the remote sub-division and circle headquarters which are not yet connected with road transportation. Helicopters of Indian Air Force also help during rescues operation in the event of natural calamity and other emergent need of the state.

The flying condition of this hilly sector is very difficult due to high and low mountain ranges which are covered by mists and low clouds. Due to this reason, some locations are connected by the flight service during the winter season only. Further, some locations are connected during monsoon season only.

The helicopter service also extends services on emergency situations like lifting of stranded passengers due to disruption of road communication, lifting of VVIP's, VIP's etc. At present there are 85 helipads and 11 ALGs for transportation of men and material by Pawan Hans and Jagson helicopter services.

Flight schedule and fare realized is shown below in the table C(1) & C(2).

# **ARUNACHAL HELICOPTER FLIGHT NON-SCHEDULE OPERATION 31-01-2008**

Table C(1)

Day	DAUPHIN PPHL					MI-172 PPHL					
	Station	Dep. time	Station	Arr. Time	Fly Time	Station	Dep. time	Station	Arr. Time	Fly Time	Fight time
SUN		OFF						OFF			
1	2	3	4	5	6	9	10	11	12	13	14
MONDAY	Naharlagun	08.00	Mohanbari	08.45	00.45	Naharlagun	08.30	Seppa	09.05	01.35	Duaphin 04:15  MI-172 03:50
	Mohanbari	09.00	Roing	09.35	00.35	Seppa	09.15	Naharlagun	09.50	00.35	
	Roing	09.45	Dambuk	10.00	00.15	Naharlagun	11.00	Guwahati	12.20	01.20	
	Dambuk	10.05	Roing	10.20	00.15	Guwahati	14.00	Naharlagun	15.20	01.20	
	Roing	10.25	Pasighat	10.45	00.20						
	Pasighat	11.00	Mebo	11.10	00.10						
	Mebo	11.15	Pasighat	11.25	00.10						
	Pasighat	11.35	Roing	11.55	00.20						
TUESDAY	Roing	12.00	Mohanbari	12.35	00.35						
	Mohanbari	12.55	Naharlagun	13.40	00.45						
	Naharlagun	08.10	Ziro	08.25	00.25	Naharlagun	09.30	Mohanbari	10.25	00.55	Duaphin 05:10  MI-172 04:10
	Ziro	08.35	Daporjo	09.05	00.30	Mohanbari	10.40	Roing	11.20	00.40	
	Daporjo	09.10	Ziro	09.40	00.30	Roing	11.25	Anelhi	11.40	00.15	
	Ziro	09.50	Kokoriang	10.15	00.25	Anelhi	11.45	Anini	12.00	00.15	
	Kokoriang	10.20	Ziro	10.45	00.25	Anini	12.05	Anelhi	12.20	00.15	
	Ziro	10.55	Naharlagun	11.20	00.25	Anelhi	12.25	Roing	12.40	00.15	
	Naharlagun	12.00	Guwahati	13.15	01.15	Roing	12.45	Mohanbari	12.30	00.40	
	Guwahati	14.30	Naharlagun	15.45	01.15	Mohanbari	13.40	Naharlagun	14.35	00.55	
WEDNESDAY	Naharlagun	08.00	Mohanbari	08.45	00.45	Naharlagun	09.00	Guwahati	10.20	1.20	Duaphin 04:10  MI-172 04:50
	Mohanbari	09.00	Pasighat	09.25	00.25	Guwahati	10.35	Tawang	11.40	01.05	
	Pasighat	09.35	Aalo	09.55	00.20	Tawang	11.50	Guwahati	12.55	01.05	
	Aalo	10.00	Yingkiong	10.20	00.20	Guwahati	14.30	Naharlagun	15.50	01.20	
	Yingkiong	10.25	Tuting	10.40	00.15						
	Tuting	10.45	Yingkiong	11.00	00.15						
	Yingkiong	11.05	Aalo	11.25	00.20						
	Aalo	11.35	Pasighat	11.55	00.20						
THURSDAY	Pasighat	12.05	Mohanbari	12.30	00.25						
	Mohanbari	12.45	Naharlagun	13.30	00.45						
	Naharlagun	09.30	Mohanbari	10.15	00.45	Naharlagun	11.00	Guwahati	12.20	01.20	Duaphin 04:30  MI-172 02:40
	Mohanbari	10.30	Pasighat	10.55	00.25	Guwahati	14.00	Naharlagun	15.20	01.20	
	Pasighat	11.05	Roing	11.25	00.20						
	Roing	11.30	Aelhi	11.45	00.15						
	Aelhi	11.50	Anini	12.05	00.15						
	Anini	12.10	Anelhi	12.25	00.15						
	Anelhi	12.30	Roing	12.45	00.15						
	Roing	12.50	Dambuk	13.05	00.15						
FRIDAY	Dambuk	13.10	Roing	13.25	00.15						
	Roing	13.30	Pasighat	13.50	00.20						
	Pasighat	14.00	Mohanbari	14.25	00.25						
	Mohanbari	14.30	Naharlagun	15.20	00.45						
	Naharlagun	08.00	Mohanbari	08.45	00.45	Naharlagun	08.00	Mohanbari	08.55	00.55	Duaphin 05:20  MI-172 04:30
	Mohanbari	09.00	Khonsa	09.30	00.30	Mohanbari	09.10	Namsai	09.40	00.30	
	Khonsa	09.35	Changlang	09.55	00.20	Namsai	09.45	Tezu	10.05	00.20	
	Changlang	10.00	Mohanbari	10.30	00.30	Tezu	10.10	Hayuliang	10.40	00.30	
	Mohanbari	10.45	Naharlagun	11.30	00.45	Hayuliang	10.45	Tezu	11.15	00.30	
	Naharlagun	12.00	Guwahati	13.15	01.15	Tezu	11.20	Namsai	11.40	00.20	
	Guwahati	14.30	Naharlagun	15.45	01.15	Namsai	11.45	Mohanbari	12.15	00.30	
						Mohanbari	12.35	Naharlagun	13.30	00.55	
SATURDAY	Naharlagun	10.00	Mohanbari	10.45	00.45	Naharlagun	08.30	Guwahati	09.50	01.20	Duaphin 04:00  MI-172 04:30
	Mohanbari	11.00	Naharlagun	11.45	00.45	Guwahati	10.10	Tawang	11.15	01.05	
						Tawang	11.30	Guwahati	12.35	01.05	
						Guwahati	14.00	Naharlagun	15.20	01.20	

**FARE FOR PAWAN HANS/JAGSON HELICOPTER SERVICE AS  
ON 31-01-2008**

**Table C(2)**

Name of Station	Name of Destination	Adult (12 years above)	Minor (3 to 12 years)	Infant (1 month to 3 years)
Naharlagun	Mohanbari	1550/=	800/=	150/=
Naharlagun	Guwahati	3000/=	1500/=	300/=
Naharlagun	Roing	2750/=	1400/=	300/=
Naharlagun	Dambuk	2650/=	1350/=	300/=
Naharlagun	Yingkiong	3300/=	1650/=	350/=
Naharlagun	Tawang	3000/=	1500/=	300/=
Naharlagun	Along	3100/=	1550/=	300/=
Naharlagun	Lumla	3000/=	1500/=	300/=
Naharlagun	Tezu	3100/=	1550/=	300/=
Naharlagun	Ziro	1200/=	600/=	150/=
Naharlagun	Daporijo	1550/=	800/=	150/=
Naharlagun	Koloriang	1800/=	900/=	200/=
Naharlagun	Namsai	2550/=	1300/=	250/=
Naharlagun	Tuting	4000/=	2000/=	400/=
Naharlagun	Anini	3500/=	1800/=	350/=
Naharlagun	Khonsa	2300/=	1150/=	250/=
Naharlagun	Changlang	2250/=	1300/=	250/=
Naharlagun	Pasighat	2200/=	1100/=	250/=
Naharlagun	Miao	3100/=	1550/=	300/=
Naharlagun	Hayuliang	3850/=	1950/=	400/=
Naharlagun	Balukpong	1550/=	800/=	150/=
Naharlagun	Mebo	2650/=	1350/=	150/=
Naharlagun	Seppa	1200/=	600/=	150/=
Naharlagun	Dirang	2500/=	1250/=	250/=
Seppa	Rupa	1200/=	600/=	150/=
Rupa	Dirang	700/=	350/=	100/=
Naharlagun	Rupa	2000/=	1000/=	200/=
*Guwahati	Tawang	3000/=	1500/=	300/=

To overcome the constraints of service connectivity hurdle and to provide easy accessibility to tourist and people of the state, MI-172 helicopter introduced the daily service between Guwahati and Tawang sector under 75% subsidy scheme of Ministry of Home Affairs, Govt. of India from 29 June 2008.



“To overcome the hurdle in bringing economic development, particularly tourism, construction of green-field airport at Karsingsa near Itanagar is coming up with the foundation stone laid by Mr. Shivraj Patel, Home Minister, Govt. of India on 20th February 2007. More projects of airports/Airtrips at Tawang, Pasighat, Aalo, Daporijo, Ziro and Tezu are on the process for construction to facilitate investment for economic development of the state and movement of tourists. The Ministry of Defense has given the work allocation to upgrade the infra-structure at Tuting, Mechuka, Pasighat, Vijaynagar and Wallong to improve the air connectivity of this inaccessible and land-locked state to make it an important tourist hub”<sup>1</sup>

### **Railways**

Development of railway in Arunachal Pradesh could not be achieved as desired due to its geographical and topographical conditions. The terrain in Arunachal Pradesh is such that there is not much scope for development of railway facilities. The only railway facility in the State is a Meter Gauge branch line from Balipara to Bhalukpong in West Kameng district with total length of 43.31 Km built in 1990 has provided Arunachal Pradesh a rail link with 1.26 Km of railways line.

A sincere endeavor has been made to connect Itanagar with Harmuti by rail route. For which survey for Meter Gauge rail link from Harmuti was undertaken in the year 1978. Subsequently, reappraisal of this PET survey was carried out in the year 1984. This survey was again updated in 1997. On the basis of this updated survey report a work of Harmuti-Itanagar new line project was sanctioned in the budget of 1996-97 at a total cost of Rs. 156 Crores. On request of the State Government, the project was put on hold and alternative alignment was examined. Finally, the State Government approved the alignment from Harmuti to Itanagar in October 2006. The line was sanctioned as Broad Gauge (BG) keeping in view the ongoing Gauge Conversion of the existing MG line from Rangiya to Harmuti. After construction of this railway line Itanagar will be connected to the railway network of other major cities of the country. The project if accomplished, Itanagar would be at overnight distance from Guwahati, the biggest trade centre for the North eastern States. This will also provide a direct train connection from New Delhi to Itanagar.

The proposed line is 32 Km long. After taking off from Harmuti rail-

---

<sup>1</sup> Arunachal Front, dated 1st February 2008, front page

way Station, the alignment traverses for 6 Km in Lakhimpur district in Asom and then enters Papum Pare District of Arunachal Pradesh. It runs along the left bank of the Dikrong river for about 7 Km upto Doimukh. There the alignment crosses the river and takes a route along Pachin Nallah to Itanagar. The terrain is mostly forested and hilly. There will be 103 bridges and 3 tunnels in this section. Final Location Survey from Harmuti to Naharlagun is reportedly been completed and Part Detailed Estimate has also been already sanctioned. The work of Final Location Survey from Naharlagun to Itanagar is said to be in progress.”<sup>1</sup>

The foundation stone for the proposed line was laid by the Prime Minister Dr. Manmohan Singh on 31st January 2008 at Itanagar.

#### **Salient features of the proposed line**

**Table D(1)**

<b>Year of sanction</b>	<b>1996-97</b>
Length	32 Km
Gauge	1676mm
Total anticipated cost	Rs. 245 Crores
Speed potential	75 Kmph
Configuration	Single
No. of stations	3
No. of Tunnels	3
No. of Level Crossings	7
No. of bridges	103
No. of Road over bridges	1
No. of Road under Bridges	1

*Sources: Northeast frontier Railway, in the service of Northeast, booklet.*

#### **Travel and Tourist facilities**

The whole of Arunachal Pradesh is regarded as a restricted area where entry without an Inner Line Permit (ILP) is restricted even for Indian citizens

<sup>1</sup> Northeast Frontier Railway.

under the provisions of the Bengal Frontier Regulation, 1873 as amended from time to time. The Govt. policy to restrict the tourist is opted for certain safety measures to allow for a gradual cultural interaction and influence in the state is comparatively new in the field without hurting traditional values and degrading the state's pristine beauty. However, one can obtain the ILP from the district administration and the authorized Officers of the Government of Arunachal Pradesh stationed in New Delhi, Kolkata, Guwahati, Shillong, Tezpur and Mohanbari etc on application.

"Foreigners intending to visit the state have to obtain Restricted Area Permit (RAP). The foreign tourists can obtain the Protected Area Permit from all Indian Mission, all foreigners Regional Registration Officers (FRROs) at Delhi, Mumbai, Kolkata, Chief Immigration Officer, Chennai; Home Ministry, Govt. of India and Home Commissioner, Govt. of Arunachal Pradesh, Itanagar for a period of 10 (ten) days for a group consisting of four or more persons.<sup>1</sup>

"With an endeavour to attract more and more foreign and domestic tourists into the state, the Govt. of Arunachal Pradesh has granted relaxation on the Protected Area Permit (PAP) guidelines. Besides this, the Government has also approved for operation of five new Tourist Circuits in the state namely Aolo-Mechuka, Daporijo- Nacho via Taliha and Sayur, Ziro-Palin-Nyapin-Sangram-Koloriang, Doimukh-Sagalee-Pakke Kesang- Seppa. These are in addition to the existing tourist Circuits of Tezpur-Bhalukpong-Bomdila-Tawang, Tinsukia- Tezu-Parsuramkund, Margherita-Miao-Namdapha, Itanagar-Ziro-Daporijo-Aalo-Pasighat, Roing-Mayudia-Anini, Pasighat-Jengking-Yingkyong ( now extended upto Tuting), Tezpur-Seijosa (Pakhui)- Bhalukpong-Tipi"<sup>2</sup>

Arunachal Pradesh has all the attractions and allurements for tourist activities ranging from fishing and boating to high altitude trekking, from spending of holidays at charming hill.

Resorts have been set in the backdrop of snow-clad peaks of the eastern Himalayas for visiting places of interests and pilgrim centre. The places of tourist interest, in particular, are Bomdila, Tawang and the nearby Buddhist Monastery specially Tawang Monastery which is still considered pristine by Buddhists pilgrims from South East Asian countries offers for flow of tourists. Itanagar with the excavated ruins of the historical Ita Fort, Malinithan and

<sup>1</sup> Arunachal Pradesh, nestled in the north eastern tip of India, published by Directorate of Tourism.

<sup>2</sup> Arunachal Times dated 15/5/2008.

Bhismaknagar- the two important archeological sites; the Parshuram Kund, a place of pilgrimage, the Namdapha Wild Life Sanctuary, colourful seasonal festivals of different tribes for cultural tourism. Besides there are also other destinations of tourist interest, such as Orchid Centre at Tipi, Second World War cemetery at Jairampur, Pangchau Pass to view Lake of No Return across Indo-Myanmar international border.

In addition to this, the state government is on the process of making a tourist friendly policy, creating infrastructures and removing communication bottlenecks to tap the vast potentials in the tourism sector. Buddha Mahotsava, Siang River Festival, Namdapha Eco Cultural Festival and Pangsau Pass Winter Festival are the main annual events of the state and have played a significant role in promoting tourism in the state. The festival aimed at promoting the 'Hidden Paradise' of India- symbolizing unity in diversity and portrays the uniqueness of the whole region.

These festivals, apart from attracting tourist flow in the state, are also a way for promoting cultural heritage, better bi-lateral relations besides, opening the corridor to border trade. The festivals also serve as an ideal platform for showcasing the splendor of the region with respect to its cultural practices, crafts and art and can effectively attempt to change the stereotypical notions about the state.

Travelling in Arunachal Pradesh is no longer difficult and hazardous as it was before. The capital at Itanagar and almost all the district, sub-divisions and circle headquarters, and also many other important and remote places, as stated earlier, are today connected by motorable roads. The administrative headquarters have circuit houses, Tourist Lodge and Inspection Bungalows for officers and visitors. Besides these, there are a number of rest houses or staging huts located along the foot-tracks, which can also be used as shelters on journeys.

A journey through the West Kameng district to the Tawang district, particularly from Bomdila to Tawang over the Se La Pass about 14,000 ft above sea level is unforgettable for its natural grandeur. There are tourist lodges at Bomdila and Dirang. Lots of pilgrims including foreigners visit the 'Magh Sankranti Mela' at Parsuramkund in Lohit held in the month of January every year. The district administration provides extensive travel facilities to them in the shape of transport, lodging, medical services etc. There is a Dharam Sala (Rest house) near the kund (bathing place) for the benefits of the pilgrims and other visitors. The temporary Inner Line Permit (ILP) is

issued at the cheek gates of Sunpura and Dirak during the festival for the convenience of the visitors.

The statistics compiled by the North Eastern Council (NEC) about the flow of tourists into the region upto 2003 is, however, lowest in Arunachal Pradesh. The State received only 2195 domestic tourists and 123 foreign tourists. As compared to Sikkim which had received a whopping 1,79,661 domestic tourists and 11,966 foreign tourists.

**Table E(1)**

Sl. No.	Year	No. of Tourist Lodges	Tourist visit		
			Foreign	Indian	Domestic tourist arrival as per five govt. tourist lodges and foreign tourist as per PAP issued.
1	2	3	4	5	
1	2001-2002	5	480	5597	
2	2002-2003	5	159	4200	
3	2003-2004	5	250	1050	
4	2004-2005	5	354	NA	
5	2005-2006	5	292	3025	

*Source: Statistical Abstract of Arunachal Pradesh 2006, p 109*

The table E(1) states that the tourist both Indian and foreigner visited the state in the year 2001-2002 has the highest in numbers whereas tourist in 2005-2006 is low as compared to the preceeding year.

Part of the problem seems to be lying in connectivity. But the major hindrance for most tourists seems to be connected with the difficulty in obtaining the Protected Area Permit (PAP) and then the Inner Line Permit (ILP).

### **Post and Telegraphs**

Postal services in Arunachal Pradesh was first introduced in the early fifties have extended rapidly to all parts of the State. In 1971, there were 56 post offices, of which only 14 had telegraph facilities. In 2004, the number of post offices in the State reached to 303 including one Head Post Office at Itanagar in Papum Pare district, 46 Sub-Post Offices in the entire district except the Anjaw district which is working under the Lohit Sub-Post Office, and 256 Extra-Departmental Branch Post Offices. Telegraph facilities exist only in 31 post offices.

'The number of post offices has increased manifold during the last 40 years, a development which resulted in the population as well as the area served per post office being reduced significantly. Even so, the area served by a post office in Arunachal Pradesh was 278.07 sq km in 2000 against 32.74 sq km in Mizoram, 45.99 sq km in Meghalaya and an All India average of 21.26 sq km'<sup>1</sup> Most districts of Arunachal Pradesh (except Papum Pare and Tirap) do not have a single post office in a 100 sq km area. For details see table F(1), F(2), F(3) & F(4).

**Table F(1)**

Year	Number of Post offices	Population per Post offices	Area served by a post office( sq km)
1960-61	23	14,632	3,641
1970-71	70	6,678	1,196.33
1980-81	200	3,159	418.72
1990-91	249	3,447	363.32
2000-2001	303	3,388	276.38

Source: *Arunachal Pradesh human Development Report 2005, p 287*

The table F (1) states that due to increasing numbers of post offices in the State the serving areas declined to 276.38 sq km in 2000-2001 which in 1960-61 was 3641 sq km.

Percentage of villages with postal and telegraph facilities, on the basis of distance covered (1991)

**Table F(2)**

Districts	0 km	0-5 km	5-10 km	Above 10 km
1	2	3	4	5
Tawang	5.52	33.13	28.83	32.52
West Kameng	4.78	8.82	11.77	74.63
East Kameng	4.36	11.27	8.00	76.37
Papum Pare	2.66	14.45	13.31	69.58
Lower Subansiri	2.19	11.76	12.77	73.28

<sup>1</sup> Arunachal Pradesh Human Development Report 2005, p-156

Upper Subansiri	2.50	8.15	9.60	79.75
West Siang	4.90	25.49	16.18	53.43
East Siang	13.24	22.55	12.25	51.96
Dibang Valley	10.08	14.29	10.50	65.13
Lohit	6.78	21.97	15.81	55.44
Changlang	8.42	28.42	15.09	48.07
Tirap	15.38	10.90	17.31	56.41
Arunachal Pradesh	5.76	17.04	13.70	63.50

Source: Arunachal Pradesh Human Development Report 2005, p 288

Percentage of rural population with access to post and telegraph facilities, on the basis of distance covered (1991)

Table F(3)

Districts	0 km	0-5 km	5-10 km	Above 10 km
Tawang	23.56	36.59	18.69	21.16
West Kameng	35.88	10.49	10.31	43.32
East Kameng	26.22	9.59	10.64	53.55
Papum Pare	22.97	13.30	17.44	46.29
Lower Subansiri	18.10	13.95	11.82	56.13
Upper Subansiri	32.94	7.72	7.43	51.91
West Siang	23.20	18.82	15.32	42.66
East Siang	30.58	23.94	8.84	36.64
Dibang Valley	51.38	20.92	4.34	23.36
Lohit	29.10	30.79	13.15	26.96
Changlang	27.08	33.13	9.05	30.74
Tirap	25.26	15.83	8.27	50.64
Arunachal Pradesh	27.94	20.29	10.99	40.78

Source: Arunachal Pradesh Human development Report 2005, p 289

**Number of postal institutions and telegraph facilities in Arunachal Pradesh, as on 31-03-2001**

**Table F(4)**

Districts	No. of Post offices	No. of Telegraph facilities
Tawang	13	1
West Kameng	22	3
East Kameng	14	1
Papum Pare	25	3
Lowe Subansiri	23	1
Upper Subansiri	13	1
West Siang	28	2
East Siang	30	2
Upper Siang	10	3
Diang Valley	22	2
Lohit	45	5
Changlang	28	5
Tirap	30	2
Arunachal Pradesh	303	31

*Source: Arunachal Pradesh Human development Report 2005, p 290*

**Telecommunication**

Over the past years the State has been making slow and steady progress in creating telecommunication network. The State is at present divided into eight Telcom-Sub-Divisions, viz. Itanagar, Naharlagan, Bomdila, Tezu, Pasighat, Anini, Khonsa and Changlang. The number of telephone exchanges in the state upto 31-3-2006 was 103 as against 95 at the end of 31-3-2002. The total equipped capacity has increased from 83000 during 2004 to 84972 in 2006. The total number of working telephone connections which was 57700 at the end of March, 2004 has increased to 59384 at the end of March, 2005 registering a rise of about 7.25% over the year.



The remote Circle Headquarters of the State is linked with INMARSAT — a satellite linked – WLL telephone installed by BSNL. The Bharat Sanchar Nigam Limited (BSNL), Air Cell, Airtel, Reliance, Vodafone, Tata Indicom etc. are providing mobile phone services in the State through over sixty two mobile towers. The mobiles connection provided to the customers as on March, 2006 was 37245. (See tables G(1) & G(2))

The achievement made is highlighted in the table given below:

**Growth of Telecommunication Facilities for the Public  
for Last Four Years**

**Table G(1)**

Sl. No.	Indicator	Unit	As on March					
			2001	2002	2003	2004	2005	2006
1	2	3	4	5	6	7	8	9
1	Telephone Exchange	No.	94	95	105	105	99	103
2	Total Capacity	No	62816	73208	82868	83000	57248	84972
3	Working telephone Connection	No.	39269	44388	53862	57700	59384	58432
4	No. of Mobile connections	No	NA	NA	NA	3750	14866	37245
5	Internet Connection	No	53	NA	NA	1107	NA	2864

Source:- Economic Review of A.P.2006

**District-wise number of telephone offices/exchanges and telephone facilities in Arunachal Pradesh, as on 31-03-2006**

**Table G(2)**

District	No. of telephone offices	No. of telephone exchanges	No. of telephone connection	No. of STD facilities	No. of PCO provided	Exchange Capacity
1	2	3	4	5	6	7
Tawang	1	6	2466	491	80	4228
West Kameng	1	10	4683	904	186	7040
East Kameng	1	3	1929	367	52	2640
Papum Pare	3	15	18420	5425	615	25960
Lower Subansiri	1	8	3708	757	103	5128
Kurung Kumey	0	2	312	61	7	640
Upper Subansiri	1	3	2273	372	37	2684
West Siang	1	11	4610	807	204	7192
East Siang	1	9	4154	886	135	6792
Upper Siang	1	5	1540	283	28	2008
Dibang Valley	0	2	359	68	8	472

L/Dibang Valley	1	4	2245	439	77	2944
Lohit	1	10	4989	1036	78	7376
Changlang	1	8	4165	942	62	6036
Tirap	1	7	2579	456	50	3832
Total for A.P.	15	103	58432	13294	1723	84972

Source: Statistical Abstract of Arunachal Pradesh 2006, Directorate of Economics and Statistical, p-83

### Radio, Wireless Stations and Television

A wireless transmission system has been functioning in this State from before the introduction of postal services for government communication. The wireless network covers the capital at Itanagar and the entire district, Sub-division, Circle headquarters.

There are altogether five radio stations run by Prasar Bharati Broadcasting Corporation under the name of All India Radio (AIR). At present Radio being a household name in remote and far-flung parts of the State, it is the only means of entertainment and medium of getting news of other parts of the world. AIR broadcast its programmes only from Itanagar, Tawang, Ziro, Pasighat and Tezu stations through its medium and short waves. News items are broadcasted from All India Radio (AIR) Itanagar in eleven languages and programmes in thirteen languages form. The Radio Stations of Tawang, Ziro, Pasighat and Tezu broadcasts Monpa, Apatani, Adi, Khamti and Mishmi programmes respectively. Some of the news bulletins in different languages broadcasted from Itanagar are relayed by Dibrugarh station too.

Apart from this, FM Radio unmanned station has been installed in Itanagar. These projects has removed the feeling of isolation particularly in border areas and helping in promoting integration with the main stream, besides making the people aware of government programmes and policies.<sup>1</sup>

A low power television relay transmitter has been installed at Itanagar and a number of such transmitters are likely to be set up at various other places of the State. Doordarshan Kendra (DDK) with installation of 2 HPT both in Itanagar, 3 LPT at Pasighat, Tezu & Miao and 43 VLPT is giving a television service which is spread in almost all the districts of Arunachal Pradesh. The State Government is also proposing to upgrade DDK Itanagar to Program Production Centre (PPC) with separate transponder. The Government is also

<sup>1</sup> Arunachal Pradesh on the move page-20, published by DIPR.

providing Television sets with Direct to Home (DTH) to 1730 numbers of villages covering all the sixteen districts. Satellite television network provided by private cable operators have made the entertainment and communication network more revolutionary.

### **Information Technology**

The Ministry of Communication and Information Technology has set up the National Informatics Centre (NIC) state unit at state capital, District Informatics Centre (DIC) at all the District Headquarters and Community Information Centre Services (CICS) in each blocks with an aim to link even the remotest part of the country through internet network and many more information relating to social, cultural, economic, religious etc. with rest of the world. In Arunachal Pradesh one National Informatics Centre state unit at State Capital and 56 Community Informatics Centre Service (CICS) in 56 Block Development Office have been linked through internet.

## CHAPTER – VII

# ECONOMIC TRENDS

### Introduction

In the pre-plan period the tribes of the Arunachal Pradesh then NEFA lived in the hills under thick vegetation, any given plot of land on the hill slope within the jurisdiction of the village land could be used for agricultural production only by clearing of forests and depending entirely on the replenishment of soil fertility through the natural process of regeneration of vegetative cover over the same plot. The option of getting soil fertility replenished through 'flooding and deposition of nutrient rich silt by' any river was not open to them. Within such constraints, practice of *shifting cultivation/jhuming* (slash and burn agriculture) was the obvious method of agricultural production. It was also natural that hunting was an important complementary occupation of such cultivators. Fishing in the streams was another productive activity.

The tribal people also reared poultry, piggery and the semi domesticated *mithun*. These were not only an important source of food, but also the stock of assets as the life span of these animals exceeded a single jhum production period. The practice of frequent feasts and celebrations with chicken, pork and mithun's meat not only provided protein in the hillmen's diet but also helped keep the livestock population in check to conserve resources.

Though shifting cultivation was generally practised by the different tribes, settled cultivation was also not unknown. A few tribes, such as, the Apa Tanis, Monpas, Khamtis, etc. grew crops on permanent fields and terraces.

arranging appropriate system of irrigation.

The second source of surplus generation in the economy was from trade. Contrary to the early belief that "trade is sterile", it is now generally agreed that surplus may arise in trade and commerce. From the accounts given by the explorers, missionaries and administrators; it is clear that in the pre-colonial period; the tribes of the north-east frontier had trade relations both with Tibet and the plains of Assam. What is significant is that they imported goods from Tibet not only for their own consumption and use but also for re-exporting to Assam. There were also trade relations with Bhutan. The Akas of Kameng bought from Bhutan clothing, warm blankets, daos, swords and silver ornaments paying prices in rupees. They earned rupees by selling rubber to the traders from the Assam plains. As recorded by J. Butler, the Mishmis exchanged their "*bih(poison)*, *gatherwan* (one odoriferous root), *manjeet* (madder), and *teetah* (a bitter root greatly esteemed for its medicinal qualities) for Lama cattle, brass pipes, gongs, and copper vessels. These things bought from Tibet were exchanged for cloth, cattle, colour beads, etc. in Assam.

The goods traded were not only agricultural produce and collections from forests but also some manufactures, such as daos, Adi quilts (*miri gim*), etc. Among the goods exchanged, items like manjeet. Mishmi teeta (*Captistia*), *gertheanu* and rubber were produced / collected mainly for exports. Though emergence of a distinct class of traders was not in evidence, there were some tribes, such as the Miris and Nyishis, who acted as the intermediaries between two tribes or between the tribes and the plainsmen. H.M. Crowe in his "Account of a Journey to Apa Tannang Country" referring to the Apa Tanis' dependence on the Nyishis for having trade with the plains remarks: "The frontier tribes are interested in preventing the remoter clans from visiting the plains; as they make a profit out of hillmen and plains traders by acting as inter-mediaries." (Elwin, *India's North-East Frontier*, p. 196).

There was considerable volume of inter-tribal trade also. The Apa Tanis, for example, produced surplus rice which they traded for salt supplied by the Nyishis (who got it from the plains) and for surplus cotton produced by the Adis. All this suggests that the tribal economy was not a completely closed system, trade with transactors from outside the system formed a part of it and yielded surplus.

The third source of surplus was the forcible collections of agricultural products, cattle, cloth, slaves, etc. from the Assamese villages in the foot-hill

areas. During the later days of Ahom rule the government was unable to stop the tribal people from exacting the things they needed from the villagers by force. The tribes claimed these plains as their own territory and hence they had the right to collect a share of the produce of the villagers in the plains. The recognition of the right of the tribes to collect the produce from their respective mahals came to be known as Posa. The Adis even got a regular share of gold dusts collected by the goldwashers from the plains in the Dihong, Dibong and other tributaries of the Brahmaputra as also a share of fish caught by fishermen in those rivers. In economic terminology, income from Posa was a sort of rent, the whole part of which, if the cost of collections is ignored, was a surplus.

When the colonial period started, that is, the British Government established contact with the tribal peoples of the northeast frontier from about 1840 some significant changes took place. The first thing that the British did was to replace the system of *posa*, that is, the tribal chiefs right to tribute payable by the British subjects living in the plain, by the system of payment of annual sum of money by the government in lieu of all their demands. With the Adis, the Government made an agreement for payment of several articles of consumption to them every year. The Government also followed the policy of developing closer trade relations with the tribes. As a result, the volume of trade with Tibet gradually fell while that with Assam increased. Use of money in such exchanges became more common. Annual payment of sums of money in lieu of *posa* also injected money into the tribal economy. Though this did not immediately lead to widespread use of money for internal exchanges, savings could be stored up in money and the accumulated stock of money could be invested for productive activities in some cases. W. Robinson wrote about the Mishmis that they exchanged their produce for salt, cloth and money, "When a sufficient sum of money is procured they lay it out in purchasing buffaloes, and the country cattle. (Elwin, *India's North-East Frontier*, p. 314).

To promote increased flow of trade between the hills and the plains the Government organized a number of trade fairs at different places annually from the middle of the nineteenth century. The British were mainly interested in finding out an expanding outlet for goods manufactured at home. Importance of these fairs can be assessed from the account given by Elwin ( pp 353-4). According to Elwin, an annual fair was held at Udalguri where the Sherdukpens and Akas exchanged ponies, sheep, dogs, salt, a little gold, blankets, yak's tails, musk, chillies, spices, wax, madder, oranges and walnuts for foreign and Assamese cloth, yarn, rice, betel-nuts, brass and iron utensils, bar

iron, hoes, etc. It is recorded that in 1875 and 1876 the fair was visited by 2,000 and 3,000 tribesmen respectively.

The biggest annual fair was held at Sadiya where the main transactors from the hills were the Miris, Mishmis, Khamptis, Singphos and Adis. "In 1876, 3,000 tribesmen were present and the numbers rose in later years. In 1874, they brought down over Rs. 25,000/- worth their own articles and took home goods to the value of Rs. 17,630/-. In 1876, the turnover was much greater : they sold Rs. 49,100/- and bought Rs. 44,475/- worth of goods." This indicates that the hills were having a favourable balance of trade that is, their exports exceeded imports, leading to inflow of cash, (Indian rupees) into the tribal economy. Goods sold by the tribesmen were handicrafts, hand woven cloth, rubber, Mishmi tita, elephant tusks, rhinoceros horns, various other forest products, etc. Goods purchased by them at the fair were English yarn, English pottery, salt, brass pots, iron, tea, sugar, oil gur, opium, etc. It is significant to note that in 1879, according to the Report on the Administration of the Province of Assam for 1878-79, 40 Europeans took part in the fair for exchanging goods with the hillmen. The British were actually looking for opening of a trade route to China through these hills. The plan was to export broadcloths, etc. to Yunnan through this route. It was finally given up when it was found that it would be cheaper to send exports to Yunnan via Rangoon "as water communication by the Irawaddy is facile". (Elwin, *India's North-East Frontier*, p. 403).

### **Livelihood Pattern**

Arunachal Pradesh is as a whole rural barring a few towns. According to the Census of 2001, about 80 per cent of its population lives in villages. The total number of inhabited villages ranging from diminutive to large village is (3,863) which are grouped under 84 integrated rural development blocks. Agriculture is the main occupation of the people who by and large follow a slash and burn method of shifting or jhum cultivation as practiced on the rain-fed slopes of forested hills and dales. Jhum is an anarchic form of subsistence cultivation. The fertility of Jhum-land tends to diminish with every periodical tillage and the productivity decreases. Jhuming being the prevalent mode of cultivation is still the main prop of village economy, and it largely determines the socio-economic relations of the people and the general relatively low living standard. Their social organization cultural life, religious traditions and many festivals are interwoven with agricultural practices.

According to 2001 census about 79.66% of the state's population are

living in rural areas and 58.44% of the total workers are cultivators. The share of this sector in State Domestic Product (SDP) of Arunachal Pradesh at current price was 32.07% in 2000-2001 which has decreased to 30.30% in 2001-2002 due to fluctuation in production of agricultural production of agricultural commodities. Keeping in view the importance of this sector the State government has always given priority to various agricultural programmes in development plans for attaining self sufficiency in food grains. But the progress/improvement in this sector has not been up to the expectation. The main reason for this are its topography which is hilly one, predominance of shifting cultivation, lack of irrigation facilities, lack of technical know how etc. However efforts are being made to motivate the farmers to take up permanent cultivation and proper utilization of available cultivable land. Thus economy is basically agrarian.

To increase food production and consequently raise the living standard of the people, the government has been making sustained efforts to bring about a change from shifting cultivation to permanent cultivation. Irrigated wet-rice cultivation (WRC) and terrace-rice cultivation (TRC) in so far as it is feasible and proves to be more successful in terms of production. The plan for agricultural development on scientific lines is being successfully implemented.

As on 31st March 2005 the state has an estimated gross cropped area of 2.66 lakh hectare of which net area sown at about 2.05 lakh hect. accounting for about 2.43% of the total geographical area of 83743 sq. km. The following table shows estimates of land utilization for the year 2005-2006.

Sl. No.	Particulars	Area in Hect.
1	2	3
1	Gross Cropped Area	266000
2	Net Area Sown	205500
3	Area Under Permanent Cultivation	98500
4	Area irrigated	50000

Source:- *Economic Review of A.P, 2006*

Besides agriculture, the important subsidiary occupations are household industries including weaving, cane and bamboo work, smithery, carpet-making, wood-carving etc., and constructions, trade and commerce, hunting and fishing, stockbreeding, transport and so on. The pattern of life of various tribes of Arunachal Pradesh is changing gradually. The emergence of a new generation of educated and forward-looking tribal youths is of great impor-



tance. According to the Census of 2001, the literacy rate is 54.74 percent (male 64.07, female 44.24) compared to 11.29 percent in 1971 which shows 43% rise in 30 years. The educated young people of Arunachal Pradesh are now to be found in all categories of Government services holding responsible and high positions. In the co-operative and private sectors, there are today many enterprising tribal businessmen and entrepreneurs, who are recognized as dealers, suppliers or retail traders and owners of small-scale industries. They have also taken up the occupations of constructors, technicians, mechanics, drivers etc. Learned and distinguished professions like doctors, engineers, teachers and lawyers are yet to get numerical importance.

A tribal society organized on the basis of small social groupings, namely clan, phratry or village and subsistence cultivation as the mainstay is generally characterized by a low level of technical development and lack of economic specialisation. Such a society does not normally admit of any hereditary occupations or rigid craft or trade exclusiveness. In Arunachal Pradesh there may be class but not caste, nor any exclusive professional group like barber, washer man, cobbler, weaver etc. The only probable exception being blacksmith which is often an exclusive craft.

Animal husbandry is an important economic activity of the tribes in general. Among the Monpas, for example, it is a major occupation. The breeding of cattle forms an integral part of the Monpa farming economy. In the lower regions, such as Dirang and Kalaktang, mithun and cattle are kept in large numbers, and in the former there are also owners of yak who keep these animals on high pastures. Mithun are bought from Bangnis (Nyishis) and are crossed with Indian cattle, the resultant hybrids being used for traction and also traded to Bhutan. Sheep are kept for the sake of their meat rather than as a source of wool, though in recent years there have been government-approved attempts to introduce merino sheep and to interbreed them with the local variety in order to improve the quality of the wool. A large scientifically managed sheep farm in Sangti has achieved some promising results, but the conservatism of the Monpas stands still in the way of a general switch from meat to wool production.

In the Dirang region owners of yak keep their animals for four or five months on high pastures, where the herdsmen stay in tents or stone-huts. Most yak-owners employ herdsmen, who come either from Tawang or Bhutan and are paid an annual salary of Rs.200-300-or in lieu of cash 60 kg of unhusked rice. In addition the herdsmen are provided with goods and beer, and are given clothes.

"In the Tawang region where some villages lie at altitudes of roughly 10,000 feet yak are far more important. There most yak owners possess stone-huts (bro-brang) on their yak-pastures, and keep their herds there for the four or five warmest months when the grass is most plentiful. Here too yak is crossed with ordinary cattle, and the resultant hybrids (dzo and dzomu) are greatly valued. In 1980 the price of a big yak was Rs.1000/- and those of a good dzomu between Rs.2000/- and Rs.3000/-. Dzo is used for ploughing and for the carrying of loads and dzomu is kept mainly for the sake of their milk. In contrast to Nyishis and most other tribal of Arunachal Pradesh Monpas drink milk and also make butter."<sup>1</sup>

The livestock of the tribal people consists mainly of mithuns (an animal of the bovine species), cows, bullocks, pigs, goats, sheep and ponies. Some of them milk the cow. They also keep poultry. Fowls and eggs are sometimes used by them for trade. In fact, uses of animals and birds as goods, rituals and trade very form tribe to tribe. Mithuns cows, pigs, fowls etc. form essential items of bride-price in marriages in many tribal societies. Some of these tribes also exchange by barter their livestock for food grains.

A tribe is not normally a collection of exclusive professional groups based on hereditary occupations. The members of a tribal society usually make their living by collective efforts with the aid of simple tools. Apart from their agricultural pursuits, hunting and fishing activities common to most of the tribes of Arunachal Pradesh give an example of such collectivism. As supplementary means of livelihood, these group activities in which sometimes a whole village participates are important from the viewpoint of tribal economy in that the people derive a part or make up the deficiency of their food by hunting and fishing.

The jhum cultivation is seasonal, and it does not keep the cultivators engaged all the year round. It is the women who often do most of the cultivation; in many areas weaving is an exclusive preserve of the women in Arunachal Pradesh, and so also carpet-making amongst the Monpas. Fine work in cane and bamboo and on basketry, wood-carving and smithery are important subsidiary occupation for many tribesmen and also a good number of women.

In recent times considerable progress has been made towards agricultural development with improved methods and introduction of high-yielding variety of seeds and other inputs. Land is being increasingly brought under the more productive system of permanent cultivation mainly on irrigated terraces. Irrigation facilities are being extended to wider areas. The progressive tribal

<sup>1</sup> Christoph von Furer-Haimendorf, *Highlanders of Arunachal Pradesh*, (New Delhi, 1982), pp 155-156.

farmers are now using modern agricultural implements even machines and also chemical fertilizers. This and development in other sectors, namely animal husbandry, pisciculture, forestry, industries, transport and communications, trade and commerce rural electrification, education, public health etc. have brought about a remarkable change in the livelihood pattern of the people. The progress and achievements in various fields have been narrated under appropriate chapter-heads of this volume. Under the traditional system of Jhum cultivation and tribal economy remained changelessly localized and backward. But, while the majority of rural population is still rooted in their traditional past with a low living standard, the impact of material and cultural developments taken place since independence has created conditions which are conducive to gradual transformation of tribal economy and society.

#### General Level of Prices and Wages

There is no wholesale market in Arunachal Pradesh. Essential food items are procured from the neighboring State of Asom. Rise in prices of commodities in the wholesale market in Asom affects the retail price of goods sold in Arunachal Pradesh. Price rise in food items is somewhat checked in Arunachal Pradesh by public distribution of essential commodities at subsidized rate through the Central Purchase Organization, fair fair price shops and consumer co-operative Societies. The following table indicates the variation of prevailing retail prices of some essential commodities sold at fair price shops and open market collected from different centres of Arunachal Pradesh during January, 2005 to March, 2005.

State Trends					Centre-wise Trend			
Sl No.	Commodities	Units	Highest price	Lowest price	Highest price	Name of centre	Lowest price	Name of centre
1	2	3	4	5	6	7	8	9
1	Rice (Coarse)	kg	10.25	09.98	11.33	Naharlagun	08.80	Pasighat
2	Atta	kg	12.57	12.50	11.33	Anini	11.50	Tezu
3	Masurdal	kg	34.53	34.15	38.67	Anini	28.00	Tezu
4	Mustard oil	lt	61.61	60.30	78.33	Anini	40.00	Ziro
5	Dalda (loose)	kg	54.85	54.14	60.00	Pasighat	48.00	Tawang
6	Salt (loosed)	kg	06.00	06.00	08.00	Anini/ Yingkiong	03.00	Pasighat
7	Potatoes	kg	09.91	08.92	13.33	Anini	05.67	Roing
8	Sugar	kg	23.38	23.08	28.33	Anini	21.00	Daporijo
9	Tealeaf (loose)	kg	148.00	148.00	220.00	Along	80.00	Tawang
10	* Kerosine	lt	10.65	10.65	13.00	Along	09.10	Anini

\* NB :- Kerosine oil based on Fair Price rates

Source: Quarterly Retail Price Bulletin of A.P

### Public Distribution System

The Public Distribution System is focused as one of the national agenda under Basic Minimum Services. The PDS has spread over the whole of Arunachal Pradesh with a network of 1515 Fair Price Shops to ensure regular supply of essential commodities to the people at an uniform and reasonable price. In addition there are 36 nos. petroleum /HSD outlets, 34 SKO outlets and 22 LPG distributors in different location of the State. In the high altitude remote areas bordering International Boundary where surface communication is lacking, the supply system in those areas is maintained by air dropping through 28 CPO Stores. The State Govt. is making all out efforts to bring hitherto uncovered/partially covered areas under PDS. During the year 2003-2004, 100 more new fair price shops have been opened. Out of the total 1515 FPS by 2005-2006, 1259 are in rural areas and 256 are in urban areas, while 229 FPS are operated by co-operative societies and remaining 1286 FPS are operated by Private Entrepreneurs. The following table gives district wise number of FPS in the state as on 31-3-2006.

**NUMBER OF FAIR PRICE SHOPS IN  
ARUNACHAL PRADESH AS ON 31-3-2006**

District	Rural			Urban			Combine		
	CooP.	Other	Total	CooP.	Other	Total	Coop.	Other	Total
1	2	3	4	5	6	7	8	9	10
1. Tawang	30	34	64	5	3	8	35	37	72
2. W /Kameng	34	41	75	3	3	6	37	44	81
3. E/Kameng	20	50	70	4	7	11	24	57	81
4. P/Pare	14	68	82	6	67	73	20	135	155
5. LI Subansiri	6	77	83	7	14	21	13	91	104
6. K/Kumey	3	98	101	-	-	-	3	98	101
6. U/Subansiri	10	164	174	-	-	-	10	164	174
7. W/Siang	2	144	146	1	47	48	3	191	194
8. E/Siang	6	74	80	3	17	20	9	91	100
9. U/Siang	-	52	52	5	3	8	5	55	60
10. L.D/Valley	6	30	36	3	4	7	9	34	43
11. Lohit	15	25	40	11	5	16	26	30	56
12. Changlang	12	106	118	-	-	-	12	106	118
13. Tirap	6	81	87	7	24	31	13	105	118
14. D/Valley	2	25	27	-	-	-	2	25	27
15. Anjaw	5	19	24	3	4	7	8	23	31
A.P.Total	171	1088	1259	58	198	256	229	1286	1515

Source: Economic Review of A.P, 2006

During the year 2005-2006 the Department has procured 77906.59 MT rice, 6942.37 MT wheat and 4378.20 MT L/ Sugar from FCI and 12007 KL SK Oil for public distribution. The department also implemented the following schemes under centrally sponsored programmes;

(1) ***Targeted Public Distribution System (TPDS)***

Under the Scheme of Targeted Public Distribution System (TPDS) the state govt. has been distributing 35 Kg. of rice or wheat per month to the families living below Poverty line @ Rs.6.15 per kg. and Rs4.65 per kg wheat. 68,671 families are so far identified as BPL families in the state.

(2) ***Annapurna***

The Govt. of India has introduced a new scheme called *Annapurna* under which 10 kg. of rice are distributed free of cost to the Old indigent citizens of 65 years of age and above who are not getting benefit under National Old Age Pension Scheme. 4761 persons are benefited under this scheme in the state.

(3) ***Antyoda Anna Yojana (AAY)***

The Govt. of India has introduced another new scheme called *Antyoda Anna Yojana* under which 35 kg. of rice or wheat per month @ Rs.3/- and Rs 2/- per kg. respectively are issued to the poorest of the poor families from the existing BPL families. As many as 15100 families are benefited under this scheme.

As many as 30,100 families of total BPL families are covered under *Antyoda Anna Yojana* (AAY) scheme in the state. Under Welfare Scheme for Hostel and Borders and other welfare institutions, 15 Kg. of rice @ Rs. 6.15 per kg. per month per border is provided to school hostel borders and other welfare institutional borders in the state w.e.f April, 2002. As on the date 9800 borders are getting this benefit.

The Civil Supply Department Co-ordinates the activities of different organizations for procurement and supply of food and other necessities.

**Wages**

By an Order of the Government of Arunachal Pradesh superseding

the earlier wages revision order<sup>1</sup> coming into effect from 19th Feb'2009 the rates of wages for workers have been revised. Following are the terms of the order.

Category of workers/employee/labourer	AREA- I		AREA-II	
	Daily Rate	Monthly Rate	Daily Rate	Monthly Rate
1	2	3	4	5
Unskilled	Rs. 80.00	Rs. 80x30= 2400/-	Rs.90.00	Rs.90x30= 2700/-
Semi - Skilled	Rs. 85.00	Rs. 85x30= 2550/-	Rs. 95.00	Rs.95x30= 2850/-
Skilled	Rs. 90.00	Rs. 90x30= 2700/-	Rs.100.00	Rs.100x30= 3000/-

For the purpose of various rates of wages payable to different categories of workers two areas have been defined as follows:-

(I) AREA-I : shall comprise of places in Arunachal Pradesh where Special Compensatory Allowance (SCA) at lower rate is payable. It also includes places outside of Arunachal Pradesh where employees/ workers are employed by or under the authority of Government of Arunachal Pradesh.

(II) AREA-II : shall comprise of all other places in Arunachal Pradesh where SCA at higher rates is admissible.

***Service conditions and other benefits applicable to workers in Arunachal Pradesh.***

1. Daily Hours of Work :

- (i) No worker shall be required to work for more than nine hours in a day with break of one hour.
- (ii) If workers are engaged for more than five hours but less than nine hours, he/she shall be deemed to have worked for a full day.

2. Weekly paid day of rest :

- (i) A worker shall be allowed a day of rest with wages every week which shall ordinarily be Sunday provided that he/she works continuously for a period of six days preceding the day of rest/Sunday.

(Explanation:- Absence of worker from his/her work on any

<sup>1</sup> Vide No. LAB (MW)-1/99 [pt - VI], dated - 01/07/2005.

*day(s), during the period of six days preceding the weekly day of rest, or sickness authorized leave or an accident or a strike which is not illegal, or a lock out, or a cessation of work which is not due to any fault on the part of worker, shall be deemed to be present at work for the purpose of weekly paid day of rest.)*

3. Extra wages for overtime :

- (i) Where a worker works for more than nine hours, he/ she shall in respect of overtime work, be entitled to wages at the rate of twice his/her ordinary rate of wages.
- (ii) If workers are required to work on paid weekly day of rest, declared national holiday or festival holidays, he/she shall be deemed to have worked overtime.

4. Paid National Holidays :

- (a) 26th January
- (b) 15th August
- (c) 2nd October
- (d) 20th February
- (e) 1st May (May Day)

5. Festival Holidays :

There shall be any 5 (five) paid festival holidays in a year. The concerned Govt. Department, Semi Govt. Organisation, Industrial Units, etc. shall declare the days as may be appropriate to be observed as such holidays.

6. Casual Leave :

An employee shall be allowed 6(six) days casual leave with wages in a year. This shall not include special casual leave allowed for attending conference. meetings, etc.

7. Medical Leave and Wages during Hospitalization :

- (i) An employee hospitalized or undergoing medical treatment shall be entitled to full wage for a maximum period of 15 (fifteen) days, subject to production of medical certificate issued by a

competent authority,

- (ii) In case of injuries sustained in an accident during the course of employment for which an employee is hospitalized he/she shall be entitled to full wage up-to maximum period of 30 (thirty) days. Subject to the provision of the workmen compensation Act 1923.

(Explanation:- *An employee shall be deemed to be in continuous service* for a period of three years if he/she has, for that period, rendered uninterrupted service, including service which may be interrupted on account of sickness or authorized leave or an accident or a strike which is not illegal or lock out or cessation of work which is not due to any fault on the part of the workers.)

8. Daily Allowance :

An employee shall be entitled to TA/DA benefit as admissible to the group- "D" regular Govt. employees.

9. Existing Higher and Better Service Conditions :

Any existing higher rates of wages and better service conditions (already available to a worker) shall not be affected by this order, and such rates and service condition shall continue to be paid and made available.

**Employment in Different Occupations**

In the census enumeration of 2001 the population has been classified into two broad divisions - workers and non-workers. Work in this context are defined as participation in any economically productive activity. A person participating in such work either physically or mentally is termed as a worker. The workers are further divided into main workers, marginal-workers and non workers having secondary work. A marginal worker is one who has worked for less than 183 days during the year preceding the date of enumeration.

According to the 2001 Census distribution of total workers by main and marginal workers are indicated in the following tables..



**PERCENTAGE DISTRIBUTION OF TOTAL WORKERS  
(Main + Marginal) IN THE STATE AND DISTRICTS BY SEX  
AS PER 2001 CENSUS.**

Districts	Persons Males/ Females	Total Workers (Main+ Marginal)	Percentage to total workers(Main + Marginal)			
			Cultivators	Agriculture labourers	Workers in household industries	Other workers
1	2	3	4	5	6	7
Tawang	Total	22,099	43.00	2.10	0.45	54.45
	Males	14,254	28.34	1.52	0.45	69.69
	Females	7,845	69.64	3.17	0.45	26.74
W /Kameng	Total	34353	35.42	3.99	1.03	59.56
	Males	24870	25.07	2.90	0.59	71.44
	Females	9483	62.58	6.83	2.19	28.40
E/Kameng	Total	25917	70.95	2.74	0.33	25.98
	Males	13976	58.38	2.69	0.30	38.63
	Females	11941	85.67	2.81	0.36	11.16
Papum Pare	Total	44214	24.36	3.35	1.41	70.88
	Males	29909	17.14	2.49	1.04	79.63
	Females	14305	39.46	5.17	2.24	53.13
L/ Subansiri	Total	45032	72.24	3.36	0.62	23.78
	Males	23467	60.10	2.76	0.66	36.48
	Females	21565	85.46	4.01	0.57	9.96
U/Subansiri	Total	22263	68.68	2.05	0.50	28.77
	Males	12444	55.35	1.85	0.54	42.26
	Females	9819	85.57	2.31	0.46	11.66
West Siang	Total	42860	63.24	2.01	1.37	33.38
	Males	25587	51.47	2.11	1.32	45.10
	Females	17273	80.66	1.87	1.44	16.03
East Siang	Total	33578	52.23	5.78	1.92	40.07
	Males	20494	43.73	5.48	1.33	49.46
	Females	13084	65.54	6.24	2.85	25.37
Upper Siang	Total	17110	65.08	2.39	0.17	32.36
	Males	10346	51.47	2.71	0.18	45.64
	Females	6764	85.89	1.91	0.15	12.05
Dibang Valley	Total	25496	53.99	7.19	0.60	38.22
	Males	16433	43.93	6.35	0.75	48.97
	Females	9063	72.21	8.72	0.33	18.74
Lohit	Total	60323	57.64	6.53	0.69	35.14
	Males	39689	48.99	5.62	0.65	44.74
	Females	20634	74.28	8.28	0.76	16.68
Changlang	Total	60,009	69.94	5.40	0.98	23.68
	Males	34733	61.82	5.01	0.82	32.35
	Females	25276	81.10	5.93	1.21	11.76
Tirap	Total	48952	75.35	0.72	0.32	23.61
	Males	27347	62.71	0.76	0.26	36.27
	Females	21605	91.35	0.67	0.40	7.58
Arunachal Pradesh	Total	482902	58.44	3.85	0.86	36.85
	Males	293612	46.77	3.44	0.73	49.06
	Females	189290	76.61	4.49	1.05	17.85

Source: Economic Review of Arunachal Pradesh, 2006

The following census figures of 2001 relating to marginal workers of Arunachal Pradesh also indicates that a large number of women far more than men are engaged in cultivation.

[illegible]

Dibang Valley	Total	25,700	16,601	9,099	22,086	15,134	6,952	3,614	1,467	2,147
	Rural	22,331	13,802	8,529	18,880	12,448	6,432	3,451	1,354	2,097
	Urban	3,369	2,799	570	3,206	2,686	520	163	113	50
Lohit	Total	60,351	39,691	20,660	51,049	36,744	14,305	9,302	2,947	6,355
	Rural	51,944	32,556	19,388	43,348	30,087	13,261	8,596	2,469	6,127
	Urban	8,407	7,135	1,272	7,701	6,657	1,044	706	478	228
Changlang	Total	60,045	34,789	25,256	49,176	31,155	18,021	10,869	3,634	7,235
	Rural	55,552	31,074	24,478	44,967	27,610	17,357	10,585	3,464	7,121
	Urban	4,493	3,715	778	4,209	3,545	664	284	170	114
Tirap	Total	49,074	27,433	21,641	43,807	25,174	18,633	5,267	2,259	3,008
	Rural	43,590	22,760	20,830	38,563	20,667	17,896	5,027	2,093	2,934
	Urban	5,484	4,673	811	5,244	4,507	737	240	166	74

Source: Census of India 2001

The role of women as a working force in Arunachal Pradesh is significant. They not only work in the agricultural field, but are also engaged in other productive activities. Various occupations of the people have been described in detail in the preceding chapters on agriculture, industries and trade and commerce. It may be noted that a section of jhum cultivators who are engaged in the field for a part of the year take to other works as subsidiary occupations.

#### The Fourth Economic Census<sup>1</sup>

The Fourth Economic Census was carried out in Arunachal Pradesh during February-March, 1998 with joint endeavor of Central Statistical Organisation (Economic Census Division), Govt. of India, New Delhi and Directorate of Economics & Statistics, Govt. of Arunachal Pradesh. Similar to first Economic Census conducted in 1977, the Fourth Economic Census was carried out independently and not along with Population Census as was the case with other two censuses conducted in between. The Economic Census is the official count of all entrepreneurial units located in the geographical boundaries of the state, involved in any economic activities of either agricultural (excluding crop-production and plantation) or non-agricultural sectors of the economy, engaged in the production and distribution of goods or services not for the sole purpose of own consumption. Enterprises with at least one hired employment (establishment) and those without any hired employment (own account enterprise) formed the target of Economic Census. Information on nature of operation, type of operation, type of activity, ownership, social group of the owner, employment with hired component, employment by sex etc. have

<sup>1</sup> Source: Economic Review of Arunachal Pradesh, 2002 (Directorate of Economics & Statistics, Govt. of A.P.)

been collected. The result of Economic Census provides basic entrepreneurial data for the purpose of planning, development, administration and for improving the estimation of National Income and related aggregates.

Selected tables from the Final results of Fourth Economic Census with illustrations have been given below:

### NUMBER OF ENTERPRISES AND EMPLOYMENT THEREIN

Sl No.	Type of Enterprises	RURAL		URBAN		COMBINED	
		Number	%	Number	%	Number	%
1	2	3	4	5	6	7	8
AGRICULTURAL ACTIVITY							
	No. of Enterprises	181	90.05	20	09.95	201	100.00
1	a) OAE	105	96.33	4	03.67	109	100.00
	b) Establishments	76	82.61	16	17.39	92	100.00
	Persons usually working in enterprises	652	88.95	81	11.05	733	100.00
2	a) OAE	222	96.94	7	3.06	229	100.00
	b) Establishments						
	i) Total	430	85.32	74	14.68	504	100.00
	ii) Hired	397	85.19	69	14.81	466	100.00
NON-AGRICULTURAL ACTIVITY							
1	No. of Enterprises	14364	70.09	6129	29.91	20493	100.00
	a) OAE	6973	69.26	3095	30.74	10068	100.00
	b) Establishments	7391	70.90	3034	29.10	10425	100.00
2	Persons usually working in enterprises	51429	64.44	28374	35.56	79803	100.00
	a) OAE	9948	69.69	4327	30.31	14275	100.00
	b) Establishments						
	i) Total	41481	63.30	24047	36.70	65528	100.00
	ii) Hired	39333	64.26	21873	35.74	61206	100.00
AGRICULTURAL & NON-AGRICULTURAL ACTIVITY							
1	No. of Enterprises	14545	70.29	6149	29.71	20694	100.00
	a) OAE	7078	69.55	3099	30.45	10177	100.00
	b) Establishments	7467	71.00	3050	29.00	10517	100.00
2	Persons usually working in enterprises	52081	64.67	28455	35.33	80536	100.00
	a) OAE	10170	70.12	4334	29.88	14504	100.00
	b) Establishments						
	i) Total	41911	63.47	24121	36.53	66032	100.00
	ii) Hired	39730	64.42	21942	35.58	61672	100.00

1. ***Number of enterprises and total persons employed in agricultural and non agricultural sectors.***

As per the report a total of 20,694 agricultural and non-agricultural enterprises are there in the state. Only 201(0.97%) are engaged in agricultural activities while remaining 20,493 (99.03%) are engaged in non-agricultural activities.

A total of 20694 enterprises are having 80,536 persons usually working including 61,672 (76.58%) hired persons. Out of the total of 80,536 persons usually working 60,072 (83.28%) are male, 12,966 (16.10%) are female and the rest 498 (0.62%) are child workers. In agricultural sector there are 733 persons usually working of which 656 (89.49%) are male and 74 (10.10%) are female. Besides, 3(0.41 %) child workers are also engaged. In non-agricultural sector a total of 79,803 persons are working of which male participation is 66,416 (83.23%) and female participation is 12,892 (16.15%) and the rest 495 (0.62%) being children. Rural and urban participation of enterprises with number of persons engaged have been shown clearly in the table.

2. ***Activity (major) wise distribution of non-agricultural enterprises***

As per report, out of the total of 20,493 non-agricultural enterprises rural portion occupies 70.09% whereas rest 29.91% is in urban areas. So far activity wise participation of enterprises is concerned the highest participation is in the activity group retail trade i.e., 9191 (44.85%) followed by the activity group community, social & personal services having 6672(32.56%) numbers. The lowest participation is in the activity group mining and quarrying being 3 (0.11%) only. Of the total 79,803 persons engaged in nonagricultural sector 51,429 (64.44%) are engaged in rural areas and remaining 28,374 (35.56%) persons are working in the enterprises located in urban areas. It is observed from the result of Economic Census that the largest numbers of persons are usually working in the activity group community, social & personal services. This group has total employment of 44,385 (55.62%) followed by the activity group retail trade employing 16,463 (20.63%) workers, the employment figure registered by the activity group mining and quarrying is 240 (0.30%) workers. It may be mentioned that activity group "Others (unspecified)" has no enterprise in both sectors.

### 3. *Selected characteristics of Agricultural Enterprises*

- a) Agricultural own-account enterprises : There are 109 agricultural Own Account Enterprises (OAEs) of which 105 (96.33%) enterprises and 4 (3.67%) enterprises are located in rural and urban areas respectively. Of total agricultural OAEs, 5 (4.59%) are seasonal in nature and of which 3 (2.75%) and 2 (1.83%) are located in rural and urban areas respectively. About 36 (33.03%) agricultural OAEs with the break-up of 97.22% in rural areas and 2.78% in urban areas are operating without any premises. 100% enterprises of the total agricultural OAEs are running their entrepreneurial activities without using power/fuel. About 25 (22.94%) agricultural OAEs are owned by STs and 10(9.17%) are owned by SCs.
- b) Agricultural Establishments : There are 92 agricultural establishments of which 76 (82.61 %) are located in rural areas and 16 (17.39%) establishments are located in urban areas. Only 1 agricultural estit.. is found seasonal in nature, which is located in rural area. A total of 22 (23.91%) agricultural establishments are operating without premises and these are located in rural areas. It is noticed that 77 (83.70%) establishments. Out of the total of 92 agricultural establishments are operating without using power/fuel of which 65 (84.42%) in rural areas and 12 (15.58%) in urban areas. As many as 49 (53.26%) and 4 (4.35%) agricultural establishments are under the ownership of private (pvt. NFI + Pvt. Others) and cooperative respectively. 20 (21.74%) out of total agricultural establishments are owned by STs, 1(1.09%) by SCs, whereas OBCs owned only 3 (3.26%).

### 4. *Selected Characteristics of Non-agricultural Enterprises*

- a) Non-agricultural Own-account enterprises : In all there are 10,068 non-agricultural own-account enterprises in Arunachal Pradesh of which 6973 (69.26%) are in rural areas and 3095 (30.74%) are in urban areas. The maximum number of non-agricultural OAE i.e., 6164 (61.22%) falls in the activity group retail trade followed by the activity group community, social & personal services which constitute 1703 (16.91 %) enterprises. Only 1 enterprise is in the activity group mining & quarrying.

There are 14,275 persons usually working in these non-agricultural OAEs. It is observed that 8592 (60.19%) of the total working persons are employed in the activity group retail trade. The activity group which ranks next is community, social & personal services having total employment of 2542 (17.81 %) persons.

A total of 10,068 non-agricultural enterprises are running their enterprises without any hired workers (OAE) of which a total of 6973 (69.26%) are in rural areas, and remaining 3095 (30.74%) are in urban areas. Of the 10,068 non-agricultural OAE, 278 (2.76%) are seasonal, 929 (9.23%) enterprises run without premises, 3349 (33.26%) enterprises are owned by STs, 493 (4.90%) are owned by SCs, 7942 enterprises (78.88%) are being run without using power/fuel.

It appears from the Economic Census result that out of the total of 10,068 non-agricultural own-account enterprises, the largest number of 6164 (61.22%) own-account enterprises are in the activity group of retail trade. The second and third largest percentages are in the activity group community, social & personal services (16.92%) and manufacturing (13.62%) respectively. The remaining activity groups constitute below per cent.

The Economic Census 1998 reveals that 278 (2.76%) non-agricultural OAE are seasonal out of which 169 (60.79%) are in the activity group retail trade, followed by manufacturing 57(20.50%), Community, social & personal services (8.99%).

A total of 929 (9.23%) non-gricultural OAEs are carrying out their entrepreneurial activities without any fixed premises, of which the maximum number is in the retail trade activity (59.10%). The second largest activity is community, social & personal services 15.39%, followed by the transport sector (12.81 %), manufacturing (7.10%).

Out of the total 10,068 non-agricultural OAE, 3349 (33.26%) are owned by STs. The largest of such enterprises owned by STs is in the retail trade activity (56.58%), followed by manufacturing (28.84%), Community, social & personal services (6.75%).

Similarly, the number of non-agricultural OAEs owned by SCs is

493. As earlier the maximum number of such enterprises, owned by SCs, is in the activity group retail trade (66.53%). The second largest non-agricultural OAEs owned by SCs is in the activity group Community, social & personal services (21.30%), followed by restaurants & hotels (4.67%).

- Of the total of 10,068 non-agricultural OAEs, 7942 enterprises are running without using power/fuel. The activity group retail trade has the maximum of 5959 (75.03%) enterprises, which are running without power/fuel. This followed by the activity group Community, social & personal services with 1479 (18.62%) enterprises.
- b) **Non-agricultural Establishments :** There are 10,425 non-agricultural establishments of which as many as 7391 (70.90%) are located in rural areas as against 3034 (29.10%) are located in the urban areas of the State. A total of 65,528 persons (including 61,206 hired workers) are usually working in these non-agricultural establishments. Rural and urban participation of total employment are 41,481 (63.30%) and 24,047 (36.70%) respectively.
- It has been found that out of 10,425 non-agricultural estts. The maximum no. 4969 (47.66%) establishments are there in the activity group of community, social & personal services, having employment of 41,843 (63.86%) persons. This is followed by 3027 (29.04%) under the activity retail trade having employment of 7871 (12.01 %) persons followed by 840 (8.06%) establishments under the activity group restaurants & hotels, which provide employment to 3003 (4.58%) persons followed by 640 (6.14%) establishments under manufacturing with employment of 8058 (9.24%) persons.
- As many as 417 non-agricultural establishments are running their entrepreneurial activities without premises of which the maximum percentage i.e., 37.41% falls in the activity group transport. This is followed by the activity group community, social & personal services (23.98%) and retail trade (17.99%) etc. The percentages in other groups are very insignificant.



- From a total of 10,425 non-agricultural establishments, 355 (3.41%) belong to Private NPI, 5148 (49.38%) to private others, 242 (2.32%) to co-operative and 4680 (44.89%) to Govt. sectors. Out of the total of 5148 (pvt. Others) establishments 2769 (53.79%) of the establishments are engaged in retail trade, this followed by 821 (15.95%) in the activity groups community, social & personal services, 598 (11.62%) establishments are engaged in restaurants and hotels. The activity group mining & quarrying and electricity, gas and water supply occupy the lowest percentage having 1 enterprise each.
- Under the social group of owner, 1750 (16.79%) non-agricultural establishments are owned by scheduled tribes and 194 (1.86%) establishments are owned by scheduled castes and 179 (1.72%) establishments are owned by OBCs. 799 (45.66%) establishments owned by Scheduled tribes are in the activity group retail trade. The second largest number of establishments owned by scheduled tribes is in the activity group manufacturing with 256 (14.63%), followed by the activity group community, social & personal services with 244 (13.94%). While scheduled tribes owned non-agricultural establishments are in 10 activities, the scheduled caste owned 9 non-agricultural activities.
- It appears that out of 10,425 non-agricultural establishments, 8472 (81.27%) are running without using power/fuel. The highest percentage for running the enterprises without using power/fuel is in the activity group community, social & personal services with 4547 (53.67%), followed by retail trade (33.39%) and manufacturing (2.96%).

5. **The comparative picture of inter-district concentration of enterprises is given below:**

Sl. No	District according to Area (in sq. Km)	Concentration of total enterprises							% share of concentration of all enterprises
		Agriculture			Non-agricultural			Total Enterprises	
		OAE	Estt	Total	OAE	Estt.	Total		
1	Tawang (2172)	2	7	9	331	218	549	558	2.70
2	Tirap (2362)	20	8	28	595	712	1307	1335	6.45
3	Papum-pare	1	7	8	1488	1201	2689	2697	13.03
4	East Kameng (4114)	1	0	1	240	527	767	768	3.17
5	Changlang (4662)	12	8	20	1204	1054	2258	2278	11.01
6	East Siang (4687)	51	8	59	669	1179	1848	871907	9.22
7	Upper Siang (6188)	0	1	1	287	277	564	565	2.72
8	Upper Subansiri (7032)	2	1	3	338	479	817	820	3.96
9	West Kameng (7422)	1	18	19	776	959	1735	1754	8.48
10	West Siang (76423)	0	3	3	1602	1107	2709	2712	13.11
11	Lower Subansiri (10135)	0	3	3	521	785	1306	1309	6.33
12	Lohit (11402)	19	23	42	1526	1398	2924	2966	14.33
13	Dibang Valley (10329)	0	5	5	491	529	1020	1025	4.95
14	Arunachal Pradesh (83743)	109	92	201	10068	10425	20493	20694	100.00

Source: Economic Review of Arunachal Pradesh 2006

**KEY RESULTS OF FIFTH ECONOMIC CENSUS-2005 AND COMPARISON OVER FOURTH ECONOMIC CENSUS**

Sl. No.	Indicators		Economic Census 1998	Economic Census 2005	Growth Rate during 1998-2005
	<b>1. Enterprises (in number)</b>				
1.1	Number of enterprises	a) Rural	14545	18799	29.25
		b) Urban	6149	9935	61.57
		c) Combined	20694	28734	38.85
1.2	Number of Agricultural Enterprises	a) Rural	181	342	88.95
		b) Urban	20	54	170.00
		c) Combined	201	396	97.01
1.3	Number of Non-agricultural enterprises	a) Rural	14364	18457	28.49
		b) Urban	6129	9881	61.22
		c) Combined	20493	28338	38.28

2. Employment (in number)					
2.1	Number of persons employed	a) Rural	52081	66205	27.12
		b) Urban	28455	44180	55.26
		c) Combined	80536	110385	37.06
2.2	Number of persons engaged in Agricultural enterprises	a) Rural	652	1686	158.59
		b) Urban	81	421	419.75
		c) Combined	733	2107	187.45
2.3	Number of persons engaged in Non-agricultural enterprises	a) Rural	51429	64519	25.45
		b) Urban	28374	43759	54.22
		c) Combined	79803	108278	35.68
3. Selected characteristics of Enterprises					
3.1	Number of Enterprises Without power	a) Rural	11484	11 048	-3.80
		b) Urban	5116	6869	34.27
		c) Combined	16600	17917	7.93
3.2	Number of Non-perennial Enterprises	a) Rural	353	691	95.75
		b) Urban	122	156	27.87
		c) Combined	475	847	78.32
3.3	Number of Enterprises Without premises	a) Rural	686	929	35.42
		b) Urban	718	799	11.28
		c) Combined	1404	1728	23.08
3.4	Number of Enterprises under Social Group of Owner	a) SC	698	1502	115.19
		b) ST	5144	7947	54.49
		c) OBC	599	1671	178.96

Source: *Economic Review of Arunachal Pradesh 2006*

### Manpower and Employment

Utilization of manpower is closely related with developmental plans and programmes. Before the planning era, no high or middle level manpower was available in Arunachal Pradesh (erstwhile NEFA). As a result, at the initial stages of development, manpower had to be brought from outside the state for administrative and development work. But with the passage of time, in the successive plan periods, the number of educational institutions has increased considerably and thereby sufficient number of educated manpower was created during the past three decades. The out-turn of students in Board/University examinations from the institutions in Arunachal Pradesh during the last few years is shown in the table given as follows:

Year	Matric (X)	H.S.S./P.U.	Graduation	Post graduation
1	2	3	4	5
1960-61	31	-	-	-
1965-66	47	14	-	-
1970-71	54	49	15	-
1975-76	60	53	43	-
1984-85	584	1092	92	-
1989-90	1679	1031	73	10
1995-96	1871	1757	422	28
1996-97	2316	1106	440	109
1997-98	2478	1287	560	34
1998-99	1879	1789	737	159
1999-2000	1748	2013	843	157
2000-2001	2560	2185	NA	NA

With only four Primary Schools at the time of Independence Arunachal Pradesh is now having a University, a Regional Institute of Science & Technology (NERIST), nine degree colleges, large number of government schools spread over the entire state and many highly acclaimed educational institutions run by voluntary organizations. With the rapid expansion of educational facilities gradual improvement in literacy percentage has been achieved in the last four censuses. From 7.23% in 1961 Census, the literacy rate has increased to 54.74% in 2001 census. At present there are few thousands of educated youth mainly with general education available for employment in occupations other than cultivation. However, the supply of technical manpower for middle or higher level jobs is limited to the available reserved seats in various technical institutes outside Arunachal Pradesh.

Of the total population of 10.97 lakhs as a whole. The proportion of were workers as against 39.26% of Pradesh was 26.73% and 17.18% respectively. Of the male and female workers, the share of Agricultural workers coupled with tively. Of the was 62%. The increasing trend of workers in the last four censuses

is shown below.

**BREAKUP OF WORKERS AND DECADAL PERCENTAGE RISE  
DURING LAST FOUR CENSUSES**

Item	1971	1981	1991	2001
1	2	3	4	5
Total workers	269542	332555 (23.38)	399782 (20.21)	482206 (20.61)
Cultivators	211160	223358 (5.77)	235987 (5.65)	281822 (19.41)
Agri. Labourers	5292	7796 (47.31)	20054 (157.23)	18569 (-7.40)
Other workers	53090	101401 (91.00)	143741 (41.75)	181815 (16.49)

*(Figures in bracket indicate percentage rise over the decade)*

*Source:- Economic Review of Arunachal Pradesh, 2006.*

It is seen that the work participation rate to total population have registered a declining trend in the last three censuses i.e. 1981, 1991 and 2001 such as 52.59, 46.24 & 43.91 respectively. During the period from 1991 to 2001, the number of cultivators has increased by 19.42% and the number of Agriculture laborers has decreased by 7.4%. The proportion of decadal rise in the number of workers in non-agricultural activities during 1991-2001 is 26.49%. This trend is indicative of the fact that avenues of employment were created in non-agricultural sectors during this decade.

A good number of other workers shown in the table are migrants working in government services and in the business activities. The trend of shifting to secondary and tertiary professions by the workers is also revealed from the table above.

## UNEMPLOYMENT

Although the stock of educated unemployment at present has not assumed serious proportion as compared to other states, yet many educated youth seek employment. This phenomenon is due to the fact that already employed educated people also some time seek higher and different job, thereby inflating number of those seeking employment.

To facilitate the local youth to get employment there are employment cells functioning in the districts. Although, these employment cells do not have the up-to date statistical information, the registration of job seekers in these exchanges provides a rough indication of the trend of unemployment situation:

The numbers of job seekers registered during 2003-2006 are given below:

Items	2003-2004			2004-2005			2005-2006		
	Total	Male	Female	Total	Male	Female	Total	Male	Female
1	1	3	4	5	6	7	8	9	10
Candidates registered during the year	4709	2956	1753	-	-	-	-	-	-
Candidates sponsored	708	502	206	283	180	103	472	350	122
Candidates Placed in various posts	27	11	16	5	3	2	13	12	1
Candidates in Live Register	25994	17487	8507	23380	15684	7696	26304	18141	8163

Source: *Economic Review of Arunachal Pradesh, 2006.*

It has been observed that majority of the students continue their studies for higher education in general education. Where as a low percentage go for technical professional courses.

In the present situation employment opportunities for non technical persons is low and thus have to accommodate in the jobs far below their educational standards. However, there is still shortage of manpower for specialized jobs.

The state government is till now almost the sole authority for employment due to the fact that private sector has not yet come up here to reasonable extent. It is fact that employment in Arunachal Pradesh is generally understood to be employment in the government/ public sector undertaking.

In Arunachal Pradesh the progress of planned development started late. However, within a short period significant changes have taken place in the labour market. Spread of education and exposure to modern ways of living ~~added another dimension in the social changes. The introduction of various~~ employment programmes, such as IRDP, JRY, Swarnajayanti Rojgar Yojana, EAS, PMRY have resulted in providing gainful and productive employment to the people of the state. Development programmes on agriculture, horticulture, livestock, industry and construction etc. also need both skilled and unskilled labour force both in rural and urban areas.

### Government Employees

Based on the census of 1996, strength of Arunachal Pradesh Govt.

employees is estimated to be 44352 of which 38558 are regular staff and 5794 non-regular including Central Govt. and Banking employees. Casual laborers under the State Govt. had been worked out as 11842.

### GROWTH IN STRENGTH OF ARUNACHAL PRADESH GOVT. EMPLOYEES

Year	NO. OF EMPLOYEES			GROWTH INDEX (BASE 1981-1996)		
	Total	Regular	Non- Regular	Total	Regular	Non- Regular
1	2	3	4	5	6	7
1981	19113	17028	2085	100.0	100.0	100.0
1982	19140	17138	2002	100.0	100.6	96.0
1983	19356	17845	1511	101.3	104.8	72.7
1984	21021	20106	915	110.0	118.1	43.9
1985	22192	21114	1078	116.1	124.0	51.7
1986	24104	22147	1961	126.1	130.0	94.0
1987	-	26837	-	-	157.6	-
1988	30187	27507	2680	157.0	161.5	128.5
1989	33993	29712	4281	177.9	174.5	205.3
1990	36173	30580	5593	189.2	179.6	268.2
1993	37577	32898	4679	196.8	192.2	224.4
1994	39819	34503	5316	208.3	202.6	254.9
1995	41399	36372	5027	216.6	213.6	241.1
1996	44352	38558	5794	232.1	226.4	277.9

Source: Census of Govt. Employees in A.P. 1996.

Growth and expansion of Govt. establishment and introduction of new projects and schemes has resulted in the growth of employment as a consequence to the increase in the plan allocation for the State. There is thus regular rise in employment as compared to 1981 base in the subsequent years.

Taking 1981 as base the growth rate in employment reveals that compared to 1981, total strength of Arunachal Pradesh Govt. employees rose at acceleration rate till 1986 by 26%, 1986 by 58%, 1989 by 9%, 1994 by 108.3% and further in 1985 as by about 116.6% and finally in 1996 by 232.1% respectively. Corresponding rise in regular employees had been 30%, 61.5%, 74%, 102.6%, 113.6% and 126% respectively in 1986, 1988, 1994, 1995 and 1996. The difference between the growth of total employees and regular employees depending in works programme variation from year to year and new creation of jobs. This, average annual growth in number of Arunachal Pradesh Govt. employees compared to 1981 may be read as around 116.6% for total employ-

ees and 113.6% for regular employees. Major share of employees are in General Administration (GA) and others (24.9%) followed by PWD (19.0%), Education (18.6%), Health (8.7%) and Policy (7.17%). The sectoral share of the non-regular employees are in the lower pay ranges only. The total non-regular employees are with 2030 numbers followed by GA/others and Health as 1699 and 486 respectively.

The number of government employees in Arunachal Pradesh as on 31 March 1986, 1994, 1995 and 1996 according to groups is as follows.

As on 31 March 1986

Group A	-	507
Group B	-	1366
Group C	-	17293
Group D	-	3266
<b>Total</b>		<b>22432</b>

As on 31 March 1994

Group A	-	803
Group B	-	1867
Group C	-	22445
Group D	-	9388
<b>Total</b>		<b>34503</b>

As on 31 March 1995

Group A	-	885
Group B	-	1969
Group C	-	23559
Group D	-	9959
<b>Total</b>		<b>36372</b>

As on 31 March 1996

Group A	-	927
Group B	-	2063
Group C	-	24520
Group D	-	11048
<b>Total</b>		<b>38558</b>



The hike noticed in Group 'A' in 1994 is due to upgradation of certain Group 'B' posts to Group 'A' posts resulting nominal decline in Group 'B' cadre. Thus Group 'A' and 'C' staff rose steadily over the years. The rising of Group 'D' is uniformly moderate due to general restrictions imposed in the creation of new posts in the recent years.

### **Trends in economic development**

Arunachal Pradesh is gifted with an abundance of natural resources – forests, minerals and hydel power. But, what it lacked was an infrastructure, the prerequisite for a long term development to be achieved through scientific exploration and utilization of the resources. The development of Arunachal Pradesh, started from the scratch, has to be planned from the beginning and carried through phased programmes keeping in view the peculiar problems, immediate needs and available resources. The measures taken in the first stage aimed at improving the existing methods of production for attainment of a higher standard of living, and also bringing about changes in the backward economy through monetization and mobility of supply and demand so as to organize production and consumption on a broader basis by breaking their localization.

The pace of development gathered a tremendous momentum in the following years. Improvement of economy through development of agriculture and communications received increasingly greater emphasis in the Five Year Plan. During the second, third and fourth plans, priorities were laid on agriculture for increased production. Highest priorities were given to construction of roads and buildings followed by social services including education and medical. Agriculture was raised to second priority level in the Fourth Plan. In an appreciation of the facts that economy of this tribal area could be promoted to a better productive system only through the development of agriculture, being the main occupation of the people, efforts were made to introduce improved and scientific method of cultivation in place of the old indigenous methods, which were found nor conducive to more productivity. Agricultural stagnation was the main constraint on economy, resulting in the low standard of living of the people.

**The specific features of the New Agricultural Policy, Government of Arunachal Pradesh, 2001.<sup>1</sup>**

### ***Addressing problems related to shifting cultivation***

Special emphasis to be given to shifting cultivation, ensuring better

<sup>1</sup> Arunachal Pradesh Human development report, 2005.

land management, introducing improved cultivation in slope land through agroforestry, horticulture, and encouraging other household activities. The programme is to be designed in such a way that there will be simultaneous thrust on weaning the *jhum* farmers towards better modes of cultivation.

#### ***Location-specific strategy for development***

Efforts will be made to formulate an area-specific, differentiated strategy taking into account the agronomic, climatic, socio-economic practices as well as the resource-worthiness of the farmer. Special emphasis will be made for introducing newly developed HYV seeds, improved planting material, adoption of new technology and mechanized farming.

#### ***Convergence of allied activities***

There would be a shift from the commodity approach to a systems approach in agriculture. All land-based activities like that of agriculture, sericulture, livestock, fish-rearing, etc., would be given a new dimension and synergistic functional assignment. The policy will aim at avoiding duplication of programmes/works by different Functionaries, as far as possible. Towards that end, There will be regular monitoring and evaluation of all schemes implemented by the Agriculture and allied departments through an appropriate mechanism.

#### ***Technology transfer***

Importance will be accorded to identify new location-specific and economically viable improved species of agriculture, sericulture, livestock, and fish rearing. The entire extension system will be revitalised. Innovative and decentralised institutional changes will be introduced to make the extension system responsible and accountable. The development of human resources through capacity-building and skill upgradation of extension functionaries is to receive due attention.

#### ***Supply of inputs***

Adequate and timely supply of inputs such as seed, fertilizers, pesticides, agri-tools and implements, credit at reasonable rate to farmers will be provided by the Government and other institutions subject to availability of resources and funds. Greater emphasis will be given to increase the consumption of such inputs for achieving the targeted increase per unit of area. As far as possible, use of effects of inorganic fertilizers.

***Facilitate private investment in agriculture***

Efforts would be made to create conditions that encourage participation of private enterprises in the establishment of agro-based industries. An incentive package and guidelines would be finalized ensuring participation of the private sector and financial institutions in the agricultural sector as a whole. NABARD will have to play a major role in channelising investment.

***People's participation***

The new policy would encourage formation of Self-Help Groups and village committees, at different levels. The village committee would be vested with the task of maintaining and managing the assets created so far like irrigation channels, terraces, market sheds, etc.

***Marketing infrastructure***

Emphasis will be laid on development of marketing infrastructure and techniques of preservation, storage and transportation, with a view to reducing the post-harvest losses and ensuring a better return to the grower. Upgradation and dissemination of market intelligence will receive particular attention. Efforts will be made to strengthen the market infrastructure.

***Agro-processing***

Setting up of Agro-processing units in production areas will be given priority. To reduce post-harvest wastage, an effort would be made to add value, especially to agricultural and horticultural produce, by setting up small processing units. The Small Farmers Agricultural Business Consortium (SFAC) will be activated to cater to the needs of farmer entrepreneurs. Tea plantations will be brought under the agriculture sector, but, for processing, it may be under the industries sector.

***Price support***

Market intervention scheme, involving procurement through a notified agency, will be implemented for selected agricultural/horticultural crops, so that the farmers are assured remunerative prices.

***Use of Information Technology (IT)***

The database for the agricultural sector will be strengthened to ensure greater reliability of estimates and forecasting, which will help in the process of



BASKET MAKING



CRAFTS FROM TIRAP



MOTIF OF APATANIS



CARPETS FROM BOMDILA



NOCTE WOOD CURVING



BEADS OF WANCHOS





WEAVING



TEXTILE OF AKAS



BEADS OF VARIOUS COLOURS



SILVER BANGLE (NYIMI KORI)



ELEPHANT PLOUGHING IN ARUNACHAL



ORANGE CULTIVATION





KIWI PLANTATION IN WEST KAMENG



KIWI PLANTATION





PISCICULTURE



TOMATO HARVESTING



PADDY FIELD AT ZIRO



ITAFORT



MALINTHAN AT LIKABALI, WEST SIANG DIST





HOLLOCK GIBBON, THE STATE  
ANIMAL OF ARUNACHAL PRADESH



HORNBILL, STATE BIRD  
OF ARUNACHAL



MITHUN (*BOS FRONTALIS*)



YELLOW SPOTTED WOLF SNAKE LYCODON JARA



PIED KINGFISHER CERYLE RUDIS





YAK



RED-NECKED KEELBACK  
RHADOPHIS SUBMINIATUS



GORAL NAEMORHEDUS GORAI



ARUNACHAL PRADESH LEGISLATIVE ASSEMBLY AT NAHARLAGUN



ENTRANCE GATE AP CIVIL SECRETARIAT, ITANAGAR



RAJ BHAWAN



CHIEF MINISTER'S OFFICIAL BUNGALOW





SCIENCE CENTRE AT ITANAGAR



ITANAGAR PERMANENT BENCH, NAHARLAGUN GUWAHATI HIGH COURT





RAMAKRISHNA MISSION HOSPITAL AT ITANAGAR



RAJIV GANDHI POLYTECHNIC AT ITANAGAR



ARUNACHAL STATE HOSPITAL AT NAHARLAGUN



DERA NATUNG GOVERNMENT COLLEGE, ITANAGAR



NERIST



JAWAHARLAL NEHRU STATE MUSEUM



TAWANG MONESTARY





DENDROBIUM DEVONIANUM- A RARE ORCHID



ESMERALDA CATHCARTII - ENDANGERED ORCHID



INDIA ARUNACHALENSIS- AN  
ENDEMIC & CRITICALLY ENDAN-  
GERED ORCHID FROM A.R.P



SARCOGLYPHIS ARUNACHALENSIS-  
AN ENDEMIC ORCHID OF  
ARUNACHAL PRADESH



PAPHIOPEDILUM FAIRIEANUM -  
THE LOST LADY'S SLIPPER ORCHID,  
CRITICALLY ENDANGERED



BIERMANNIA JAINIANA -  
AN ENDEMIC ORCHID OF  
ARUNACHAL PRADESH



GALEOLA LINDLEYANA - RARE  
SAPROPHYTIC ORCHID





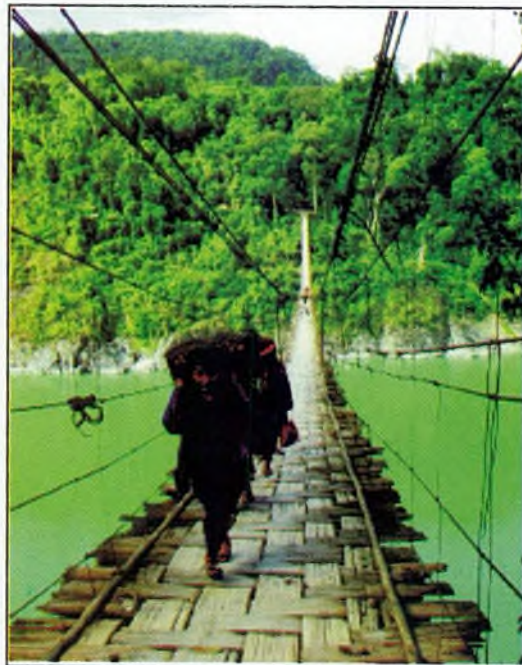
MYANMARESE TRADERS EN-ROUTE TO NAMPONG



ROAD TO TAWANG



PARSHURAM KUND BRIDGE, LOHIT DISTRICT



SUSPENSION BRIDGE





VIEW OF MOUNTAIN



SIANG RIVER





DONG IN ANJAW DISTRICT



SHUNGETSER  
LAKE IN  
TAWANG DIST



LANDSCAPE. ANINI

planning and policy-making.

### ***Flood and drought management***

It will be the endeavor of the government to device a mechanism through which the floods and droughts, affecting agricultural production, are tackled. The provisions of the National Crop Insurance Scheme will be reviewed, facilitating its introduction in the state. In the foothill areas, water-pumping systems will be provided to exploit the groundwater.

Further, contingency agriculture planning would be encouraged along with the use of drought and flood-resistant crop varieties in the affected areas.

### **Industries**

At present the main thrust of the Industry Department is to promote traditional village and small scale industries and there by provide employment opportunities and improve the economic conditions of the people of the state. At present there are 14 district industries centers in the state. Three DICs provide all possible help and guidance to the prospective entrepreneurs for taking up industrial ventures and provide services for identification of suitable schemes, preparation of project reports, supply and management of raw materials and marketing of finished product etc. The DICs also organize trainings at district level to create awareness amongst the entrepreneurs. They also assist entrepreneurs to avail incentive packages and facilities given by both central and state government.

There are two industrial training institutes and one rural industrial development centre functioning in the state which impart vocational education to the local youths in trades like Electrician, Motor Mechanic, Wireman, Fitter, Plumber, Surveyor, Mechanic (TV & Radio), Draughtsman (Civil), Carpenter, Welder, Shorthand and secretarial practice. A total number of 106 trainees passed out from different ITI's and RIDC of the state in different trade during 2005-2006.

The Government of India, Ministry of Labour has approved for establishment of two new ITI's at Yupia (for woman) and Miao (General) and upgradation of Rural Industrial Development Centre, Dirang in to ITI for which an amount of Rs. 468.41 lakhs sanctioned.

Under Centrally Sponsored Scheme (CSS) Government of India approved for establishment of one Growth Centre at Niglok-Ngorlong within an

estimated cost of Rs. 10.71 crores. The Government of India also approved for establishment of four (4) Industrial Infrastructure Development Centres (IIDC) at Bame, Dirang, Balukpong and Miao under CSS for which project report amounting Rs. 5.00 crores has been submitted to SIDBI for onward submission to the Government of India for approval.

The tables below shows upto-date position of industries and schemes implemented under CSS.

**DISTRICTWISE VILLAGE AND SMALL SCALE INDUSTRIES  
AS ON 31-03-2006**

Sl. No.	Particulars	Number
1	2	3
1	Medium Scale Industries	15
2	No. of Village & Small Scale Industries registered permanently (functioning)	525042
3	No. of Industrial Estates	1413

*Source: Economic Review of A.P, 2006.*

### **Transport and Communication**

There were only a few motor able roads during the British days, e.g. the Stilwell road in the India-Burma border constructed during the Second World War, the Lohit Valley Road motorable from Sadiya to Benning constructed in 1912 and the Sadiya-Nizamghat Road. Porter tracks, mule paths and cane or bamboo bridges were the only means of communications as well as transport. The economic backwardness of this region and the isolation of its people were evidently due mainly to the absence of regular road communications suitable for vehicular traffic. After 1947, it was keenly felt that no all-round development of this tribal area was possible without a network of trunk and lateral roads and bridges to connect the deep interior parts of the districts. Such roads were also essential for an effective and efficient administration. With the expansion of administrative activities, the need for transportation of goods to the interior areas also assumed a great importance. The magnitude of the problems of supply and transport in a mountainous terrain where great distances were traversed on foot can well be imagined. To meet those problems, food and other necessities were supplied to the government servants by means of air-drops. A system of porter age and animal transport for carrying of land and provisions was also introduced. But, it was not possible to meet the growing

requirements of the administration and develop the area without road communications. Airdropping of supply besides being extremely expensive had its limitations. It was, therefore, obvious that the problems could be solved only by constructing roads, a fact which received increasing emphasis under the development programmes taken up by the government in different phases since independence. As a matter of fact, high priority has been given on roads in all the Five Year Plans of the territory since 1951.

But construction of roads in this rugged mountainous terrain having primeval forests, torrential rivers and heavy rainfall was not an easy task. It posed a great challenge to the engineers. The available man power and material resources were far from being sufficient for the purpose. Initial endeavors were, therefore, directed towards construction of bridle-paths and porter tracks.

An infrastructure of communications is vital for development of any area. Therefore, despite great difficulties and natural obstacles, the task of road building was undertaken in the fifties with great zeal and determination. A remarkable network of bridle-paths and foot-tracks over an wide area of the interior was constructed. Considerable progress was also achieved in building of major roads. At this time Dr. Elwin made an observation that the road to Bomdila, the headquarters of the present West Kameng District, at a height of 9,000 feet, would, when complete, be one of the great roads of India, a marvel of engineering skill.

Late D. Ering, the then Union Deputy Minister, who was from Siang, wrote on this phase of road construction in the erstwhile NEFA as follows:

'Road building in NEFA has made commendable progress in the last six years. All the five district headquarters are connected by black-top roads, so also three sub-divisional headquarters. One is connected presently by the rail cum-road link with Assam on the north bank of Brahmaputra. A number of lateral roads have been completed and more are under construction. A lion's share of this contribution to NEFA is of the Border Roads Organisation. The PWD too with their small resources has contributed to the development of roads. They have very rightly given priority to road building over building construction in their plan of work in NEFA. Communication with the rest of the country will go a long way in the development of this strategic border area, where the pace of development in the present situation has to be fast enough.'

A major break-through in the work for connecting the remote and interior areas by good roads was achieved after 1962. This has been mainly due to the sustained efforts of the Border Road Development Board (BRDB).

Transport and communication play a vital role on the over all development of an area in general and industrial development in particular. Arunachal Pradesh being a hilly state has no any other suitable and viable mode of communication like railways and waterways. Road is the principal mode of communication for movement of goods as well as movement of the passengers. Yet in this sector the state is much behind the rest of the North Eastern states. As such in the development plans the Govt. has been attaching high priority to the construction of roads and as a result the total length of roads constructed in the state stood at about 15021.85 km. (including 399.80 km. under N/Highway) giving the road density of 17.9 km per 100 sq. km. of area at the end of March, 2004 as against the all India average of 74.9 km. Per 100 sq. km during 1997. Category wise length of road for last 5 years is given below:

**CONSTRUCTION AGENCY, LENGTH OF ROADS DURING  
AS ON 31.3.2005**

Construction Agency	Black topped	Water bound macadam	Traveled	Un-surfaced	Total length of roads
1	2	3	4	5	6
APPWD	32.522	1091.048	1233.10	2776.375	7319.37
Project Vartak	51.87	203.18	10.00	264.31	2841.33
Project Udayak	-	48.15	-	36.39	714.08
RWD	-	284.73	-	2002.55	2346.35
Forest	-	13.55	1007.42	45.83	1112.65
Total for A.P.	84.39	1640.66	2250.52	5107.46	14333.78

Source: *Economic Review of A.P., 2006.*

The above table indicates that out of total road length of about 14333.78 km. in 2004–2005 only. 33.1 % were black topped, 31.25% surfaced and rest 35.63% were un-surfaced.

**Rural Link Roads**

Construction of rural link roads connecting a village or a cluster of villages with the main road is yet another scheme taken up by the RWD. The total length of such link roads constructed till the end 31st March, 2005 is 2346.33 km.

### State Road Transport

Arunachal Pradesh State Transport Services came into existence in 1975 with only two buses. The department is now operating a fleet strength of 236 buses (as on 31.3.2005) on 153 routes within and outside state. The average daily passengers carried by the buses were 6385 nos. Apart from APST bus services, large volume of traffic is operated by private operators. The APST department is also operating four Railway Out Agencies at Along, Naharlagun, Bomdila and Yingkiong to facilitate advance reservation in long distance trains.

### OPERATIONAL STATISTICS OF ARUNACHAL PRADESH STATE TRANSPORT

Indicator	Unit	Operational Statistics			
		2002-2003	2003-2004	2004-2005	2005-2006
1	2	3	4	5	6
Bus route coverage	No	147	148	153	153
Distance bus route coverage	Per bus per day (in Km.)	95	NA	88	91
Total bus km operated.	-do-	NA	NA	71000	7761378
Strength of bus fleet (No of buses)	Nos.	233	236	236	236
Seat occupancy ratio	Percent	68	NA	54	51
Traffic receipt	Rs in lakh	705	691	718	876
Bus fleet utilisation	Percent	68	66	66	67
Operational Expenditure	Rs in lakh	2600	2032	2262	2414
Net (operational) loss	-do-	9.72	NA	NA	NA
Fuel efficiency	Km per litre	3.10	3.12	3.12	3.08
Tyre efficiency	In Km	28000	35000	35000	19000
Bus station	In No	12	13	13	24
Railway out agency	-do-	5	4	4	5
Average daily passengers carried	-do-	5027	6275	6385	7186
Average bus on road on any given day	-do-	141	162	162	128
Total passenger carried	No in lakhs	18.35	22.29	22.29	25.86

Source: *Economic Review of A.P., 2006.*

### Railways

There is only one metre gauge railway line of 22 km. connecting Bhalukpong with Balipara. The progress and achievements in Railways have been narrated under appropriate chapter-heads of this volume.

### Civil Aviation

The state of Arunachal Pradesh did not have a place in the air map of the country till 1995. In view of remoteness and long distance between the capital and district headquarters and due to absence of a good surface communication there was a long felt need for air communication for movement of passengers and for supply of ration items to the remote parts of the state. As a first step towards the effort the state govt. introduced a single helicopter service basically for passengers through Pawan Hans Helicopter Limited (A Govt. of India Enterprise) with effect from December, 1995. Govt. have acquired another aircraft in 2003 making the total strength to two. The passenger service was initially started on two routes viz; Naharlagun- Guwahati and Naharlagun-Mohanbari and subsequently extended to few other places of the state.

The helicopter service is also extended to other locations on emergency situations like lifting of stranded passengers due to disruption of road communication, lifting of VIP's etc. At present there are 85 helipads and 11 ALGs for transportation of men and material by Pawan Hans helicopter services functioning in the state at the end of 2004-005. Thus during 2004-2005 the average area and population served by each post office were 207.77 sq. k.m. and 3675 persons respectively.

### GROWTH OF POST OFFICES IN ARUNACHAL PRADESH

Indicator	Unit	Post Offices as on 31st March						
		2000	2001	2002	2003	2004	2005	2006
1. Post offices	No.	301	303	304	305	305	304	304
(a) Head post office	No.	1	1	1	1	1	1	1
(b) Sub-post office	No.	46	46	47	47	48	48	48
(c) E.D.B.P.O.	No.	254	256	256	257	256	255	251
2. Telegraph office	No.	21	21	31	31		-3	NIL
3. Population served per post office	Person	3005	3601	3675	3675	3675	3675	25295
4. Area served by one post office	Sq. km	278	276	207	207	207	207	28.69

Source: *Economic Review of A.P., 2006.*

Over the past years the state has been making slow and steady progress in creating telecommunication network. The state is at present divided into eight Telcom-Sub Divisions, viz; Itanagar, Naharlagan, Bomdila, Tezu, Pasighat, Anini, Khonsa and Changlang. The number of telephone exchanges in the state at the end of 31-3-2005 was 99 as against 95 at the end of 31-3-2002. The total

equipped capacity has increased from 83000 during 2003-2004 to 57248 during 2004-2005. The total number of working telephone connections which was 57700 at the end of March, 2004 has increased to 59384 at the end of March, 2005 registering a rise of about 7.25% over the year. The achievement made during 2001 to 2005 is highlighted in the table given below:-

**GROWTH OF TELECOMMUNICATION FACILITIES FOR THE PUBLIC FOR LAST FOUR YEARS**

Sl. No.	Indicator	Unit	As on March					
			2001	2002	2003	2004	2005	2006
1	2	3	4	5	6	7	8	9
1	Telephone Exchange	No.	94	95	105	105	99	103
2	Total Capacity	No	62816	73208	82868	83000	57248	84972
3	Working telephone Connection	No.	39269	44388	53862	57700	59384	58432
4	No. of Mobile connections	No	NA	NA	NA	3750	14866	37245
5	Internet Connection	No	53	NA	NA	1107	NA	2864

*Source: Economic Review of A.P, 2006.*

Radio Stations are functioning at Tezu, Pasighat, Itanagar and Tawang. Very low power transmitters (VLPT) have been set up almost in every District Headquarter and a low power TV transmitter has been set up in the State Capital at Itanagar.

**Education and Human Resource Development**

If literacy is the criterion of formal education, then it may be said that almost the whole of the region now known as Arunachal Pradesh remained an 'land of darkness' before independence. In the olden days, home was virtually the only centre of learning for the tribal children of this region. It was the home where the myths and legends about the origin, migration and settlement of a tribe were transmitted orally from generation to generation. It was the home again where the children were taught the traditional ways of tribal life and crafts by their parents. But, save the two Buddhist tribes of the Monpas and the Khaptis, they had no script, and they were illiterate in that sense. The monasteries of the Monpas and Khaptis are seats of Buddhist enlightenment and monastic education.

The history of institutional or formal education in Arunachal Pradesh dates from about the middle of the 19th century, when an American Baptist



Mission had opened a lower primary school at Sadiya to impart education to the local children including those of the adjacent hills. After 1914 when Sadiya was the administrative headquarters of the Central and Eastern Sections North-East Frontier Tract, a government school was set up there. On the eve of the World War II, primary schools were opened at Chowkham and Bolung. There are the few schools established before 1947.

After independence, intensive efforts were made to spread modern education among the tribal people and the achievement was significant. By the month of March 1972, there were 59 schools, of which eleven were high and seven higher secondary schools, with altogether 27,974 students on roll. The first college in Arunachal Pradesh named Jawarlal Nehru college was established at Pasighat in 1964. The college provided higher education in arts, science and commerce up to degree level.

Education and Human Resources Development is of paramount importance to improve the socio-economic status of people. In this respect, till independence, Arunachal Pradesh lagged extremely behind with only 4 primary schools and literacy less than 1 %. A modest beginning, however, could be made right from the first Five Year Plan despite formidable constraints like inaccessibility of territory, peoples' unawareness of the need of education and traditional dependence on children for domestic and field work. With increasing emphasis through successive plans, significant progress could be made over the past few decades. The census record reveals progressive growth of literacy as 7.23% in 1961, 11.29% in 1971, 20.79% in 1981, 41.59% in 1991, and 54.74% in 2001. As per 2001 census data, male and female literacy rate in Arunachal Pradesh are 64.07% and 44.24% respectively as against All India rates of 64.13% and 39.29% respectively. In view of low literacy rate as compared to other states of the country emphasis has been laid on extension of educational facilities and provision of infrastructure facilities like school building, teaching staff, teaching / hearing materials, etc. During 9th Plan emphasis were made to achieve the national objective of universalisation of elementary education, complete eradication of illiteracy among the people of age group 15-35 years, expansion of vocational education and youth service facilities to reduce dropout rates. The following table shows growth of educational institutions during last few years.

**GROWTH OF EDUCATIONAL INSTITUTION**

Type Educational Institutions	During last four years			
	2002-2003	2003-2004	2004-2005	2005-2006
1	2	3	4	5
1. Pre-primary schools	58	NA	NA	NA
2. Primary schools	1325	1364	1371	1380
3. Middle schools	348	449	495	528
4. Secondary schools	130	130	136	142
5. Higher Secondary schools	74	74	78	81
6. College (Arts & Science)	7	10	10	10
7. University	1	1	1	1
8. School for Handicapped	1	1	1	1
9. Technical Educational Institution	2	2	2	2
10. Medical College ( Homeo )	1	1	1	1
11. Polytechnic	1	1	1	1

*N.B: Figure include Govt/ Private/ autonomous institutes.*

*Source: Economic Review of A.P, 2006.*

Efforts are also being continued on higher and University education with qualitative improvement at all level. At present there are nine (9) government colleges, 3 private colleges and one University in the state.

In respect of technical education, Arunachal Pradesh is yet to have institutional facilities except the lone North Eastern Regional Institute of Science and Technology (NERIST) with limited seats for the state. Therefore, with a view to cater technical man power requirement of the state, Arunachal Pradesh Polytechnic renamed Rajiv Gandhi Polytechnic has been set up at Itanagar in 2002-2003 under the World Bank Assisted Project. The Institute offers technical level diploma courses in Information Technology, Travel Tourism and Hotel Management, Costume Design and Garment Technology, Herbal Remedies and Cosmetology, Automobile Engineering and Electrical & Electronic Engineering. There is no college for study in medicine (except one Homeopathic College under Pvt. Sector) at Itanagar, veterinary, forestry, agriculture, fishery etc under Govt. as well as private Sector and hence, students are sent to study these disciplines in the institutions of other states of the country. On completion of their courses, most of these students return to the state catering Technical Manpower needs in various fields.

With a view to meet up the demand for skilled manpower in different

trades, the government have establishment following vocational education institutes.

1. Health Training and Research Centre, Pasighat.
2. Industrial Training Institutes (ITI) at Roing, Taborijo and Dirang.
3. Gram Sevak Training Centre, Pasighat.
4. District Institute of Education and Training at Changlang, Roing Pasighat, Seppa, Dirang and Naharlagun.

Two more ITI's will be set up at Miao and Yupia for which government have already accorded sanction.

### **Power**

Although, Arunachal Pradesh possessing immense potential of power in the form of hydel, oil, natural gas and coal resources, the progress in this sector in the state has not taken place on a scale proportionate to resources availability. As a result, there is a big gap between availability and requirement for power in the state. As per 2001 Census out of 2,12,615 households only 116,275 households (54.7%) are having electricity facility.

The total un-exploited hydel potential of the state is -estimated to be 49,000 MW. Even if a part of the available hydro potential is harnessed the state will not only be self sufficient in meeting its own power requirement but at the same time, it can earn revenue by supplying power to the other neighboring states of the region. The existing micro mini hydel projects with an installed capacity of 32.48 MW and Diesel sets with an installed capacity of 27.12 MW are the main sources of power supply in the state.

The National Hydro Power Corporation (NHPC) has undertaken survey and investigation works of Siang and Subansiri basin mega hydro power project with an estimated installed capacity of 20700 MW.

Priority is being accorded by the State Government in annual plans not only to meet increasing power demand within the State but also to bridge the gap of demand and supply in the region as a whole. But due to inadequate State's financial resources, the govt is unable to materialise its ambition of financing large hydel projects. Therefore, the government is encouraging participation of private sector companies in hydro power development.

At present the overall power supply position in the state is not satisfactory. The consumption of power in the state has been increasing over the recent years. The present demand is about 95 MW which is partially met from the existing micro/mini hydel stations and diesel generation sets with total installed capacity of 59.72 MW only and imports of state's share from central sector and purchase from Assam State Electricity Board (ASEB). The achievement made in past few years under various items of power sector is presented in the following table:

#### ACHIEVEMENT UNDER POWER SECTOR

Sl. No.	Indicators	Unit	Achievement during the year		
			2002-2003	2003-2004	2004-2005
1	2	3	4	5	6
1.	Installed capacity	MW	59.30	59.72	60.12
1.1.	Hydel	-do-	32.18	32.60	33
1.2.	Diesel	-do-	27.12	27.12	27.12
1.3.	Stand by	do	-	-	-
2.	Annual Generation	MU	62.52	56.50	49.47
2.1.	Hydel	-do-	52.04	56.18	39.33
2.2.	Diesel	-do-	10.48	10.32	10.14
3.	Imported from ASEB	MU	82.76	3.31	636.30*
	Supplied by NEEPCO	do	21.26	47.23	
4.	Annual Consumption	MU	76.18	85.22	93.91
4.1.	Domestic	MU	34.72	37.70	38.93
4.2.	Commercial	-do-	5.56	10.53	6.85
4.3.	Industrial	-do-	1.64	2.07	1.98
4.4.	Public lighting and water works	-do-	5.48	16.63	8.02
4.5.	Agriculture/ Others	-do-	28.78	18.28	38.15
5.	Villages electrified during the year	No.	20	106	36
6.	Total Power requirement for A.P	MW	95	95	NA

\* Includes 197.53 MU free power supply from RHEP

Source: Economic Review of Arunachal Pradesh, 2006.

In the field of rural electrification programme achievement made so far is satisfactory. In spite of difficulties and hilly terrain the department has been able to electrify 2469 villages till the end of March, 2004 accounting for 64% out of total villages of 3863 as per 2001 census.

Distribution of household by source of lighting as per 2001 Census is given below:

#### DISTRIBUTION OF HOUSEHOLD BY SOURCE OF LIGHTNING

S1. No.	Source of lighting	Total	%	Rural	%	Urban	
	1	2	3	4	5	6	7
1	Total	212,615	100.0	164,501	100.0	48,114	100.0
2	Electricity	116,275	54.7	73,205	44.5	43,025	89.4
3	Kerosene	66,779	31.4	62,279	37.9	4,500	9.4
4	Solar energy	481	0.2	375	0.2	106	0.2
5	Other Oil	1,582	0.7	1,571	1.0	11	0.0
6	Any other	9,853	4.6	9,717	5.9	136	0.283
7	No Lighting	17,645	8.3	17,309	10.5	336	0.698

Source: *Economic Review of Arunachal Pradesh 2006.*

#### Mining

The most important mineral resources of Arunachal Pradesh is oil and natural gas which are being extracted in small quantity from Kharsang Oil Field in Changlang District by Oil India Limited and Geo Empro Petroleum Limited, a consortium of private and foreign industries. Survey and investigation carried out have also established presence of economic deposit of coal at Namchik-Namphuk belt of Changlang district. There is a proposal to carry out commercial extraction of the coal deposit.

No detail survey of other mineral resources could be taken up due to absence of infrastructure, difficult terrain and thick forest growth. However, preliminary investigations carried out in some parts of the state have confirmed economic deposits of limestone, dolomite, graphite, granite, marble stone etc. To promote exploration and exploitation of various minerals the state govt. has created the Department of Geology and Mining in the year 1995. The table below shows production of oil, natural gas and coal during last three years.

#### STATEMENT SHOWING PRODUCTION OF CRUDE OIL, NATURAL GAS AND COAL

Sl No.	Particulars	2003-2004		2004-2005		2005-2006	
		Quantity	Value (Rs. in lakh)	Quantity	Value (Rs. in lakh)	Quantity	Value (Rs. in lakh)
1	2	3	4	5	6	7	8
1	Crude Oil	77000 MT	3706	-	2264.83	98955.703	2153.60
2	Minor Minerals	NA	431	-	445.10	NA	856.75

Source: *Economic Review of Arunachal Pradesh 2006.*

## BIBLIOGRAPHY

- Allen, B.C. : (1) *Assam District Gazetteers*, (Vol-IV)-Kamrup(Shillong, 1905).  
 (2) *Assam District Gazetteers*, Vol V, Darrang (1905).  
 (3) *Assam District Gazetteers*, (Vol- VII), Sibsagar, (Shillong, 1905).  
 (4) *Assam District Gazetteers*, Vol- VIII Lakhimpur, (Shillong, 1905).  
 (5) *Assam District Gazetteers*, (Vol-XI) : *The Sadiya and Balipara Tract Gazetteers*, Part I and II, (Shillong, 1928),
- Banerjee, A.C. : (1) *Constitutional History of India*.  
 (2) *The Eastern Frontier of British India*, (Calcutta, 1964).
- Barman, S.G. : *NEFA the land & its people* (Indian Quarterly Vol. XIX No. 14, 1963).
- Bloch, T. : *Annual Reports of the Archaeological Survey of India*, 1904 – 05 and 1906 -07.
- Barua, Hem : *The Red River and the Blue Hill* (Gauhati, 1966).
- Barua, K.L. : *Early History of Kamrupa* (Gauhati, 1966).
- Baruah, T.K.M. : *The Idu Mishmis* (Shillong, 1960).
- Bhuyan, S.K. : (1) *Early British Relations with Assam* (Shillong, 1928).  
 (2) *Atan Buragohain and his times* (Gauhati, 1957).  
 (3) *Anglo Assamese Relations, 1771–1826* (Gauhati, 1949).
- Bora, D.K. : (1) *History and Archeology of Itanagar*.  
 (2) *The Nah*.
- Borpujari, H.K. : *Problems of the Hill Tribes, North-East Frontier* (Guwahati, 1970).
- Bower, Ursula Graham : *The Hidden Land* (London. 1953)
- Chakravarty, B.C. : *British Relations with the Hill Tribes of Assam since 1858*

- (Calcutta, 1964).
- Chakravarty, L.N. : *Glimpses of the Early History of Arunachal* (Shillong, 1973).
- Chatterjee, S.K. : (1) *Kirata – Jana – Krti* (Calcutta , 1951).  
 (2) *The Place of Assam in the History and Civilisation of India.*  
 (3) *Indo – Mongoloid* ( Calcutta , 1954 ).
- Choudhury, P.C. : *The History of Civilisation of the People of Assam to the twelfth century A.D.* (Gauhati , 1966).
- Cooper, T.T. : *Notes on the Mishmi Hills*, JASB (1873).
- Chakravarty, L.N. : *Glimpses of the Early History of Arunachal Pradesh*, (Shillong, 1975).
- Chatterjee, Suniti Kumar : (1) *The place of Assam in the History and Civilization of India* (Guwahati, 1970).  
 (2) *Kirata-Jana-Krti*, (Calcutta, 1974).
- Choudhury, J.N. : (1) *Arunachal Panorama*, (Shillong, 1973).  
 (2) *Arunachal Through the Ages*, (Shillong, 1982).
- Chowdhery, H.J. : *Floristic Diversity and Conservation Strategies in India*, Vol-II: In the context of States and Union Territories.
- Chowdhury, J.N. : (1) *Arunachal Panorama* (Shillong, 1973).  
 (2) *The Hill Miris of Subansiri* (Shillong).
- Christoph von Haimendrof : *Highlanders of Arunachal Pradesh*, (New Delhi, Furur-1982), pp 155-156.
- Dutta , P.C. : *The Tangsas* (Shillong , 1969).  
*The Noctes* (Shillong , 1978).
- Deuri, R.K. : *The Sulungs* (Shillong , 1982).
- Das Gupta, K. : *An Introduction to central Monpa* (Shillong, 1968).
- Dalton, E.T. : *Tribal History of Eastern India* (Descriptive Ethnology of Bengal) (Delhi, 1973).
- Devi, Laksmi : *Ahom-Tribal Relations*, (Guwahati, 1968).
- Dhar, Bibhash and Coomar, Palash Chandra : *The Tribes of Arunachal Pradesh*, (2004).
- Dutta, J.C. : *Malinithan*.
- Dutta, Parul : *The Wanchos* (1990).
- D. Ering : *The North-East Frontier Agency*, 1972 edited by K. Suresh Singh.
- Dr. D.K. Dutta & : *Impacts of Buddhist Arts and Crafts in the Econo-*

- D.K. Duarah : *my of the Monpas of Arunachal Pradesh.*
- Elwin, Verrier : (1) *India's North-East Frontier in the Nineteenth Century* (London, 1962).  
 (2) *A Philosophy for NEFA* (Shillong, 1964).  
 (3) *The Art of the North-East Frontier of India* (Shillong, 1959).  
 (4) *Democracy in NEFA* (Shillong, 1965).  
 (5) *India's North East Frontier in the Nineteenth Century*, (London, 1962).
- Elwin, Verrier (ed) : *India's North East Frontier, in the nineteenth century* (London, 1962).
- Ering, D. : *The North-East Frontier Agency, published in Tribal Situation in India* edited by K. Suresh Singh, (Simla, 1972).
- Elwin, Verrier (ed) : *India's North East Frontier, in the nineteenth century* (London, 1962).
- Furer –Haimendrof, Christopher von : *Highlanders of Arunachal Pradesh* (New Delhi, 1982).
- Gait, Edward : *A History of Assam* (Calcutta, 1967).
- Hamilton, W. : *East India Gazetteer* (London, 1815).
- Hamilton, F. : *An Account of Assam, 1807-14*, Edited by S.K. Bhuyam (Gauhati, 1940).
- Hannay, S.F. : *Notes on the Ancient Temples and other Remains in the vicinity of Saddiya, Upper Assam*, JASB, June, 1848.
- Hesselmeyer, S.H. : *The Hills Tribes of the Northern Frontier of Assam*, JASB, 1868.
- Hodgson, B.H. : *On the aborigines of the Eastern Frontier* JASB (Vol. XVIII, 1849).
- Hunter, William : *A Statistical Account of Assam* (Vol-1), (Delhi, 1975).
- Kri, H. : *The Mishimis* (An Introduction), 2008.
- Kumar, K. : *The Palibos* (Shillong, 1979),
- Kumar, K. : *The Boris*, (Shillong, 1979)
- Lego, N. : *Modern History of Arunachal Pradesh-1825-2006* (2006).
- Luthra, P.N. : *Constitutional and Administrative Growth of the North-East Frontier Agency*, (Shillong, 1971).
- Mackenzie, Alexander : (1) *The North East Frontier of India*, (Delhi, Reprint,



- 1979).
- (2) *History of the relations of the Government with The Hill Tribes of the North-East Frontier of Bengal* (Calcutta, 1884).
- M'Cosh, J. : *Account of the mountain tribes on the extreme North-East Frontier of Bengal*, JASB., Vol.V, 1836.
- Michell John, F. : *The North East Frontier of India* (Delhi, Reprint, 1973).
- Nanda, Neeru : *Tawang-The Land of Mon*, (New Delhi, 1982).
- Pandey, B.B. : *The Bangnis: A Tribe in Transition*.
- Raikar, Y.A. and Chatterjee, S. : *Archeology of Arunachal Pradesh* (1980).
- Reid, Robert : *History of the Frontier Areas Bordering on Assam* (Delhi, Reprint, 1982).
- Riddi, Ashan : *The Tagins of Arunachal Pradesh*, (2006).
- Robinson, W. : *A Descriptive Account of Assam, 1841*, (Delhi, Reprint 1975).
- Roy, Sachin : *Aspects of Padam Minyong Culture*, (Shillong, 1966).
- Roy, Sachin : (1) *Aspects of Padam-Minyong Culture* (Shillong, 1966)  
(2) *Anthropometry of the Adis* (Shillong).
- Robinson, W. : *Descriptive account of Assam* (1841).
- Reid, Sir Robert : *History of the Frontier Areas Bordering on Assam* (Delhi, Reprinted 1983)
- Shastri B, and Simon, I. : *NEFA* (Shillong, 1967).
- Shastri, B.N. : *The Kalika Puran*.
- Shukla, B.K. : *The Daflas of the Subansiri Region*, (Shillong 1965).
- Sinha, C. : *Emergence of Arunachal Pradesh as a State*. (Delhi, 1989).
- Srivastava, L.R.N. : *The Gallongs* (Shillong, 1962).
- Srivastava, L.R.N. : *The Gallongs*, (Shillong, 1962).
- Sharma, R.R.P. : *The Sherdukpens*, (Shillong, 1961).
- T. Norbu : *Power Potential in Arunachal Pradesh*.
- Von Furer Haimemndorf, C. : (1) *Highlanders of Arunachal Pradesh*, (1982).  
(2) *The Apatanis and their Neighbours*, (London, 1952).

## OTHER WORKS: REPORTS, JOURNALS AND BULLETINS ETC

Annual Report of the Archaeological Survey of India, 1904-05 by T. Bloch.

"Arunachal News" – a periodical journal published by the Directorate of Information and Public Relations, Government of Arunachal Pradesh – Issue of August 1977 and August 1978-Independence Day Numbers, September 1978, November 1978, November-December 1979, Republic Day Numbers 1980, 1981, April-May 1981, June 1981, August 1981, September – October 1981, January 1982, October – November 1982 and February – March 1983.

Arunachal Pradesh, nestled in the north eastern tip of India, 2008 Directorate of Tourism, Government of Arunachal Pradesh

Arunachal Review, Vol-IX, December 2007 & February 2008, Directorate of IPR Government of Arunachal Pradesh.

Arunachal Pradesh, nestled in the north eastern tip of India, 2008 Directorate of Tourism, Government of Arunachal Pradesh

Arunachal Pradesh on the move, 2008 Directorate of IPR, Government of Arunachal Pradesh.No. IPR (PUB) 102/3000/2008.

Arunachal Pradesh Human Development Report-2005, Department of Planning, Govt. of Arunachal Pradesh.

According to the Jhum Land Regulation, 1947, the members of a village or a community has a customary right to cultivate Jhum land by the shifting method.

Arunachal Pradesh Piscicultural activities from the dawn of statehood (1987-2005), Department of Fisheries, Govt. of AP, Itanagar 2005.

Arunachal Agriculture at a Glance 2004-2005, directorate of Agriculture (Agricultural census Division) Arunachal Pradesh 2007.

Annual Report 2004-2005, Department of Horticulture, Govt. of Arunachal Pradesh, Chimpu, Itanagar.

Arunachal Agriculture 2006, Department of Agriculture, Govt. of AP, Naharlagun.

Agricultural Marketing Activities in Arunachal Pradesh, 2006, Department of Agriculture, Govt. of AP, Naharlagun.

Agricultural Census (1995-1996), State Total Social Group- Scheduled Tribe, State Agricultural Census Commissioner, Arunachal Pradesh, Naharlagun.

Agricultural Census (1995-1996), State Total Social Group-All Social Group, State Agricultural Census Commissioner, Arunachal Pradesh, Naharlagun.

Agricultural Census (2000-2001), State Total Social Group- Scheduled Tribe, State Agricultural Census Commissioner, Arunachal Pradesh, Naharlagun.

Agricultural Census (2000-2001), State Total Social Group-All Social Group, State Agricultural

Census Commissioner, Arunachal Pradesh, Naharlagun

Annual Administrative Report 2006-2007, Department of Animal Husbandry and veterinary, Nirjuli, Arunachal Pradesh.

Arunachal Pradesh Piscicultural Activities from the Dawn of State-Hood (1987-2005), Directorate of Fisheries, Itanagar 2005.

Arunachal Pradesh Khadi & Village Industries Board, Itanagar, A.P Khadi & village Industries Board.

Arunachal Pradesh Human development report, 2005.

Barpatra, C.R – The Freedom Fighter Speaks (published in Arunachal News, September, 1978).

Bhattacharjee, T.K. – *Resarun: The Adis – Their Origin and Migration*, (1975).

Bora, D.K. – *Resarun: Archeological Ruins of Naksaparbat*, (Shillong, 1982, Vol –VIII).  
Directorate of Research Publication : *The Taklung Dzong*.

Dutta, J.C. – *Resarun : Notes on the Ruins of Naksaparbat in Arunachal Pradesh*, (Shillong, 1982).

Census of Govt. Employees in A.P, 1996.

Draft Annual Operating Plan 2005-2006 Agriculture, department of Agriculture, Govt. of AP.

Draft Annual Operating Plan 2006-2007 Agriculture, department of Agriculture, Govt. of AP.

Director of Industries, Arunachal Pradesh, Itanagar.

Department of Geology and Mining.

Economic Review of Arunachal Pradesh, 2006, Directorate of Economics and Statistics, Government of Arunachal Pradesh.

Economic review of A.P, 2006.

Economic Review of Arunachal Pradesh, 2002 (Directorate of Economics & Statistic, Govt. of A.P)

Geology and Mineral Resources of the States of India, Part IV, by the Director General, Geology Survey of India, December, 1974.

Industrial Potential Survey, Arunachal Pradesh, Report of a Study Team (Bombay, 1972).

Investment Prospects in Agriculture and Allied Sectors in Arunachal Pradesh (Emerging horizon

in agri business), Department of Agriculture, Arunachal Pradesh 2007.

Malinitan by the Directorate of Research, Arunachal Pradesh Administration.

Manyu, Dimso – *Arunachal Review* Vol-I, No-1, July, 2009 : Origin and Migrational History of Mishmis.

Manual of instruction for input survey 1996-1997. State Agricultural Census Commissioner, Arunachal Pradesh, Naharlagun.

News paper : The Arunachal Times 5th July' 2006 and 15th May' 2008.

: Arunachal Front, 1st February 2008.

Northeast Frontier Railway, in the service of Northeast, 2008, Indian Railway, printing at Das graphics & offset press Maligaon, Guwahati.

"Resarun" – A periodical Research Journal published by the Directorate of Research, Government of Arunachal Pradesh. Issues – Vol. I Nos. 2,3 and 4; Vol.2 Nos. 2 and 3, Vol.3, No. 4 and Vol. IV No. 1, Vol. VII No. 1 & 2, /vol. VIII No. 1 and Resarun 1975.

Resarun Volume 17 (1 & 2), 1991 Directorate of Research, Government of Arunachal Pradesh.

Sarkar, N. – *Resarun, An Account of Gorcham Chorten: The largest Stupa in Arunachal Pradesh*. (Shillong, 1977, Vol-3).

Sarkar, Niranjan – *Resarun: Neolithic Celts from Arunachal Pradesh*, (Shillong, 1982).

Stoner, C.R. – *The Sulung Tribes of the Assam Himalayas*; Published in Arunachal Bulletin, Shillong, August, 1972.

Statistical Abstract of Arunachal Pradesh, 2006, Directorate of economics and Statistics, Govt. of AP.

State report on agricultural census, 1976-77 by the directorate of agriculture and rural development, Govt. of A.P. part-1.

The article by Bibhas Dhar, *the Monpas of Khalaktang alias, the Tsanglas*, published in the tribes of North-East India, (Shillong, 1984) edited by S. Karotemprel.

Techno-Economic Survey of NEFA, (New Delhi, 1967) by the National Council of Applied Economic Research.

Third SSI census 2001-2002, Deptt. Of Industries, Govt. of A.P Itanagar, Directorate of Industries. Govt. of A.P Udyog Sadan, Itanagar.

Quarterly Retail Price Bulletin of A.P

**MISCELLANEOUS REFERENCE**

Gazetteer of India Arunachal Pradesh – *Lohit Districts 1978*, Gazetteer Department, Government of Arunachal Pradesh.

Gazetteer of India Arunachal Pradesh – *Tirap Districts 1980*, Gazetteer Department, Government of Arunachal Pradesh.

Gazetteer of India Arunachal Pradesh – *Subansiri Districts 1981*, Gazetteer Department, Government of Arunachal Pradesh.

Gazetteer of India Arunachal Pradesh – *East Siang and West Siang Districts 1994*, Gazetteer Department, Government of Arunachal Pradesh.

Gazetteer of India Arunachal Pradesh – *East Kameng, West Kameng and Tawang Districts 1996*, Gazetteer Department, Government of Arunachal Pradesh.

---