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Development Disparities among the Districts of Assam

**A thesis submitted in partial fulfillment of the requirements for
award of the degree of Doctor of Philosophy**

By
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Registration No. 006/2011



in
Mathematical Sciences

**School of Science and Technology
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DECEMBER, 2011**

***DEDICATED TO MY BELOVED
PARENTS***

Late Probin Baruah & Late Basundhara Baruah

Abstract

Development is a multidimensional process and its impact cannot be described fully by a single indicator. Moreover, a number of indicators when analyzed individually do not provide an integrated and easily comprehensible picture of reality. Hence there is need for building up of a composite index of development based on key indicators. Furthermore disparities create bottlenecks to the development. The lesser the disparity, the greater the chances of development; and the greater the disparity, the lesser will be the chances that development takes place. Balanced regional development has been given a high priority in the planning process. The work reported in this thesis is on the quantitative analysis of development as a whole, covering key indicators of development as far as possible, to estimate its composite index and development distances of different districts from each other. The regional imbalances are computed and classified for chosen 23 districts in to different stages of development such as high level, medium level, developing and low level. To identify the model districts, those districts belonging to a group of comparatively homogeneous developmental stage within close proximity to each other, for the low developed districts and estimate Potential Target of various developmental indicators of low developed districts for improving the level of development. Here the development indicators are divided in to seven sectors viz. Industry, Health, Status of Women, Basic Infrastructure Services, Agriculture, Education and Socio-Economic sector. Each sector is divided in to various sub sectors and ranking of the districts are done for each sub sector. From the study it is observed that for different sectors, different districts show better prospect. On the basis of all the sectors Kamrup is found to be in first ranking and Dhemaji is in the last ranking. Development disparities in the status of women among sixteen major states of India and in socio-economic sector among seventeen major states of India and among eight NE states is measured.

Complete Fertility Rates are computed for 1951-1955 birth cohorts of women by using Parity Progression Ratio for districts of Assam. Using these computed fertility rate and literacy rate composite index is computed and ranking of the districts have been carried out. The district Dibrugarh is ranked first and Dhemaji is in the last. Different

fertility behavior is observed in the study between rural and urban women, between women of Hindu religion and Muslim religion. It reveals from the study that fertility rate decreases when education level rises.

From the study it is found that all the sectors except agriculture are highly associated with other sectors. Agriculture sector is influenced by Basic Infrastructure sector only. To identify the sectors for variation of overall development of economic sectors across the districts a regression equation is obtained by taking composite index of overall sectors in 23 districts in Assam as dependent variable and composite index of Fertility and Literacy, Agriculture, Health, Socio-Economic, Education, Status of Women, Basic Infrastructure and Industry as explanatory variable. All the sectors are exercising significant influence on overall development. But except Fertility and Literacy and Socio-Economic sector other sectors have highly significant effect on overall development. From the study it is observed that there is high significant correlation coefficient exist among the rankings obtained by four methods namely method is used by Narain et al., Equal weighted index method (Indexing method), Deprivation method and Principal Component Analysis In the study it is also observed that variation among different sectors is higher for developed districts than low developed districts. The variation is observed in different sectors among the districts are not same. The highest variation is observed in Fertility and Literacy sector and lowest variation is observed in Agriculture sector.

DECLARATION

I, **Ajanta Nath**, hereby declare that the subject matter in this thesis entitled “**Development Disparities among the Districts of Assam**” is the record of work done by me, that the contents of this thesis did not form basis of the award of any previous degree to me or to the best of my knowledge to anybody else, and that the thesis has not been submitted by me for any research degree in any other university/institute.

This thesis is being submitted to the Tezpur University for the degree of Doctor of Philosophy in Mathematical Sciences.

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TEZPUR UNIVERSITY

CERTIFICATE

This is to certify that the thesis entitled “Development Disparities among the Districts of Assam” submitted to the School of Science and Technology, Tezpur University in partial fulfillment for the award of the degree of Doctor of Philosophy in Mathematical Sciences is a record of research work carried out by Mrs. Ajanta Nath under my supervision and guidance.

All help received by her from various sources have been duly acknowledged.

No part of this thesis has been submitted elsewhere for award of any other degree.

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Ajanta Nath.
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List of data

Agriculture

- (1) Livestock population (9 indicators)
- (2) Agriculture infrastructure (13 indicators)
- (3) Crop production (24 indicators)
- (4) Pulse production (16 indicators)
- (5) Fish production (6 indicators)
- (6) Rice production (19 indicators)
- (7) Fertilizer used (12 indicators)
- (8) Overall agriculture (83 indicators)

Education

- (1) Facility avails by the school in percentage (7 indicators)
- (2) Result (10 indicators)
- (3) No of teacher per lakh population (10 indicators)
- (4) No of school per lakh population (12 indicators)
- (5) Literacy rate 2001 (7 indicators)
- (6) Overall education (19 indicators)

Health

- (1) Demographic rate (6 indicators)
- (2) Maternal health (6 indicators)
- (3) Performance show by the districts (13 indicators)
- (4) Infrastructure of health (10 indicators)
- (5) Overall medical (35 indicators)

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- (1) Indicators of female status in 16 major state (25 indicators)
- (2) Female literacy (9 indicators)
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- (1) Electricity used (5 indicators)
- (2) Sericulture (13 indicators)
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- (4) Road (8 indicators)
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- (1) Indicators of bank of districts (14 indicators)
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- (1) Indicators of 17 major states (25 indicators)
- (2) Indicators of NER (23 indicators)
- (3) Overall Socio-economic (54 indicators)

Abbreviation

ANC	Antenatal care
APPBO	Average Population Per Branch
B.C.G.	Bacillus Calmette Guerin
BIS	Basic Infrastructure Service
CBR	Crude Birth Rate
CC	Conventional Contraceptive
CDR	Crude Death Rate
CEB	Children Ever Born
CFR	Complete Fertility Rate
CHC	Community Health Centre
CI	Composite Index
CWR	Child Women Ratio
DI	Development Index
DCI	Development Composite Index
DPT	Diphtheria, Pertussis, Tetanus
EDI	Economic Development Index
FWPC	Family Welfare Planning Centre
FWPR	Female Work Participation Rate
HDC	Handloom Demonstration Centre
HDI	Human Development Index
HDR	Human Development Report
HTC	Handloom Training Centre.
HYV	High Yielding Varieties
IFA	Iron folic Acid
IMR	Infant Mortality Rate
IUD	Intra Uterine Devices
IUD	Intrauterine Device
MNC	Maternal and Newborn Care

NE	North East
NER	North East Region
NFHS	National Family Health Survey
NSDP	Net State Domestic Product
OBC	Other Backward Classes
OPV	Oral Polio Vaccine
PCA	Principal Component Analysis
PHC	Primary Health Centre
PPR	Parity Progression Ratio
SC	Sub Centre
SC	Schedule Cast
SCB	Schedule Commercial Bank
SDP	State Domestic Product
SR	Sex Ratio
SRB	Schedule Rural Bank
SRS	Sample Registration System
SSI	Small Scale Industry
ST	Schedule Tribe
TFR	Total Fertility Rate
TT	Tetanus Toxoid
UNDP	United Nation Development Programme
WESU	Weavers Extension Service Unit
WPR	Work Participation Rate

Chapter 1

Introduction

According to UNDP, “The real wealth of a nation is its people. And the purpose of development is to create an enabling environment for people to enjoy long, healthy and creative lives.” This simple but powerful truth is very often forgotten in the pursuit of material and financial wealth. Economic achievement is not the only scale of measurement to know the development of the society. In UNDP’s HDR it is rightly remarked, “Human development is the end – economic growth a means. So, the purpose of growth should be to enrich people’s lives.”

There is no clear-cut definition of development. Development takes place on the basis of certain indicators: economic, social, psychological, cultural and political. Income, expenditure, and growth function as indicators of economic, industrial as well as agricultural development. Literacy and health are some basic indicators of social development. The feeling of well-being and change in attitude are psychological indicators. Indicators of cultural development include modern and traditional cultures, which tend to influence other cultures. Lastly, the political indicators within a country work as indicators of political development. It may be mentioned in this connection that political situations within a country may influence the policies of other countries and as such political indicators can also play an important role in defining development. Disparity is just the other side of the same coin, which reflects development. Development of a place is judged keeping in view the part played by disparity side by side with development.

A few important types of disparities are as follows

- Global Disparity
- Interstate Disparity
- Intrastate Disparity
- Rural-Urban Disparity

All types of disparities alleviate poverty. Poverty in all its forms is predominant in rural areas. Stability of a nation depends upon absence of disparities between regions because disparities can pose a challenge to the solidarity and stability of a nation. It is of

paramount importance for economically backward areas to develop transport and communication links with markets, seaports and other transport needs. These systems can reduce cost of production and services from those regions and thereby make them more competitive. Balanced development not only means balanced investment in urban and rural areas and regions within countries, it also means an equal empowerment of urban and rural areas and regions within countries to decide their own path of development.

Disparities in economic and social development across the region and intra regional disparities among different segments of the society have been the major reason for adopting planning in India since independence. Nature also had created differences among people, among regions and among situations. These differences are known as natural difference and are taken generally as granted. The conditions of these natural differences are also called as constraint at the path of development on the other hand differences created by men on account of social, economic, political, religious and cultural aspects are called not as differences but inequalities or disparities. The history of economic disparities goes back to the British rule. The British Government in India developed those regions, which are important to them on economic and administrative grounds while rest of the regions were neglected. Big industrial cities were developed at sea shores and education opportunities were developed in the nearest areas to fulfill need of cheap man power. They developed canal irrigation but only in those areas where agricultural land was fertile. They supported social elites and rich families for seeking help in administration, these elites acted as agents of British rule and gathered wealth and resources by exploiting the general mass, with the help of the support of some special right provided to them by the Government. This created severe economic disparities. Considerable level of regional disparities remain at the end of 1970s. The accelerated economic growth since the early 1980s appeared to have aggravated regional disparities. The economic reforms since 1991 with stabilization and deregulation policies as their central themes seem to have further widened the regional disparities. The seriousness of the emerging acute regional imbalances has not yet received public attention it deserves. It was US President John F. Kennedy who coined the adage that “arising tide lifts all boats.” But when it comes to human development, the rising tide of global prosperity has lifted some boats faster than others—and some boats are sinking fast. Enthusiasts emphasize the positive aspects of globalization and use the language of the global village to describe the new order. Their idea of global village when viewed through the lens of

human development appears deeply divided between the streets of the haves and those of the have-nots.

Some of these important measures for elimination of disparities are

- Change the mindset of people, to get rid of caste and class prejudice.
- Provide preferential treatment to backward regions, states, areas, etc.
- Provide strong governance to remove interregional, interstate, and intrastate disparity.
- Create transparency in governance.
- Increase people's participation in development starting at the panchayat level.
- Being accountable to people.

After independence nine committees have looked at the problem at national level and two have studied at regional level. Each committee studied the problem to find the reasons of disparities and suggest remedial action on India's most backward districts.

The committees included

- Committees on Dispersal of Industries (1960)
- Patel Committee Report (1964)
- Planning commission study group (1966-1971)
- Pandey commission report (1968)
- Wanchoo commission report (1968)
- Sukhamoy Cakravarty Committee Report on Backward Areas (1972)
- National Committee on Development of Backward Areas (1978)
- Hyderabad Karnataka Development Committee (1981)
- Fact finding Committee on Regional Imbalances (1983)
- Committee for the Development of Backward Areas (1983)
- 100 Backward districts (1996)

Besides these committees, there have been some ad-hoc listings of worst districts too. In 1981, the government of India had decided to provide some priorities to backward areas for grant of license.

Dr. N.J.Kurian, adviser of the planning commission had written a paper (2002) on the socio-demographic disparities in major Indian states. Dr. Kurian expressed that 49 percent of the worst performing districts were from Assam, Bihar, Madhya Pradesh, Orissa, Rajasthan, Uttar Pradesh and West Bengal. Indeed Bihar, Madhya Pradesh,

Orissa, Rajasthan and Uttar Pradesh did not have a single district in the best 100 districts of the country. Dr Kurian also derived the majority of the best districts be in the first 100 or 200 from Tamilnadu, Kerela, Punjab, Karnataka, Haryana, Maharastra, Gujrat and Andhra Pradesh. Also, except Gujrat, none of the districts of these states figure in the worst 100. Kurian also pointed out that those states Bengal, Uttar Pradesh and Bihar provided leadership and contribution to the freedom struggle in post independence India, their elite contributed most significantly to shape the county's destiny. Then why are the situations of these states coming to such deplorable state?

To control interstate disparity in development were mainly started during the 4th Five Year Plan (1969-74). With the exception of the hill area development programme having been identified towards the later half of the 3rd Five-year plan, most of the other such programmes were initiated during the fourth Plan. The Indo-China war in 1962 made our planners and policy makers sensitive to the development of hill areas in North and North eastern India for national security. Industrially backward areas in the country were identified in 1969. Areas characterized as 'structurally impoverished', such as drought prone areas were identified in 1972. Areas dominantly inhabited by the socially backward tribal communities were identified in 1974 for the Tribal Sub Plan projects.

While preparing 7th plan (1985-90) the Planning Commission of India admitted that "The problem of regional disparities in development has to be talked at different levels. Part of the solution lies in the development of agriculture in less developed regions. However it is a much wider problem and its resolution requires a close re-examination of the mechanisms for canceling the flow of finance, policies on industrial location and the distribution of investments in irrigation and in infrastructure and a host of other matters. It is essential that the regional dimension of development is dealt with as an integral part of the 7th plan."

It was 4th five-year plan (1969-74), which marked for the initiation of decentralization of national planning by introducing district level plan. Further district level plan was decentralized block level during sixth five-year plan (1980-85). The 7th plan (1985-90) emphasized local area planning by stressing on demographic decentralization. The 8th plan (1992-97) put emphasis on building and strengthening people's institution and making people active participation within liberalization and privatization framework. The main focus was on population control, environmental protection and infrastructural development. The 9th plan (1997-2002) aimed at growth with social justice and equity. The planning commission in its 10th plan (2002-07) aims

to strengthen decentralization of planning. In mid term appraisal (MTA) of the 10th five-year plan, made in June 2005, it has been admitted, “regional imbalances have actually got accentuated, particularly over the last 15 years.” It has been further asserted, “With the opening up of economy and removal controls, the play of market forces may tend to exacerbate disparities.”

1.1 Background of the study

Using ranking method Ashok Mitra [1965] the former Registrar General of India found that among 327 districts in India 84 districts were in the highest level of development 88 were medium and 79 were in the lowest level of development.

To find out development disparities among the 14 states of India on the basis of five indicators V Nath [1970] used also the ranking method. From the study it is found that Maharastra and Tamil Nadu were most developed states. Gujrat, West Bengal, Panjab and Kerela came after that and the remaining eight states were less developed.

To know regional disparities are decreased or not, Hemanta Rao [1977] used Principal Component Analysis on the basis of 24 indicators of four sectors of economy agriculture, industry, education and banking. He considered three time periods 1956, 1961 and 1965. He observed from the study that regional disparities decrease over time.

In the study by Archana Sarma [1991] taking some ten relevant indices of economic development it has been sown that North Eastern states have a low level of development compared to other states of the country.

Drenze J. and A. Sen (1995) find the diversities in economic and social development among the Indian states remarkable.

On the basis of composite indices for 15 states of India B.N. Ganguly and D.B.Gupta [1998] obtained development disparities. They also studied about whether regional disparities declined or not. For the study they had considered the time periods 1955, 1960 and 1965.

The study was conducted by N.N.Bhattacharya [1998] the validity rating of as many as states in North Eastern region is very low only Assam is placed in medium level category.

Riskin, C. (1998) observed that substantial disparities between Chinese Provinces in the 1950s became much more serious with industrialization. He states that the leadership opted for the diversion of investment resources to the more backward

provinces and consequently “ ...relative convergence of provincial industrialization occurred from the start of the first five year plan (1953-57) with less industrialization province growing at higher proportional rate than more industrialization ones.” Nevertheless he agrees that the regional disparity in terms of rural poverty remained high.

Rajkishor Meher [1999] makes an attempt to study the level of interdistrict development disparities of Orissa at different points of time since mid fifties. He used Indexing Method and Deprivation method and based on secondary data. He had taken 27 key indicators from three sectors of economy viz. agriculture, industry and basic infrastructure services. In order to find out causes of socio-economic backwardness, development problems of advance and backward district, intradistrict, intragroup disparity and the like four villages of different types in the tehsil area of each of the selected tehsills are taken for study.

In the study of Jayanta Madhab [2001] it is found that despite nature's bounty bestowed in the NER, its economy could not go ahead just like western and southern region of India. The poor quality of infrastructure facilities, violence due to militancy and insurgency has deterred many potential entrepreneurs both from within and outside the region.

A.K. Agrawala and P.Hazarika [2002] had studied the inter district development disparities among the districts of Assam. They have tried to show the development disparities of the state economy in three different sectors viz. agriculture, industry and BIS. Their study was based on Equal weightage index method, Ranking method and Method of Principal Component Analysis. The result came out from their study as Indexing method had classified 10 districts out of 23 as relatively developed. The rest 13 districts are categorized as backward with Dhemaji placed in the 23rd position. Deprivation method has placed 3 districts as moderately developed and the remaining 20 districts as backward. The Principal Component Analysis had classified 6 districts to be moderately developed, 6 districts are classified as developing, 6 districts are as backward and 5 districts as very backward. In all three methods Dhemaji came out as backward district and Kamrup, N.C.Hills and Jorhat as developed relatively or moderately.

For focusing the attention of scientist, planners, policy makers and administrators on the regional disparities and socio- economic development in the country, a seminar was organized jointly by the Planning Commission, Government of India and State Planning institute Government of Uttar Pradesh during 1982. Realizing the importance

and seriousness of the problem of estimation of level of development, the Indian Society of Agricultural Statistics conducted a series of research studies in this direction. Analyzing the data at state level for the year 1971-72 and 1981-82, it was found that there were disparities in the level of development between different states. There after a deeper analysis using the district level data on socio-economic indicators was made for the States Orissa [Narain, 1992-93], Andhra Pradesh [Narain, 1994], Kerala [Narain, 1994] Uttar Pradesh [Narain, 1995], Maharashtra [Narain, 1996], Karnataka [Narain, 1997], Tamilnadu [Narain, 2000], Madhya Pradesh [Narain, 2002], Assam [Rai, 2004] and West Bengal [Narain, 2011].

For the state of Orissa, Narain et al. considered 46 developmental indicators for the year 1991-92. In the study out of 13 districts of the state 6 districts were found to be low developed. They used 30 developmental indicators for the year 1991-92, for estimating the level of socio-economic development at district level for the state Andhra Pradesh. Out of 22 districts in the state 9 districts are found to be low developed. For the state Kerala, 42 developmental indicators for the year 1991-92 were utilized by them to study socio-economic development at district level for the state, out of 14 districts 5 districts are found to be poorly developed. To study the socio-economic development disparities among districts of Uttar Pradesh, the state is divided into some regions, on the whole out of 63 districts of the state 23 districts they had found to be low developed. In the state Maharashtra 43 socio-economic indicators were considered, out of 29 districts 11 districts were found to be low developed. Thirty-nine developmental indicators were used by them to find out development disparities in the districts of Karnataka. Five districts out of 20 districts came out as low developed districts. In case of Tamil Nadu where 42 developmental indicators were considered, 6 districts out of 22 districts were found low developed in the year 1994-95. In the year 1994-95, 47 indicators were considered for 45 districts of Madhya Pradesh 8 districts were become low developed in socio-economic front. With reference to overall socio-economic development based on 48 indicators, three districts of Assam namely Sonitpur, Karbi Anglong and Lakhimpur are found to be better developed by Rai et al. and three districts N.C.Hills, Hailakandi and Tinsukia are observed to be low developed in 2004. A study for evaluating the level of socio-economic development was conducted covering two hundred twenty eight districts belonging to the states of Andhra Pradesh, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Orissa, Tamil Nadu and Uttar Pradesh and it was found that 73 districts were

low developed which require special attention for undertaking future developmental Programmes.

Wei and Kim (2002) has shown that the increasing regional inequality is widely considered to be the reason for the existing regional problem in China and an obstacle of its stability and development.

Fedorov (2002) highlights the growing regional inequality in Russia in the 1990s. This study shows that the regional inequality and polarization during the traditional period in Russia have increased significantly.

V. Orgle (2002) after citing a number of studies on growing regional disparities in Ghana, discuss the growing trends in spatial inequalities and polarization in Ghana during the period of stabilization and structural adjustment programmes –late 1980s to late 1990s. This study concludes that regional inequality increased during the first stages of reform period followed by a short period of decline before resuming its increase trend for the rest of the period 1999.

Noorbakhsh (2003) analyzed regional disparities amongst major states in India and to find out if they are on a convergence or further divergence course. The analysis is extended to the evolution of disparities amongst the states with respect to larger set of socio-economic indicators specially HDI, a number of regional composite indices are constructed from the selected indicators and tested for their validity.

Regional Development Disparities in Malaysia, there is just one study by Economic Planning Unit in 2006 that used the Development Composite index based on 16 indicators include social and economic index . The study used of a simple method (Normalize method) for ranking states of Malaysia. The result shows that Wilayah Persekutuan, Kuala Lumpur ranked the highest DCI followed by Pulau Pinang , Melaka and Selangor.

From the late 1950s to 1980s , it was believed that investment is the prime mover of the system and that of adequate dose of investment can solve any and all problems of growth and disparities Dholakia and Dholakia (1980) found that it was not a correct remedy for reducing regional disparities .

Of late, the theory finding favour among policy makers is that human capital is the prime determinant in economic growth and disparity. Most of the people argued that the reason of fast development in East Asian economy in recent decade was due to their high level investment in human capital development in the preceeding years (Kurian, 2000). High level of Human development obtained in Kerela by increasing public

investment in social sector. But due to high level of investment in social sector the state had to face severe resource crunch as a result of it the financial health of the state deteriorating. The three authors (Jeromi 2003). Ahluwalia (2002) and Sach et. al (2002) find regional disparity rose in India during 1990s.

1.2 Study area

India has got 119th rank in United Nation's Human Development Index (2010) due to poor social infrastructure, mainly in areas of education and health care. When inequality –especially in education and health care- is considered, India's HDI value sees a 30 percent loss, according to the report. In the gender inequality index India is at the poor 122nd position among 138 countries, Bangladesh and Pakistan are ranked 116th and 112th positions respectively, indicating that these nations are better in gender equality than India. Life expectancy at birth in India is currently 64 years, as against 67 years in Pakistan. When it comes to education, average time of a kid spends in school in India is much less than neighboring Pakistan. India's rank is 119th in HDI and has moved up one position since 2005. Delhi's rate of multidimensional poverty is close to Iraq's and Vietnam's (about 14 percent), while the state of Bihar's poverty is similar to Sierra Leone and Guinea (about 81 percent), 81 percent of people of Schedule tribe are multidimensionally poor, along with 66 percent of those of SC and 58 percent of those of OBC. UNDP pointed out that poverty rates in eight Indian states that have combined population 421 million are similar 26 poorest countries in Africa.

India is the second fastest growing major economy in the world, with a GDP growth rate of 9.2 percent at the end of the second quarter of 2006-07. However due to huge population per capita income of India is low. The World Bank has placed it in the list of low-income economy. India's economy is diverse, depending on agriculture, handicrafts, textile, manufacturing and a multitude of services. Two thirds of Indian workforce depends directly or indirectly on agriculture. However service sector plays an important role in India's economy. India's major industries include textile, food processing, steel, transportation equipment, cement, mining, petroleum, machinery and software.

According to the definition of Indian Planning Commission, Assam is an underdeveloped state. Planning Commission have defined underdeveloped state as one

“Which is characterized by the co-existence, is greater or less degree, of unutilized or underutilize man power on the one hand and of the unexploited natural resources on the other.”

The economy of Assam is predominantly agrarian. The net cultivated area of the state is 27.53-lakh hectare in (2004-05) of which 23 percent area either flood prone or draught prone. From the point of view of productivity also, the picture is very frustrating. In 1951, 79 percent of the population engaged in agriculture, contributed 66.4 percent of the income while 21 percent engaged in other sectors, contributed 33.6 percent. In 1961, 78.5 percent engaged in agriculture, contributed 55.3 percent of the income and others contributed 44.7 percent. Likewise in 1971, 77 percent-contributed 57.4 percent with others contributed 42.6 percent. This way its share to Net State Domestic Product has declined from about 40.50 percent in 2000-01 to 30.06 percent in 2007-08. The contribution of secondary sector in 2000-01 is 11.56 percent, which becomes 14.61 percent in the year 2007-08 and tertiary sector contribution rises from 47.94 percent in 2000-01 to 55.33 percent in 2007-08. In the year 2008 total GSDP of Assam is 71625 crores where as for the states Maharashtra, Uttarpradesh and Andhra Pradesh are 610108 crores, 357557 crores and 326549 crores respectively.

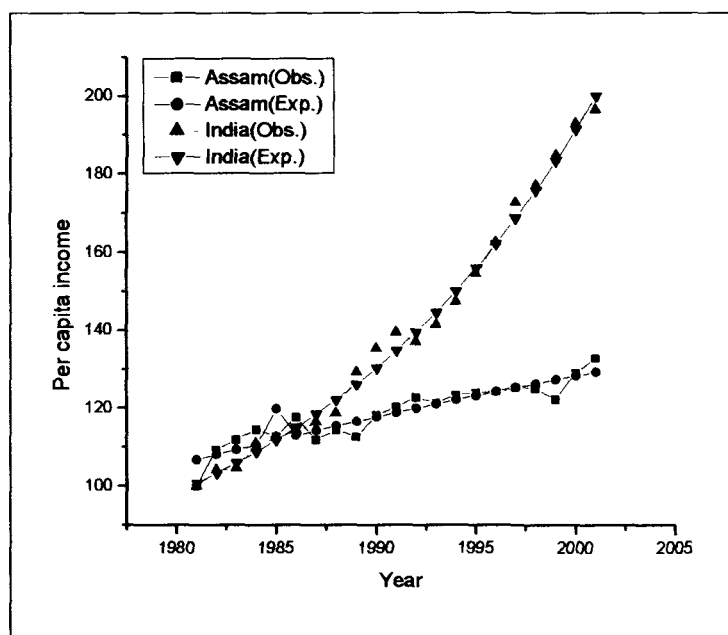
GSDP&GDP growth rate during plan periods

Period	Assam	India
First Plan	4.9	8.2
Second Plan	5.3	9.7
Third Plan	8.6	2.8
Fourth Plan	0.3	5.9
Fifth Plan	0.7	15.3
Sixth Plan	7.1	7.4
Seventh Plan	3.38	5.52
Eight Plan	3.74	6.63
Nine Plan	1.51	5.51
Ten Plan	5.74	8.02
Annual Plan 2007-08 of XI Plan	6.06	9.00

Source: Director of Economics & Statistics, Assam, 2007-08

Instead of going upward in developmental path Assam is lagging behind most of the major states of the country. During the first plan (1951-56) the state income at constant price rose by 19.8 percent as against the target 12 percent. Thus there was an

increase in the state income at constant prices from Rs. 223.6 crores in 1950-51 to Rs. 267.9 crores in 1955-56. The growth rate of state income at 19.8 percent was even higher than that of national income, which was 18.4 percent during the first plan. Further the percentage of the income of Assam to the national income increased from 2.51 in 1950-51 to 2.55 in 1955-56.



Source of data: *Journal of Applied Statistics* 2, 48-65, 2005

It is observed from the above figure that Per Capita Income of Assam is higher than national average up to the year 1985 and since 1985 the growth of Per Capita Income of Assam is very slow also lagged behind that of all India. In 2008-2009, per capita income of Assam is only 60 percent of India's per capita income. This statistic is the lowest today since 1950, and this particular ratio has been falling through out this decade from 76 percent in 2002-03 to 65 percent in 2007-08. The average rate of growth of real per capita income of Assam from 2002-03 to 2008-09 is only 3.7 percent, as compared to, say, Arunachal's 6 percent. One of the basic reasons of underdevelopment of Assam is poor infrastructure facilities.

For administrative and revenue purposes, the state has been divided in to 27 districts including newly created Kamrup urban district and districts under the newly created Bodoland Territorial Council areas; Kokrajar, Baska, Chirang and Udalguri. The percentage of people residing in urban areas have increased considerably from 11.10 percent in 1991 to 12.90 percent in 2001, indicating that even after six decades of

independence, 87.10 percent of the state's population reside in rural areas. The degree of urbanization ranges from 36.01 percent in case of Kamrup to the lowest of 2.39 percent in Nalbari. The sprawling district of Karbi Anglong almost 10,500 sq km in area is nearly eight times as large as Hailakandi district. With respect to population densities the spread is even larger. The most densely populated district Dhubri (585 per sq km.) has a population density of almost sixteen times that of the least densely populated district N.C. Hills (38 per sq km). Literacy rate is highest in Jorhat (76.33) and lowest in Dhubri (48.21) district. In the 20th century, between the years 1901-2001, the population of the state increased eight fold. The decadal variation in population of Assam has been very much larger than that in India as a whole, especially in the first half of the century. It is only in the last decade that the decadal variation in Assam has declined to a rate less than that of India.

Assam is blessed with fertile soil and climate conducive to agriculture. The state has potentiality to expand its agricultural production manifold. There are several other positive attributes and the state is well placed to serve the needs and markets of other states of North East. With the success of green revolution technology, the emphasis on industrial development for economic growth got considerably weakened in the 1980s and 1990s, as it was realized that industrial growth had failed to give a boost to the development of backward areas and the agricultural growth itself could push these backward areas on a high growth path. The 6th and 7th plan clearly recognized that industrial development alone could not eliminate regional disparity and agricultural growth would have to be promoted in non green revolution areas (eastern and central part of the country) to accelerate growth process. There has been a shift in development paradigm in the last decade of 20th century from economic growth to human development. Health, Education, sanitation and other basic amenities were incorporated in the analysis of backwardness. Governance is another key concern. Districts have been identified for operating programmes specifically aimed at upgrading the health and educational status of the people.

1.3 Objective of the Study

In the present study an attempt has been made to quantify the development disparities in the districts of Assam on the basis of composite index of development:

- 1) To estimate the level of development for Industry, Health, Status of women, Basic Infrastructure, Agriculture, Education and Socio-Economic sector based on optimum combination of developmental indicators of different districts separately. Each sector is divided in to various sub sectors and ranking of the districts are done for each sub sector.
- 2) To evaluate regional imbalances in the level of development and to classify the districts in to different stages of development such as high level, medium level, developing and low level.
- 3) To identify the model districts i.e. those districts belonging to a group of comparatively homogeneous developmental stage, within close proximity to each other, for the low developed districts and estimate Potential target of various developmental indicators for improving the level of development of the low developed districts.
- 4) Complete Fertility Rates are computed for 1951-1955 birth cohorts of women by using Parity Progression Ratio for each district of Assam. Using these computed fertility rate and literacy rate composite index is computed and ranking of the districts are made.
- 5) A comparative study on the Socio –Economic development in Assam among North-Eastern states and among major states in India is also done.

1.4 Source of Data

The investigation has been carried out on the basis of secondary source of information. The information has been collected from

- i. Statistical Hand book Assam, Directorate of Economic and Statistics, Assam, 2004-05, 2005-06, 2006-07, 2007-08, 2008-09.
- ii. Economic Survey, Assam, Directorate of Economic and Statistics, Assam, 2004-05, 2005-06, 2006-07, 2007-08, 2008-09.
- iii. Hand book of Agriculture Statistics, 2005-06.
- iv. Agriculture Statistics at a glance, 2005-06.
- v. Census Report of India, Government of India, 1991& 2001
- vi. Report on the third All-India Census of Small Scale Industrial Unit. Directorate of Industries & commerce, 2001-02
- vii. Human Development Report of Assam, 2003, Govt of Assam.

- viii. NEDFI data bank, 2005-06,2006-07,2007-08
- ix. RBI Basic Statistics, 2005-06
- x. National Family Health Survey-3. State volumes (Mumbai IIPS, 2006)
- xi. Indian Development Report 2004-05 (New York: Oxford University Press).

1.5 Methodology

The following three methods have been considered for this investigation.

- 1) Method is used by Narain et al.
- 2) Equal weighted index method (Indexing method)
- 3) Deprivation method
- 4) Principal Component Analysis

In this study, 23 districts of Assam have been considered as the unit of analysis.

1.5.1 Method given by Narain et al.

Let a set of n points represent districts $1, 2, \dots, n$ for a group of indicators $1, 2, \dots, k$, which can be represented by a matrix (X_{ij}) ; $i = 1, 2, \dots, n$ and $j = 1, 2, \dots, k$. As the developmental indicators included in the analysis are in different units of measurement and since our object is to arrive at a single composite index relating to the dimension in question. There is a need for standardized as shown bellow:

$$Z_{ij} = \frac{X_{ij} - \bar{X}_j}{S_j}$$

where $S_j^2 = \frac{\sum_{i=1}^n (X_{ij} - \bar{X}_j)^2}{n}$, and

$$\bar{X}_j = \frac{\sum_{i=1}^n X_{ij}}{n} \quad (i=1,2,\dots,n), (j=1,2,\dots,k)$$

Let $[Z_{ij}]$ denotes the matrix of standardized indicators. The best district for each indicator (with maximum/minimum standardized value depending upon the direction of the indicator) is identified and from this the deviations of the value for each district has been taken for all indicators in the following manner:

$$C_i = \left(\sum_{j=1}^k (Z_{ij} - Z_{0j})^2 \right)^{1/2}$$

where Z_{0j} is the standardized value of the j th indicator of the best district and C_i denotes the pattern of development of i th district.

The pattern of development is useful in identifying the districts which serve as 'models' and it also helps in fixing the potential target of each indicator for a given districts. The composite index of development is obtained through the following formula:

$$D_i = \frac{C_i}{C}$$

$$C = \bar{C} + 2S, \quad \bar{C} = \sum_{i=1}^n \frac{C_i}{n}$$

$$\text{and } S = \left(\sum_{i=1}^n \frac{(C_i - \bar{C})^2}{n} \right)^{1/2}$$

1.5.1(1) Relative Share of Area and Population under Different Level of Development

A simple ranking of district on the basis of composite indices is sufficient but a suitable classification of districts formed on the basis of mean and standard deviation of the composite indices will provide a more meaningful characterization of various stages of development. For relative comparison it appears appropriate to assume the districts having composite index less than or equal to (Mean - SD) as highly developed districts. And the districts having composite index greater than or equal to (Mean + SD) be low developed districts. Similarly districts with composite index lying between (Mean and Mean - SD) are classified as middle level developed district with composite index lying between (Mean and Mean + SD) are classified as developing districts.

1.5.1(2) Fixation of Potential Target

Using the standardized variates $[Z_{ij}]$, the economic distance between different districts may be obtained as follows:

$$D_{ip} = \left(\sum_{j=1}^k (Z_{ij} - Z_{pj})^2 \right)^{1/2}$$

$$(i=1,2,\dots,n \text{ and } p=1,2,\dots,n)$$

Here $D_{ii} = 0$ and $D_{ip} = D_{pi}$.

The distance matrix will take the form

$$\begin{bmatrix} 0 & d_{12} & d_{13} \dots & d_{1n} \\ d_{21} & 0 & d_{23} \dots & d_{2n} \\ & & \cdot & \\ d_{n1} & d_{n2} & d_{n3} \dots & 0 \end{bmatrix}$$

The minimum distance for each row, ($d_i, i = 1, 2, \dots, n$) will be obtained from the distance matrix for computation of upper and lower limits (C.D.) as indicated below:

$$C. D. = \bar{d} \pm 2\sigma_d, \quad (1)$$

$$\text{where } \bar{d} = \sum_{i=1}^n \frac{d_i}{n}, \text{ and } \sigma_d = \left(\sum_{i=1}^n \frac{(d_i - \bar{d})^2}{n} \right)^{1/2}.$$

The distance matrix can also be used for fixing targets for different districts on each indicator, which would be in the direction of reducing the disparities. The target can be computed for each district from the actual values of the indicators for those at higher level of development. However, the question is would the respective district have the capacity to achieve such higher targets? So the districts should be identified which are homogeneous; with a close proximity to each other with the district under consideration, in terms of considered indicators. For setting out the targets, for example, for district A, the model districts are to be identified on the basis of composite index lower than that of district A and their individual distance with district A not exceeding the upper limit of C.D. given in (1), will serve as model districts for district A on all the indicators considered in the analysis. The best values among the model districts will be taken as potential target for district A for a given indicator. This procedure will be repeated for a given district for all indicators considered. It would show the path how much improvement required in different indicators for balanced development in the district. It would be quite interesting to examine the extent of improvement required in different indicators of the low developed districts. It will also provide avenues to bring about uniform regional development in the state. Such information helps the planners and administrators to readjust the resources to reduce inequalities in level of development among different districts of the state. Some of the low developed districts require improvement of various dimensions in almost all the indicators.

Advantages of the Method

- 1) It can summarize complex and multidimensional issues.
- 2) It is easier to interpret.
- 3) It facilitates the task of ranking states/ districts/region etc. on complex issues.
- 4) It can assess the progress of different regions over time.
- 5) It reduces the size of a set of indicators or includes more information within the existing size limit.
- 6) It places performance and progress of different at the center of policy arena.
- 7) It facilitates communication with general public (citizen, media etc) and promotes accountability.

Disadvantages

- 1) It may send misleading policy messages if it is poorly constructed.
- 2) It may invite simplistic policy conclusions which may not be possible for adoption.
- 3) It may be misused.
- 4) The selection of indicators and weights for aggregating the composite index can change the final conclusion.
- 5) It may lead to inappropriate conclusions if indicators that are difficult to measure are ignored.

1.5.2 Equal weighted index method

In this method the chosen indicators are combinely worked out for each district taking the aggregate state value of each indicator as 100. It provides the value of the sum total of index of indicators used in this study for a particular year. The same divided by the number of indicators gives the average index of development in a district.

1.5.3 Deprivation method

This method has been used in the construction of Human Development Index in Human Development Report published by the United Nations Development Programme. The deprivation measure places a district in the range of zero to one. If I_{ij} is the deprivation indicator for the j^{th} district with respect to the i^{th} variable then it is given by

$$I_{ij} = \frac{\text{Max}_j X_{ij} - X_{ij}}{\text{Max}_j X_{ij} - \text{Min}_j X_{ij}}$$

where X_{ij} indicates the value of the i^{th} indicator with respect to j^{th} district.

The second step is to define an average indicator (I_j). This is done by taking a simple average of the chosen indicators.

$$I_j = \frac{\sum_{i=1}^n I_{ij}}{n}$$

The third step is to measure the Economic Development Index on the basis of the development indices for each separate district as one minus the average deprivation index, i.e. $(\text{EDI})_j = (1 - I_j)$

The districts for which EDI score point is 0.8 and above, is termed as highly developed. If the score point lies between 0.5 and 0.8 (including 0.5 but excluding 0.8) then the district is termed as moderately developed and if the score point is below 0.5 then the district is termed as less developed or backward. EDI is an absolute measure of development.

1.5.4 Principal Component Analysis

Principal component analysis is appropriate when there have obtained measures on a number of observed variables and wish to develop a small number of artificial variables (called Principal Components) that will account for most of the variance in the observed variables. It is useful when there have some data on a number of variables and believes that there is some redundancy in those variables. Redundancy means that some of the variables correlated with one another, possibly because they are measuring the same construct. Technically, a principal component can be defined as linear combination of optimally weighted observed variables. It is a special case of factor analysis. The principal component satisfy the following two conditions I) principal components are orthogonal (uncorrelated), ii) the first principal component has a larger variance as possible.

Algorithm for computation of PCA scores

The steps for computing score by Principal Component Analysis are given below according to Zhu Joe (1998) and Filiz Kardiyen, H Hasan ORKCU (2006).

Step 1. Correlation matrix (R) of the variables are computed.

Step 2. Eigen value and eigen vectors of the Correlation matrix (R) are computed. The eigen values are arranged in decending order of magnitude $\hat{\lambda}_1 \geq \hat{\lambda}_2 \geq \dots \geq \hat{\lambda}_p$

($\sum_{k=1}^p \hat{\lambda}_k = p$) and the related p eigen vectors ($\hat{l}_1, \hat{l}_2, \dots, \hat{l}_p$) are obtained.

Step 3. Principal components are computed. Each Principal component is obtained by solving the following equation

$$PC_k = \sqrt{\hat{\lambda}_k} \hat{l}_k \quad (k=1, \dots, p)$$

Step 4. The first m Principal components are selected satisfying $\sum_{k=1}^m \hat{\lambda}_k / p > 0.90$

Step 5. $t = \sum_{k=1}^m w_k PC_k$ gives a linear combination weighted with the explanation ratios of

m principal components selected in step 4. For determining the signs w_k 's, signs of the components of the PC_k are considered. According to this

i) If all the components of the PC_k are negative, then weight w_k is negative, if all the components of the PC_k are positive, then the weight w_k is positive.

ii) If more than half of the components of the PC_k is negative then w_k is negative, otherwise it become positive.

Step 6. To use the principal component scores in ranking, matrix $D = (\underline{d}_1, \underline{d}_2 \dots \underline{d}_p)_{n \times p}$ is standardized and matrix $D_z = (\underline{d}_{z1}, \underline{d}_{z2} \dots \underline{d}_{zp})_{n \times p}$ is obtained.

Step 7. Principal components score are computed with the help of the equation

$$PC_{score} = D_z t \text{ and units are ranked according to values of score.}$$

1.6 Thesis Outline:

The thesis consists of nine chapters. **Chapter 1** is the introductory one. It provides the brief description about the reason of development disparities which is

observed in various regions and the measures are taken by the government in different times for uniform development in the states. The objective of the study and detailed background of the study on development disparities are mentioned here. It provides the details about the study area and availability of the data for the study and provides the outline of the thesis. Methodologies are given which are used in the computation of composite index. It is tried to highlight in **Chapter 2** the development disparities in agriculture sector of economy of districts of Assam on one hundred two indicators by the methods of Narain et al. and PCA. **Chapter 3** is related to the study of development disparities in the health sector for districts of Assam on thirty-five indicators by the methods of Narain et al. and PCA. It is tried to highlight in **Chapter 4** the status of women in Assam for the districts on the basis of forty-three indicators through the methods of Narain et al. and PCA. Here disparities of status of women among sixteen major Indian states on the basis of twenty five indicators are computed. Completed Fertility Rate of women for the birth cohort of women (1951-1955) by using Parity Progression Ratio for each district of Assam and for the state are computed. Using these computed fertility rate and literacy rate composite index is computed and ranking of the districts have been made. In **Chapter 5** development of education sector in the districts of Assam are computed for forty-eight indicators by the methods of Narain et al. and PCA. In **Chapter 6** the development disparities of Basic Infrastructure facilities among districts of Assam are computed on the basis of forty indicators by using four methods viz. Method is given by Narain et al., Equal weighted index method, Deprivation method and PCA. In **Chapter 7** development disparities in industrial sector of Assam for districts are obtained on the basis of sixty five indicators using the methods Narain et al., Equal weighted index method, Deprivation method and PCA. In **Chapter 8** development disparities in socio-economic sector in the districts of Assam are obtained on the basis fifty-four indicators and computed by the methods of Narain et al. and PCA. Position of Assam in seventeen major states of India and among North East States for selected indicators are computed by using the methods of Narain et al. and PCA. **Chapter 9** is related to overall results, discussion and conclusion of the study. Here districts of Assam are ranked on the basis of nine sectors of economy. Correlation coefficient between different sectors is computed. Taking composite index of overall development as dependent variable composite index of the sectors which are considered in the study as independent variable a regression line is obtained. Suggestions are tried to be given with some examples how a region can be developed and reduced disparities which arise as a

threat before us. At last conclusions are drawn from the study. In **Appendix A & B**, profile of Assam and the profile of districts are given respectively.

Chapter 2

Agriculture sector

It is an attempt to draw a clear picture of development disparities among the districts of Assam in agriculture sector with the help of composite index. One hundred two indicators are considered here which are directly related to the agriculture. The entire agriculture sector is divided in to seven sub sectors namely Production of miscellaneous crops; Production of pulses, cereals and oil seeds; Fertilizer used; Percentage of livestock population; Rice production; Fish production and Infrastructure facilities the districts avail. According to method used by Narain et al. in overall agriculture sector the districts Nagaon, Borpheta, Dhubri and Kamrup are placed in better position. Potential targets are obtained for each indicator for low developed districts from the model districts. According to Principal Component Analysis Nagaon, Kamrup and Bongaigaon are placed in first three ranks.

2.1 Introduction

While most other states in India are gradually moving away from their traditional agriculture based economy towards industry or service oriented economy, Assam is still heavily dependent on the agriculture sector. Assam's economy is fundamentally based on agriculture. Over 70 percent of the state population relies on agriculture as farmers, as agriculture labors or both for their livelihood. A majority of the state's population, almost 90 percent of an estimated 22.4 million in 1991 and 23.22 million in 2001, lives in rural areas where mainstay of business is agriculture and its allied activities. In terms of SDP the agriculture sector contributed over 38 percent of the state income in 1990-91. It contributes 26.4 percent to Net State Domestic Product at current prices during 2007-08 (advanced estimates).

According to Agriculture census, 2000-01, there were 27.1 lakh operational holding in the state covering an area of about 31.1 lakh hectares of land. The marginal

holding less than one hectare of land accounted for 62.6 percent of the total holdings and 21.3 percent of the total operated area of the state in 2000-01. The smallholding with size between 1-2 hectares shared 20.7 percent of the total holdings and 23.5 percent of the total operated area. The average size of the individual holding was only 1.15 hectare during the 2000-01 compared to an average size of 1.47 hectare in 1970-71. Such fragmentation occurred due to two principal factors 1) inheritance related 2) government land reform measures, which set ceiling for land holding per family (50 bighas at present) thereby promoting and facilitating land fragmentation. Numerous study shows that small and fragmented land holding are one of the principal causes of low productivity because such land holding do not facilitate economic and efficient use of modern technology. Assam is far behind in the use of modern agricultural technology to improve its agricultural productivity index.

Assam produces both food and cash crops. The principal food crops produced in the state are rice, maize, pulse, potato, wheat etc. while the principal cash crops are tea, jute, oilseeds, sugar cane, cotton and tobacco. Assam is the second largest producer of jute, the production of jute during 2000-01 was 6.68 lakh bales with productivity at 1730 kg/hectare. The production of sugarcane in the state during this period was 9.88 lakh metric tons with productivity of 369 quint/hectare. Rice is the most important staple crop of Assam, its production per hectare 1475 kilograms in 2004-05 and 1369 kilograms in 2006-07. Assam is traditionally horticultural state due to its unique agro climatic condition. The horticulture crops occupy 5.46-lakh hectare out of Gross Cropped Area of 39.58-lakh hectare. If one were consider the fertility of the land and the abundance of water in the state, the two most important component of agriculture growth, Assam should have been one of the better – developed states in the country. The consumption of chemical fertilizer is in decreasing trend. The consumption of bio-fertilizer in 2006-07 is 180.00 metric ton as against 131.90 metric ton 2005-06. Seed is an important input of cultivation, 1,74,353 quintals seeds were sold during 2006-07 of which 80,906 quintals were own production and 93,447 quintals were imported. Due to infrastructural inadequacy accompanied with humid sub-tropical climate except the seeds of paddy and mustard the state could not achieve self-sufficiency in production of seeds. As per Land Utilization Statistics of the state for the year 2002-03 Assam has estimated 39.58 lakh

hectare of Gross Cropped Area of which Net Area sown about 27.53 lakh hectare and the area sown more than once stand 12.5 lakh hectare of the total 78.44 lakh hectare geographical area of the state. The ultimate irrigation potential 27.00 lakh hectare, which constitutes 66.06 percent of the gross cropped area. The potential created by the department up to March 2004 is 6.75 lakh hectares and out of this approximate 2.05 lakh hectare created by Major /Medium irrigation scheme, 3.13 lakh hectare by minor irrigation scheme and 1.49 lakh hectare by Shallow Tube Well and other schemes. The overall irrigation development in the state 25 percent of the ultimate irrigation potential of the state against 50 percent to 90 percent in case of other states of India. Livestock is an essential and important contributor to the NSDP. Diary and poultry farming can augment incomes and increasing purchasing power. Assam has a substantial live stock population, but average size of cattle in Assam is small and not have good quality. Fishery is the vital part of rural economy. The demand for fish is high, with over 90 percent of the population being fish consumer. The demand is estimated to be 280 metric tones per annum. Approximately 3 lakh hectares of crop area is subjected to annual flood, 82 percent of the farmers of the state belongs to small and marginal farmer.

At present, Assam is the biggest producer of tea in India whose share ranges between 50-60 percent of India's total tea production. Assam alone produces approximately 29 percent of world tea production.

Assam has been divided in to six agro climatic zones. These are

- North bank plains [Dhemaji, Lakhimpur, Sonitpur and Darrang]
- Upper Brahmaputra Valley [Golaghat, Jorhat, Sibsagar, Dibrugarh, Tinsukia]
- Central Brahmaputra Valley [Nagaon, Morigaon]
- Lower Brahmaputra Valley [Dhubri, Bongaigaon, Kokrajar, Goalpara, Barpeta, Nalbari and Kamrup]
- Barak valley [Karimganj, Cachar, Hailakandi]
- Hill district [Karbi Anglong and N.C. Hills]

2.2 List of Indicators used for the study

A) Yield kg per hectare

- 1) Potatoes
- 2) Sweet Potatoes

- 3) Tapioca
- 4) Sugar cane
- 5) Tobacco
- 6) Chilies
- 7) Onion
- 8) Turmeric
- 9) Banana
- 10) Papaya
- 11) Orange
- 12) Pineapple
- 13) Ginger
- 14) Coriander
- 15) Garlic
- 16) Black Pepper
- 17) Kharif vegetables
- 18) Rabi vegetables
- 19) Assam lemon
- 20) Guava
- 21) Litchi
- 22) Jackfruit
- 23) Mango
- 24) Other fruits
- 25) Tur
- 26) Gram
- 27) Black Gram
- 28) Green Gram
- 29) Peas
- 30) Rice
- 31) Maize
- 32) Wheat
- 33) Other cereals
- 34) Total cereals
- 35) Jute
- 36) Cotton
- 37) Sesamum
- 38) Rape & mustered
- 39) Total Pulse
- 40) Total Oil seeds
- 41) Indigenous cattle %
- 42) Cross breed cattle %
- 43) Indigenous buffaloes %
- 44) Sheep %
- 45) Goats %
- 46) Pigs %
- 47) Horse & Ponies %
- 48) Fowls %

49) Ducks %

B) Consumption of fertilizer in kg per hectare sown area

- 50) Nitrogen in Kharif crops
 - 51) Potash in Kharif crops
 - 52) Sulphur in Kharif crops
 - 53) Total fertilizer in Kharif crops
 - 54) Nitrogen in Ravi crops
 - 55) Potash in Ravi crops
 - 56) Phosphorous in Ravi crops
 - 57) Total fertilizer in Ravi crops
 - 58) Total Nitrogen in Kharif & Ravi crops
 - 59) Total Potash in Kharif crops
 - 60) Total Phosphorous in Kharif crops
 - 61) Total fertilizer in both Ravi & Kharif crops
 - 62) Registered Beel Fisheries
 - 63) Registered River Fisheries
 - 64) Production in Fish % 2003-04
 - 65) Production in Fish % 2004-05
 - 66) Production in Fish seed % 2003-04
 - 67) Production in Fish seed % 2004-05
 - 68) Agriculture labor to main workers %
 - 69) Small tea growers %
 - 70) Registered area of small tea growers %
 - 71) Cropping intensity
 - 72) Forestland %
 - 73) Average size of holding
 - 74) Village used electricity in agriculture %
 - 75) Net area irrigated to net area sown %
 - 76) Net area sown per cultivator %
 - 77) Area HYV used to net sown area %
 - 78) Area sown more than once to net sown area %
 - 79) Number of Veterinary Dispensary
 - 80) Number of AI center
 - 81) Number of Agriculture subdivision
 - 82) Number of Agriculture Development officer Circle.
 - 83) Number of Village Level Extension Worker.
- Production of Summer rice in the years
- 84) Average yield (2000-01) in kg/hect
 - 85) Average yield (2001-02) in kg/hect
 - 86) Average yield (2002-03) in kg/hect
 - 87) Average yield (2004-05) in kg/hect
- Production of Autumn rice in the years
- 88) Average yield (2000-01) in kg/hect
 - 89) Average yield (2001-02) in kg/hect

- 90) Average yield (2002-03) in kg/hect
- 91) Average yield (2003-04) in kg/hect
- 92) Average yield (2004-05) in kg/hect
- Production of Winter rice in the years
- 93) Average yield (2000-01) in kg/hect
- 94) Average yield (2001-02) in kg/hect
- 95) Average yield (2002-03) in kg/hect
- 96) Average yield (2003-04) in kg/hect
- 97) Average yield (2004-05) in kg/hect
- Production of Total rice in the years
- 98) Average yield (2000-01) in kg/hect
- 99) Average yield (2001-02) in kg/hect
- 100) Average yield (2002-03) in kg/hect
- 101) Average yield (2003-04) in kg/hect
- 102) Average yield (2004-05) in kg/hect

2.3 Ranking of Districts based on Agriculture

Stages of development have been worked out and ranked of different districts for seven-sub sectors of agriculture sector on the basis of composite index by Narain et al. method. Next, taking eighty-three indicators composite index are computed of the districts for whole agriculture sector of Assam and ranking have been done. The composite index of development along with the rank of the districts are presented in Table 2.1.

Table 2.1 Ranking based on composite index of development

Sl no	District	Miscellaneous crop		Pulse Cereal & oil seeds		Infrastructure		Live stock		Fish		Rice		Fertilizer		Agriculture	
		CI-1	Rank	CI-2	Rank	CI-3	Rank	CI-4	Rank	CI-5	Rank	CI-6	Rank	CI-7	Rank	CI-8	Rank
[1]	Kokrajjar	7881	1	8186	10	6774	5	8489	17	7744	17	7298	17	5031	7	8103	6
[2]	Dhubri	7904	2	7768	5	7199	8	7819	11	5873	5	6639	14	5574	10	7845	3
[3]	Goalpara	8852	7	6865	1	8267	17	8887	19	8086	18	5226	9	2314	1	8241	9
[4]	Bongaigaon	9111	14	7498	3	7210	9	7626	7	8425	21	8035	19	2382	2	8084	5
[5]	Borpeta	8857	8	8986	18	6320	3	7205	2	4435	2	8176	20	4263	6	7818	2
[6]	Kamrup	8741	6	8141	8	6406	4	7335	3	7115	8	5948	12	4096	4	7881	4
[7]	Nalbari	9307	18	8751	16	6301	2	8444	15	7030	7	8257	21	5371	8	8474	11
[8]	Darrang	9053	12	7919	6	6806	6	7810	10	7569	14	6578	13	4138	5	8128	7
[9]	Marigaon	9140	16	1 0062	23	8700	19	7682	8	6877	6	7349	18	5804	12	9046	18
[10]	Nagaon	9775	23	9243	19	4609	1	7400	5	3836	1	4525	7	3217	3	7781	1
[11]	Sonitpur	8188	3	7371	2	6973	7	7385	4	7416	12	7046	16	7336	17	8210	8
[12]	Lakhimpur	9218	17	8820	17	8714	20	8419	14	7157	9	9759	23	8036	19	9289	19
[13]	Dhemaji	9089	13	8150	9	9428	22	9040	21	8283	20	8786	22	8912	22	9656	22
[14]	Tinsukia	8699	4	9272	20	8120	16	8852	18	7674	16	5499	10	6499	14	8980	16
[15]	Dibrugarh	9030	11	8352	12	8096	14	7751	9	7503	13	3868	5	5727	11	8597	13
[16]	Sibsagarh	8965	10	8122	7	8374	18	7846	12	7410	11	3237	4	8433	20	9039	17
[17]	Jorhat	9612	21	9632	22	7628	11	5293	1	7353	10	5889	11	6573	15	8766	14
[18]	Golaghat	8960	9	8227	11	8119	15	7994	13	8108	19	2699	1	6935	16	8935	15
[19]	Karbi Anglong	9113	15	7540	4	7994	13	9014	20	9257	22	6845	15	8790	21	9380	20
[20]	N C Hills	9766	22	8546	14	9819	23	1 0027	23	9572	23	4839	8	9052	23	1 0296	23
[21]	Cachar	9398	19	8544	13	7294	10	7516	6	5006	3	3870	6	6469	13	8437	10
[22]	Karimganj	8718	5	9418	21	7825	12	8477	15	5339	4	3039	2	5490	9	8547	12
[23]	Hailakandi	9497	20	8681	15	8967	21	9461	22	7649	15	3133	3	7568	18	9519	21

Source: (a) Statistical Handbook Assam, Directorate of Economics and Statistics, Government of Assam. 2004-05, 2005-06, 2006-07, 2007-08, 2008-09.

(b) Handbook of agricultural statistics, 2005-06

(c) Agriculture Statistics at a glance, 2005-06

(d) Economic Survey, Assam (Directorate of Economic and Statistics, Assam). 2004-05, 2005-06, 2006-07, 2007-08, 2008-09.

CI-1: Composite Index based on 24 Indicators

CI-2: Composite Index based on 16 Indicators

CI-3: Composite Index based on 13 Indicators

CI-4: Composite Index based on 9 Indicators

CI-5: Composite Index based on 6 Indicators

CI-6: Composite Index based on 19 Indicators

CI-7: Composite Index based on 12 Indicators

CI-8: Composite Index based on 83 Indicators

From the Table 2.1 it is observed that in the production of Miscellaneous Crop Kokrajjar is found to be first and the district Nagaon is found to be in the last position. In production of Pulse Cereal crops & oil seeds Goalpara is in the first position and Morigaon is in the last position. In the subsector infrastructure Nagaon district is found to be in first ranking and N.C. Hills is in the last. In livestock the district Jorhat occupies first position and N.C. Hills is in the last position. In fish production Nagaon district is found to be in

first position and N.C. Hills is in the last. In the production of rice Golaghat is in the first position and Lakhimpur is in the last position. In overall agriculture sector Nagaon district is found to be in first ranking and N.C. Hills is in the last.

2.3.1 Relative Share of Area and Population under Different Level of Development

An important aspect of the study is to find out the relative share of area and population affected under various stages of development in agriculture field in the state. The details are given in Table 2.2.

Table 2.2 Area and Population under different levels of development

Sectors	No of indicators	Level of development	No of districts	Area %	Population %
Miscellaneous Crop	24	High	[1],[2],[11]	14 87	14 88
		Middle	[14],[22],[16],[3],[5],[18],[16]	27 01	34 32
		Developing	[15],[8],[4],[7],[9],[19],[23],[21],[12],[13]	43 19	37 66
		Low developing	[17],[20],[10]	14 93	13 14
Pulse, cereal crop and oil seeds	16	High	[3],[11],[4],[19]	25 16	15 84
		Middle	[2],[8],[16],[6],[13],[1],[18],[15]	34 36	38 73
		Developing	[21],[5],[7],[12],[20],[23]	22 66	21 99
		Low developing	[10],[14],[22],[17],[9]	17 82	23 44
Infrastructure	13	High	[10],[5],[7],[6]	17 62	28 64
		Middle	[1],[8],[11],[2],[4],[21],[17]	30 51	34 06
		Developing	[3],[9],[12],[14],[15],[16],[18],[19],[22]	39 82	32 41
		Low developing	[23],[13],[20]	12 05	4 89
Livestock	9	High	[17]	3 63	3 74
		Middle	[6],[8],[5],[11],[10],[21],[4],[2],[15],[16],[18],[9]	52 37	65 55
		Developing	[3],[7],[12],[19],[22],[14],[1]	31 95	25 82
		Low developing	[23],[13],[20]	12 05	4 89
Fish	6	High	[10],[5],[21],[22]	16 34	24 07
		Middle	[2],[9],[7],[6],[12]	16 86	26 16
		Developing	[1],[4],[3],[8],[11],[13],[14],[15],[16],[17],[18],[23]	47 27	46 01
		Low developing	[19],[20]	19 53	3 76
Rice	19	High	[18],[22],[23],[16],[15],[21]	21 00	23 18
		Middle	[10],[20],[3],[14],[17]	22 09	20 54
		Developing	[1],[6],[8],[9],[11],[2],[19]	40 12	41 22
		Low developing	[4],[5],[7],[13],[12]	16 79	15 06
Fertilizer	12	High	[3],[4],[10]	10 13	15 16
		Middle	[6],[1],[5],[8],[7],[22],[2],[15],[9]	33 66	46 28
		Developing	[21],[23],[11],[17],[14],[18]	26 24	25 38

		Low developing	[12],[16],[19] [13],[20]	29 97	13 18
Agriculture	83	High	[10],[5],[2],[6]	18 31	30 47
		Middle	[8],[11],[21],[4],[15] [22],[1],[3],[7]	33 52	39 72
		Developing	[16],[18],[9] [17],[12],[14]	22 82	21 87
		Low developing	[19],[23],[13],[20]	25 35	7 94

In case of production of miscellaneous crops three districts viz. Kokrajar^[1], Dhubri^[2], and Sonitpur^[11] are found to be better developed. These districts cover about 14.87 percent area and 14.88 percent population of the state. Similarly three districts viz.. Jorhat^[17], N.C. Hills^[20] and Nagaon^[10], are observed to be low developed these districts cover about 14.93 percent areas and 13.14 percent population of the state. Seven districts namely Tinsukia^[14], Karimganj^[22], Kamrup^[6], Goalpara^[3], Borpheta^[5], Golaghat^[18] and Sibsagar^[16] are classified as middle level developed districts. They cover about 27.01 percent area and 34.32 percent population of the state. The remaining ten districts namely Dibrugarh^[15], Darrang^[8], Bongaigaon^[4], Nalbari^[7], Morigaon^[9], Karbi Anglong^[19], Hailakandi^[23], Cachar^[21], Lakhimpur^[12] and Dhemaji^[13] are grouped in to developing districts. They cover about 43.19 percent area and 37.66 percent population of the state.

In terms of production of pulse, cereal crop and oilseeds four districts namely Goalpara^[3], Sonitpur^[11], Bongaigaon^[4] and Karbi Anglong^[19] are found to be better developed. These districts cover about 25.16 percent area and 15.84 percent population of the state. Similarly five districts viz. Nagaon^[10], Tinsukia^[14], Karimganj^[22], Jorhat^[17] and Morigaon^[9] are observed to be low developed these districts cover about 17.82 percent area and 23.44 percent population of the state. Eight districts viz., Dhubri^[2], Darrang^[8], Sibsagar^[16], Kamrup^[6], Dhemaji^[13], Kokrajar^[1], Golaghat^[18] and Dibrugarh^[15] are classified as middle level developed districts. They cover about 34.36 percent area and 38.73 percent population of the state. The remaining six districts viz. Cachar^[21], Borpheta^[5], Nalbari^[7], Lakhimpur^[12], N.C. Hills^[20] and Hailakandi^[23] are grouped in to developing districts. They cover about 22.66 percent area and 21.99 percent population of the state.

In case of infrastructural facilities obtained in four districts Nagaon^[10], Borpheta^[5], Nalbari^[7] and Kamrup^[6] are found to be better developed. The districts cover

about 17.62 percent area and 28.64 percent population of the state. Similarly Hailakandi^[23], Dhemaji^[13] and N.C. Hills^[20] are observed to be low developed these districts cover about 12.05 percent areas and 4.89 percent population of the state. Seven districts viz. Kokrajar^[11], Darrang^[8], Sonitpur^[11], Dhubri^[2], Bongaigaon^[4], Cachar^[21] and Jorhat^[17] are classified as medium level developed districts. They cover about 30.51 percent area and 34.06 percent population of the state. The remaining nine districts namely Goalpara^[3], Morigaon^[9], Lakhimpur^[12], Tinsukia^[14], Dibrugarh^[15], Sibsagar^[16], Golaghat^[18], Karbi Anglong^[19] and Karimganj^[22] are grouped in to developing districts. They cover about 39.82 percent area and 32.41 percent population of the state.

In case of livestock population one district namely Jorhat^[17] is found to be better developed. The districts cover about 3.63 percent area and 3.74 percent population of the state. Similarly Hailakandi^[23], Dhemaji^[13], and N.C. Hills^[20] are observed to be low developed these districts cover about 12.05 percent areas and 4.89 percent population of the state. Twelve districts namely Kamrup^[6], Darrang^[8], Borpeta^[5], Sonitpur^[11], Nagaon^[10], Cachar^[21], Bongaigaon^[4], Dhubri^[2], Dibrugarh^[15], Sibsagar^[16], Golaghat^[18], and Morigaon^[9] are classified as medium level developed districts. They cover about 52.37 percent area and 65.55 percent population of the state. The remaining seven districts namely Goalpara^[3], Nalbari^[7], Lakhimpur^[12], Karbi Anglong^[19], Karimganj^[22], Tinsukia^[14] and Kokrajar^[11] are grouped in to developing districts. They cover about 31.95 percent area and 25.82 percent population of the state.

In case of fish production four districts viz. Nagaon^[10], Borpeta^[5], Cachar^[21] and Karimganj^[22] are found to be better developed. The districts cover about 16.34 percent area and 24.07 percent population of the state. Similarly Karbi Anglong^[19] and N.C. Hills^[20] are observed to be low developed these districts cover about 19.53 percent areas and 3.76 percent population of the state. Five districts viz. Dhubri^[2], Morigaon^[9], Nalbari^[7], Kamrup^[6] and Lakhimpur^[12] are classified as medium level developed districts. They cover about 16.86 percent area and 26.16 percent population of the state. The remaining twelve districts viz. Kokrajar^[11], Bongaigaon^[4], Goalpara^[3], Darrang^[8], Sonitpur^[11], Dhemaji^[13], Tinsukia^[14], Dibrugarh^[15], Sibsagar^[16], Jorhat^[17], Golaghat^[18] and Hailakandi^[23] are grouped in to developing districts. They cover about 47.27 percent area and 46.01 percent population of the state.

In case of rice production six district viz. Golaghat^[18], Karimganj^[22], Hailakandi^[23], Sibsagar^[16], Dibrugarh^[15] and Cachar^[21] found to be better developed. The districts cover about 21.00 percent area and 23.18 percent population of the state. Similarly Bongaigaon^[4], Borpeta^[5], Nalbari^[7], Dhemaji^[13] and Lakhimpur^[12] are observed to be low developed these districts cover about 16.79 percent areas and 15.06 percent population of the state. Five districts viz. Nagaon^[10], N.C.Hills^[20], Goalpara^[3], Tinsukia^[14] and Jorhat^[17] are classified as middle level developed districts. They cover about 22.09 percent area and 20.54 percent population of the state. The remaining seven districts namely Kokrajar^[1], Kamrup^[6], Darrang^[8], Morigaon^[9], Sonitpur^[11], Dhubri^[2] and Karbi Anglong^[19] are grouped in to developing districts. They cover about 40.12 percent areas and 41.22 percent population of the state.

In case of fertilizer is used in agriculture three districts viz. Goalpara^[3], Bongaigaon^[4] and Nagaon^[10] are found to be better developed. These districts cover about 10.13 percent area and 15.16 percent population of the state. Similarly Lakhimpur^[12] Sibsagar^[16], Karbi Anglong^[19], Dhemaji^[13] and N.C. Hills^[20] are observed to be low developed These districts cover about 29.97 percent area and 13.18 percent population of the state. Nine districts viz. Kamrup^[6], Darrang^[8], Borpeta^[5], Kokrajar^[1], Nalbari^[7], Karimganj^[22], Dhubri^[2], Dibrugarh^[15] and Morigaon^[9] are classified as middle level developed districts. They cover about 33.66 percent area and 46.28 percent population of the state. The remaining six districts namely Cachar^[21], Hailakandi^[23], Sonitpur^[11], Jorhat^[17], Tinsukia^[14] and Golaghat^[18] are grouped in to developing districts. They cover about 26.24 percent area and 25.38 percent population of the state.

In case of overall agriculture four districts viz. Nagaon^[10], Borpeta^[5], Dhubri^[2] and Kamrup^[6] found to be better developed. The districts cover about 18.31 percent area and 30.47 percent population of the state. Similarly Karbi Anglong^[19], Hailakandi^[23], Dhemaji^[13], and N.C. Hills^[20] are observed to be low developed these districts cover about 25.35 percent areas and 7.94 percent population of the state. Nine districts viz. , Darrang^[8], Sonitpur^[11], Cachar^[21], Bongaigaon^[4], Dibrugarh^[15], Karimganj^[22], Kokrajar^[1], Goalpara^[3] and Nalbari^[7] are classified as middle level developed districts. They cover about 33.52 percent area and 39.72 percent population of the state. The remaining six districts viz. Sibsagar^[16], Golaghat^[18] and Morigaon^[9], Jorhat^[17],

Lakhimpur^[12] and Tinsukia^[14] are grouped in to developing districts. They cover about 22.82 percent area and 21.87 percent population of the state.

2.3.2 Model Districts and Potential Target for Low Developed District

The list of model districts identified for various low developed districts is given in the Table 2.3. Here at best three model districts are selected for low developed districts on priority basis. The best values of different indicators among the model districts will be taken as potential target of the low developed districts in the Table 2.4.

Table 2.3 Model districts for Low developed districts

Low developed districts	Model districts
Karbi Anglong[19]	Lakhimpur[12], Golaghat[18],
Hailakandi[23]	Kokrajari[1], Sonitpur[11], Dibrugarh[15]
Dhemaji[13]	Kokrajari[1], Tinsukia[14], Karimganj[22]
N C Hills[20]	Lakhimpur[12], Tinsukia[14], Karbi Anglong[19]

Table 2.4 Estimate of Potential Target and Actual achievement (given under the bracket)

Development indicators	Karbi Anglong	Hailakandi	Dhemaji	N C Hills
Potatoes	7262(10527)*	7264(3902)	7611(4207)	7070(8085)*
Sweet Potatoes	2800 (3262)*	3227(3179)	3505(3100)	3190(4900)*
Tapioca	3426 (5038)*	4108(0)	3615(2935)	3727(5000)*
Sugarcane	38561 (41155)*	38265(41400)*	39808(36919)	37978(32556)
Tobacco	650 (397)	527(480)	505(625)*	556(780)*
Chillies	628 (829)*	625(541)	666(762)*	700(573)
Onion	2946 (2372)	2708(1712)	2424(2550)	2425(2038)
Turmeric	475(804)*	630(505)	655(655)	665(546)
Banana	13414(13784)*	13553(12410)	13753(15260)*	11441(14500)*
Papaya	14187(15284)*	30308(19205)	15616(15017)	15064(15284)*
Orange	10083(9005)	10935(9850)	10352(9586)	11164(10074)
Pineapple	13479(15562)*	13943(14203)*	14124(13945)	14007(14734)*
Assam lemon	7100(6268)	7183(7735)*	7014(6335)	6640(6889)*
Guava	17220(19734)*	17394(19600)*	18921(19179)*	19263(18760)
Litchi	4047(3714)	4857(6038)*	4869(4440)	4413(4210)
Jack fruit	10527(10370)	9860(10042)*	9821(9782)	9826(8434)
Mango	8195(8422)*	8452(7520)	8093(6980)	7548(7125)
Other fruit	3591(1039)*	3569(3281)	2729(2057)	2866(7982)*
Ginger	8350(7660)	3840(4900)*	6457(6520)*	7080(5505)
Coriander	910(0)	916(920)*	3853(990)	703(0)
Garlic	3410(0)	3340(4740)*	3078(1850)	1301(0)
Black pepper	1530(1520)	1608(1950)*	1752(1490)	1598(1730)*
Kharif vegetables	13118(22364)*	17786(23750)*	19993(23930)*	18514(15038)
Ravi vegetables	15586(20380)*	17646(18192)*	19229(23920)*	18409(17316)
Tur	690(678)	699(694)	679(750)*	722(720)
Gram	442(507)*	492(455)	507(434)	457(300)
Black Gram	553(575)*	487(575)*	486(575)*	481(575)*
Green Gram	443(620)*	434(450)*	476(533)*	457(470)*

Peas	642(636)	581(570)	548(638)*	508(488)
Rice	595(609)*	554(574)*	548(543)	564(1733)*
Maize	1372(1274)	1342(1274)	1317(1274)	1277(750)
Wheat	73(84)	73(65)	73(73)	71(60)
Other cereals	380(738)	477(400)	499(518)*	430(452)*
Total cereals	475(454)	536(418)	512(937)*	566(1635)*
Jute	473(489)*	536(417)	517(342)	416(1274)*
Cotton	1574(1444)	1605(2121)*	1699(1074)	1452(80)
Sesa mum	569(785)*	552(410)	583(923)*	633(730)*
Rape & mustered	848(1460)*	927(1066)*	1149(985)	949(381)
Total pulse	507(336)	495(555)*	489(677)*	574(547)
Total oil seeds	1560(1392)	1590(2120)*	1683(1072)	1446(446)
Indigenous cattle %	5 33(2 36)	4 59(1 73)	3 97(2 83)	4 09(71)
Cross breed cattle %	2 44(4 36)*	3 33(3 29)	3 25(08)	2 10(1 41)
Indigenous buffaloes %	3 61(6 57)*	4 60(4 10)	6 17(4 74)	4 42(6 69)*
Sheep %	63(91)*	2 94(6 97)*	3 53(09)	50(09)
Goats %	5 68(97)	4 56(2 07)	3 16(1 41)	2 31(1 27)
Pigs %	5 68(7 28)*	4 73(29)	4 03(7 40)*	5 96(3 43)
Horse%	5 97(0)	4 81(24)	1 89(14 45)*	6 02(1 37)
Fowls%	2 42(4 52)*	5 80(3 10)	3 93(1 59)	2 93(1 88)
Ducks	3 79(513)	3 72(2 36)	3(94)	1 85(12)
Total fertilizer (N) both Ravi & Kharif Corps	17 66(3 45)	19 85(18 19)	17 66(2 32)	9 27(75)
Total fertilizer (p) both Ravi & Kharif Corps	9 40(1 97)	12 24(5 36)	9 40(96)	5 25(53)
Total fertilizer (N) both Ravi & Kharif Corps	7 36(59)	8 79(3 59)	7 36(86)	3 79(32)
Registered beel Fisheries	13 (0)	17(6)	12(8)	6(0)
Registered river Fisheries	4 5 (0)	10(9)	12(8)	6(0)
Production of fish %2003-04	4 17(65)	4 89(3 17)	4 20(1 95)	3 08(30)
Production of fish seed %2003-04	1 89(0)	1 20(6 00)*	1 22(09)	94(0)
Agriculture labor to man worker%	11 71(19 63)*	16 14(18 59)*	17 69(11 71)	12 91(002)
Small tea growers %	13 22(10 99)	7 29(325)	4 91(081)	5 21(081)
Registered area %	11 83(25 38)*	6 72(531)	7 24(199)	8 87(104)
Cropping intensity	155(142)	143(128)	134(160)*	155(136)
Percentage of Forestland	10(41)*	07(12)*	142(11)	17(38)*
Average size of Holding	1 14(1 35)*	1 38(1 30)	1 43(1 14)	1 35(1 08)
village used electricity in agriculture %	88(1 90)*	2 73(4 28)*	2 58(0)	83(17)
Net area irrigated to net area sown %	63(12 6)*	1 63(033)	2 97(013)	3 43(13 3)*
Net area sown per cultivator %	48 05(65 19)*	73 69(72 80)	77 18(34 29)	49 40(82 12)*
Area HYV used to net sown area %	49 56(67 17)*	43 25(56 93)*	46 07(30 40)	44 81(29 48)
Area sown more than once to net sown area %	53 40(57 25)*	34 76(47 68)*	43 30(68 67)*	61 16(37 37)
Number of Veterinary Dispensary	9(9)	12(5)	11(13)	11(6)
Number of AI center	30(10)	44(18)	34(23)	24(1)
Number of Agriculture subdivision	3(2)	3(1)	3(2)	2 5(1)
Number of Agriculture Development officer Circle	14(14)	16(7)	15(11)	12(5)
Number of Village Level Extension Worker	110(102)	114(63)	102(57)	86(36)

*Indicates actual achievement that already better than the potential target

Table 2.5 Rank of the districts of Agriculture sector based on Narain et al. and PCA.

Sl. no	District	PCA Score	Rank	
			PCA	Narain et al.
[1]	Kokrajjar	1.2258	12	6
[2]	Dhubri	2.9001	5	3
[3]	Goalpara	2.1639	8	9
[4]	Bongaigaon	3.6089	3	5
[5]	Borpeta	3.2755	4	2
[6]	Kamrup	5.2225	2	4
[7]	Nalbari	1.3304	10	11
[8]	Darrang	2.6326	6	7
[9]	Marigaon	-2.0413	17	18
[10]	Nagaon	5.8750	1	1
[11]	Sonitpur	1.2526	11	8
[12]	Lakhimpur	-2.9704	19	19
[13]	Dhemaji	-5.5862	22	22
[14]	Tinsukia	-2.4943	18	16
[15]	Dibrugarh	.9805	14	13
[16]	Sibsagarh	1.3836	9	17
[17]	Jorhat	1.1291	13	14
[18]	Golaghat	.2151	15	15
[19]	Karbi Anglong	-4.5950	21	20
[20]	N.C. Hills	-8.6259	23	23
[21]	Cachar	2.2676	7	10
[22]	Karimganj	-1.8933	16	12
[23]	Hailakandi	-4.4908	20	21

From the Table 2.5 it is observed that according to Narain et al. method Nagaon, Borpeta, Dhubri and Kamrup are developed districts but Karbi Anglong, Hailakandi, Dhemaji and N.C. Hills are low developed districts. According to Principal Component Analysis Nagaon, Kamrup and Bongaigaon are placed in first three ranks. N.C. Hills is placed in the last.

2.4 Results and Discussion

The study reveals that for both methods Narain et al. and PCA the Nagaon, Borpeta and Dhubri and Kamrup are placed in the first four rankings in overall agriculture sector. Two hill districts Karbi Anglong and N.C. Hills and two plain district Dhemaji and Hailakandi are low developed in this case. Kabi Anglong and Dhemaji are developed and medium developed districts respectively in production of pulse, cereal crops and oil seeds and Hailakandi and N.C. Hills are developed and medium developed districts in production of rice respectively. If proper thrust is given in development of the

specific subsectors in the respective districts then the districts will be able to develop on the basis of it. For each low developed district model districts are found in Table 2.3. From the model districts best value of each indicator is taken as potential target for each indicator of low developed districts, furnished in Table 2.4. From the table it is observed that a number of indicators of low developed districts show better prospect than their potential target.

Chapter 3

Health Care Service sector

It is an attempt to find development disparities of health care sector among the districts of Assam. Thirty-five indicators related to the health are considered in the study. The entire health sector is divided into four sub sectors and districts are ranked according to position of development for each sub sector. It is observed that in overall health sector according to the method is used by Narain et al. the districts Kamrup, Jorhat and Nalbari are in better developed compared to other districts. Potential target are set for each indicator for low developed districts from the model districts. According to Principal Component Analysis Kamrup, Dibrugarh and Nalbari are found to occupy first three positions respectively and N.C.Hills is in the last.

3.1 Introduction

It is an attempt to throw light on the developmental disparities in Health care sector in twenty-three districts of Assam. Development is a multidimensional process and its impact cannot be captured fully by any single indicator. Moreover a number of indicators when analyzed individually do not provide an integrated and easily comprehensible picture of reality. Hence there is need for building up of a composite index of development on some key factors, related to health of people, combined in an optimum manner. To improve the quality of life, health care facilities are extremely important. A better health care system can improve the health status of its population; reduce birthrate, death rate, infant mortality rate, child mortality rate and maternal mortality rate. Since health is influenced by a number of factors, such as adequate food, housing, basic sanitation, healthy lifestyles, protection against environmental hazards and communicable diseases. There is a saying that Health is wealth. An alarming health care system can control the disease like malaria, tuberculosis, HIV/AIDS etc. There is symbiotic relationship between health and poverty. A sound health can do any hard work when it is necessary. The availability of health care facilities in a region depends on health care delivery system i.e. health care institution and

infrastructure that are available in a region and mostly depend on the people, which are involved in the system. It operates in the context of the socio economic and political framework of the country and involves management and organizational matters.

An assessment of the health status is possible from key indicators such as infant mortality, crude birth rate, crude death rate, life expectancy and nutritional status. There is a rural – urban divide, and a gender gap reflected across almost all indicators. Of concern also is the fact that the commonly used indicators for the measurement of the health status of a population show that while there has been improvement in the all indicators, Assam's performance in the last decade has been lower than the average for the country. Life expectancy at birth (LEB) in Assam is below that of the country as a whole, and is one of the lowest amongst major Indian States. In the 1970's men could expect to live longer than women. This has since been reversed; women can now expect to live longer than men. This is a trend that began to take place initially in urban areas, but is now true of rural areas as well. There is still a very significant gap between the LEB for rural and for urban areas. In the period 1992- 96, the LEB in urban areas was 64.6 years. In rural areas it was almost ten years less, at 55.6 years. The Birth rates in Assam continued to be higher than the all India average birth rates from 1951 to 1971. Although census was not conducted in Assam in 1981, as per interpolated figures, the birth rate in Assam was lower than the all India average birth rate, this continued till 1991. But in 2001, the rural birth rate in Assam with 27.8 was higher than the all India average rural birth rate of 27.1 although the birth rates for urban areas for the same year was lower in Assam with 18.5 against the all India urban birth rate of 20.2. The SRS data for the period 1998-2001 confirm that the birth rates in rural Assam continued to be higher than the corresponding all India rates, whereas for urban areas, it was the reverse. As per the SRS Bulletin, October 2002, in 1998, the death rate in Assam decreased to 10.0 and thereafter the steady decreasing rate continued and dropped down to 9.5 in 2001 but remained higher than the all India average rate of 8.4. Over the period between 1998 and 2001, the rural death rates declined in Assam as well as at the all India level. But the rates for urban Assam had a fluctuating increase during the period. In 2001, the rural death rate in Assam was 9.8, marginally higher than the all India rate of 9.0, while the death rate in urban Assam was 6.6, 0.3 per cent higher than the all India rate of 6.3. The IMR for urban Assam is substantially lower than the all India average

(36 per 1,000 as against 44 per 1000 for India), while in rural Assam the IMR is higher than that for rural India (79 per 1000 against 75 per 1,000 for India) in 1999. Under-5 mortality is substantially higher in rural areas, a fact corroborated by NFHS - 2 data. The under-5 mortality rate is 81 deaths per 1,000 live births for rural children, and 55 deaths per 1,000 live births for urban children. Sanitation and water supply are two important components of well being and good health. Poor sanitation and water supply leads to ill health and disease. The districts with the highest percentage of population with access to toilet facilities were Karimganj (73.17 percent), Cachar (63.27 percent) and Hailakandi (60.97 percent). In Kokrajhar, Dhemaji, Darrang and Nalbari less than 20 percent of the population had access to a toilet facility. Access to safe drinking water in Assam is substantially less than the national average. The population in Assam with access to safe drinking water is 45.86 percent, compared to the all India figure of 62.30 percent. Households with access to safe drinking water stand at 43.28 percent in rural areas and 64.07 percent in urban areas. At the all India level 55.54 percent of people in rural areas have access to safe drinking water, while in urban areas, 81.38 percent of people have access to safe water.

3.2 List of Indicators used for the study

- 1) Number of Hospitals
- 2) Number of PHC
- 3) Number of Dispensaries
- 4) Number of Rural FWPC
- 5) Number of SC
- 6) Number of CHC
- 7) No of Hospital beds per 10,000 Populations
- 8) Achievement of B.C.G.(%)
- 9) Achievement of D.P.T.-3 (%)
- 10) Achievement of O.P.V.-3 (%)
- 11) Achievement of Measles (%)
- 12) Achievement of T.T. (%)
- 13) Achievement of Sterilization. (%)
- 14) Achievement of I.U.D.insertion (%)
- 15) Achievements of C.C. Users (%)
- 16) Achievement of O.P. Users (%)
- 17) Achievement of Sterilization (%)
- 18) Achievement of I.U.D. insertion (%)
- 19) Achievement of C.C. Users (%)

- 20) Achievement of O.P. Users (%)
- 21) IMR for male
- 22) IMR for female
- 23) Child Mortality Rate for male
- 24) Child Mortality Rate for female
- 25) Crude Birth rate (CBR)
- 26) Total Fertility Rate (TFR)
- 27) Sanitation facility (%)
- 28) Safe drinking water facility (%)
- 29) Any MNC check up (%)
- 30) 3+ANC visits (%)
- 31) At least one TT injection (%)
- 32) Recd 100 or more IFA tablet/syrup (%)
- 33) Full ANC (%)
- 34) Safe delivery (%)
- 35) Village electrified (%)

3.3 Ranking of Districts based on Health Care Service

Composite index of development have been worked out for different districts by the method Narain et al. for subsectors namely infrastructure of health sector, performance shown by the districts in running various programmes of health department, demographic rates, maternal health and overall health care system separately. The number of indicators is used for each case are ten, thirteen, six, six and thirty five respectively. The districts have been ranked on the basis of developmental index. The composite index of development along with the rank of the districts are presented in **Table 3.1**.

Table 3.1 Ranking of districts of Assam.

Sl.No	Districts	Infrastructure		Demography rate		Maternal health		Performance		Overall health	
		CI-1	Rank	CI-2	Rank	CI-3	Rank	CI-4	Rank	CI-5	Rank
[1]	Kokrajjar	.8071	16	.5163	10	.6222	12	.6221	6	.7271	9
[2]	Dhubri	.6898	6.5	.9989	23	.8962	22	.8295	18	.9119	21
[3]	Goalpara	.8594	20	.7308	22	.6751	15	.6285	7	.7991	16
[4]	Bongaigaon	.8407	18	.7291	21	.6628	13	.8060	17	.8448	18
[5]	Borpeta	.6717	5	.7235	20	.7154	18	.8724	21	.8201	17
[6]	Kamrup	.4264	1	.2654	5	.1769	1	.5026	1	.4269	1
[7]	Nalbari	.6974	8	.4233	8	.2131	2	.6140	4	.6045	3
[8]	Darrang	.6997	9	.6422	14	.4511	7	.7939	15	.7384	11
[9]	Marigaon	.7944	14	.7175	19	.6717	14	.6204	5	.7678	14
[10]	Nagaon	.4514	2	.5909	13	.7596	20	.7452	11	.6952	8
[11]	Sonitpur	.6564	4	.3756	7	.3397	5	.7255	10	.6385	5
[12]	Lakhimpur	.8137	17	.6884	17	.5576	10	.6846	8	.7690	15
[13]	Dhemaji	.9387	23	.7159	18	.8069	21	.8594	19	.9250	22
[14]	Tinsukia	.7748	13	.2872	6	.5861	11	.7961	16	.7392	12
[15]	Dibrugarh	.6245	3	.0910	2	.2930	3	.7749	13	.6178	4
[16]	Sibsagarh	.7450	12	.2257	4	.3171	4	.7560	12	.6665	6
[17]	Jorhat	.6898	6.5	.0172	1	.3743	6	.5486	2	.5633	2
[18]	Golaghat	.7313	10	.2150	3	.4653	8	.7752	14	.6894	7
[19]	Karbi Anglong	.7997	15	.5527	12	.7316	19	.5901	3	.7448	13
[20]	N.C.Hills	.8689	21	.5499	11	.9618	23	.9998	23	.9785	23
[21]	Cachar	.7448	11	.4791	9	.6777	16	.6971	9	.7313	10
[22]	Karimganj	.8564	19	.6472	15	.7055	17	.8943	22	.8743	20
[23]	Hailakandi	.9253	22	.6531	16	.5061	9	.8650	20	.8592	19

Source: (a) Census Report of India, Government of India, 2001
 (b) Assam Human Development Report 2003, Govt of Assam
 (c) Statistical Hand Book (2007-08) Directorate of Economics and Statistics, Assam,
 (d) NFHS-2006

CI-1: Composite Index based on 10 Indicators
 CI-2: Composite Index based on 6 Indicators
 CI-3: Composite Index based on 6 Indicators
 CI-4: Composite Index based on 13 Indicators
 CI-5: Composite Index based on 35 Indicators

From the above Table 3.1 it is observed that in infrastructure sub sector Kamrup is in the first and Dhemaji is in the last. In demography rate Jorhat is found to be in first position and Dhubri is found to be in the last position. In maternal health Kamrup is coming out as first and N.C. Hills is in the last. Kamrup districts is found to be first in performing various programmes which are launched by health department and district N.C. Hills is in the last. In overall health sector Kamrup is found to be in the first ranking and N.C. Hills is in the last.

3.3.1 Relative Share of Area and Population under Different Level of Development

The relative share of area and population affected under various stages of development in the state. The details are given in Table 3.2.

Table 3.2 Area and Population under different levels of development

Sectors	No of indicators	Level of development	Serial no of districts according to level of development	Area %	Population %
Infrastructure	10	High	[6],[10]	10.60	18.15
		Medium	[11],[15],[8],[17],[5],[7],[2],[18]	34.22	40.33
		Developing	[3],[4],[21],[9],[12],[14],[16],[20],[22],[1],[19]	49.36	37.34
		Low Developed	[13],[23]	5.82	4.18
Performance	13	High	[6],[17],[19]	12.58	17.16
		Medium	[7],[9],[1],[16],[12],[21],[11],[3]	26.21	28.77
		Developing	[10],[2],[4],[8],[13],[14],[15],[18],[23]	48.54	43.4
		Low Developed	[5],[22],[20]	12.67	10.67
Demographic Rate	06	High	[15],[17],[18],[16],[6]	21.35	25.15
		Medium	[14],[11],[7],[21]	19.32	15.48
		Developing	[10],[8],[23],[9],[3],[1],[5],[12],[19],[22],[20],[4],[13]	55.76	53.23
		Low Developed	[2]	3.57	6.14
Maternal Health	06	High	[6],[7],[15],[16],[11]	22.92	28.47
		Medium	[17],[8],[18],[23],[12]	17.13	18.31
		Developing	[1],[3],[4],[5],[22],[9],[10],[14],[19],[21]	46.02	44.32
		Low Developed	[13],[2],[20]	13.93	8.99
Overall	35	High	[6],[17],[7]	12.05	17.52
		Medium	[11],[16],[18],[10],[15],[21],[1],[19],[8],[14]	55.94	48.76
		Developing	[3],[4],[5],[9],[12],[23]	15.78	20.94
		Low Developed	[22],[13],[2],[20]	16.23	12.78

In case of infrastructural development, two districts namely Kamrup^[6] and Nagaon^[10] are found to be high developed. These districts cover about 10.60 percent area and 18.15 percent population of the state. Similarly two districts namely Dhemaji^[13] and Hailakandi^[23] are observed to be low developed, these districts cover about 5.82 percent area and 4.18 percent population of the state Eight districts namely, Sonitpur^[11], Dibrugarh^[15], Darrang^[8], Golaghat^[18], Jorhat^[17], Borpeta^[5], Nalbari^[7] and Dhubri^[2] are classified as medium level developed districts. They cover about 34.22 percent area and

40.33 percent population of the state. The remaining eleven districts namely, Bongaigaon^[4], Goalpara^[3], Lakhimpur^[12], Tinsukia^[14], Morigaon^[9], Sibsagar^[16], Cachar^[21], Karbi Anglong^[19], Kokrajar^[1], Karimganj^[22] and N.C.Hills^[20] are grouped in to developing districts. They cover about 49.36 percent area and 37.34 percent population of the state .

In case of performance that has been shown by health care system, three districts namely Kamrup^[6], Jorhat^[17] and Karbi Anglong^[19] are found to be high developed. These districts cover about 12.58 percent area and 17.16 percent population of the state. Similarly three districts namely Borpeta^[5], Karimganj^[22] and N.C. Hills^[20] are observed to be low developed, these districts cover about 12.67 percent area and 10.67 percent population of the state. Eight districts namely, Sonitpur^[11], Nalbari^[7], Morigaon^[9], Goalpara^[3], Kokrajar^[1], Lakhimpur^[12], Sibsagar^[16] and Cachar^[21] are classified as medium level developed districts. They cover about 26.21 percent area and 28.77 percent population of the state. The remaining nine districts namely, Bongaigaon^[4], Nagaon^[10], Dhubri^[2], Darrang^[8], Dhemaji^[13], Hailakandi^[23], Tinsukia^[14], Dibrugarh^[15], and Golaghat^[18] are grouped in to developing districts. They cover about 48.54 percent area and 43.4 percent population of the state.

Regarding demographic rate, five districts namely Dibrugarh^[15], Jorhat^[17], Golaghat^[18], Sibsagar^[16] and Kamrup^[6] are found to be high developed. These districts cover about 21.35 percent area and 25.15 percent population of the state. Similarly one district namely Dhubri^[2] are observed to be low developed, this district cover about 3.57 percent area and 6.14 percent population of the state Four districts namely, Tinsukia^[14], Sonitpur^[11], Nalbari^[7] and Cachar^[21] are classified as medium level developed districts. They cover about 19.32 percent area and 15.48 percent population of the state. The remaining thirteen districts namely, Nagaon^[10], Darrang^[8], Hailakandi^[23], Morigaon^[9], Goalpara^[3], Kokrajar^[1], Lakhimpur^[12], Karbi Anglong^[19], Bongaigaon^[4], Dhemaji^[13], Karimganj^[22], Borpeta^[5] and N.C. Hills^[20] are grouped in to developing districts. They cover about 55.76 percent area and 53.23 percent population of the state.

In case of maternal health five districts namely Kamrup^[6], Nalbari^[7], Dibrugarh^[15], Sibsagar^[16] and Sonitpur^[11] are found to be high developed. These districts cover about 22.92 percent area and 28.47 percent population of the state. Similarly three districts namely Dhemaji^[13], Dhubri^[2] and N.C. Hills^[20] are observed to be low developed, this

district cover about 13.93 percent area and 8.99 percent population of the state Five districts namely, Jorhat^[17], Darrang^[8], Golaghat^[18], Hailakandi^[23], and Lakhimpur^[12] are classified as medium level developed districts. They cover about 17.13 percent area and 18.31 percent population of the state. The remaining ten districts namely, Nagaon^[10], Morigaon^[9], Goalpara^[3], Kokrajar^[1], Karbi Anglong^[19], Tinsukia^[14], Cachar^[21], Bongaigaon^[4], Karimganj^[22] and Borpeta^[5] are grouped in to developing districts. They cover about 46.02 percent area and 44.32 percent population of the state.

In case of overall health care three districts namely Kamrup^[6], Jorhat^[17] and Nalbari^[7] are found to be high developed. These districts cover about 12.05 percent area and 17.52 percent population of the state. Similarly four districts namely Karimganj^[22], Dhemaji^[13], Dhubri^[2] and N.C. Hills^[20], are observed to be low developed, these districts cover about 16.23 percent area and 12.78 percent population of the state. Ten districts namely, Dibrugarh^[15], Sonitpur^[11], Sibsagar^[16], Nagaon^[10], Golaghat^[18], Cachar^[21], Darrang^[8], Kokrajar^[1], Tinsukia^[14] and Karbi Anglong^[19] are classified as medium level developed districts. They cover about 55.94 percent area and 48.76 percent population of the state. The remaining six districts namely, Bongaigaon^[4], Borpeta^[5], Goalpara^[3], Lakhimpur^[12], Morigaon^[9] and Hailakandi^[23], are grouped in to developing districts. They cover about 15.78 percent area and 20.94 percent population of the state.

3.3.2. Model Districts and Potential Target for Low Developed District

Model districts for the low developed districts, for thirty-five indicators on the basis of composite index of development and the developmental distances between different districts are obtained and given in Table 3.3. The best values of different indicators among the model districts will be taken as potential target of the low developed districts. The potential targets of important indicators have been estimated and presented in Table 3.4. At best three model districts are considered here for each low developed district on priority basis.

Table 3.3 Low developed district along with their Model districts

Low developed districts	Model districts
Karimganj	Darrang, Sonitpur, Cachar
Dhemaji	Darrang, Karbi Anglong, Cachar,
Dhubri	Darrang, Karbi Anglong, Cachar
N.C. Hills	Darrang

Table 3.4 Potential Target along with their actual achievement

(Figures in the bracket indicate the best values of the model districts)

Development Indicators	Karimganj	Dhemaji	Dhubri	N.C.Hills
No. of Hospitals	10(2)	8(3)	8(11)*	8(3)
No of PHC	35(16)	35(9)	35(23)	35(12)
No of Dispensaries	17(5)	14(5)	14(12)	14(2)
No of FWPC	8(5)	8(1)	8(7)	7(3)
No of Sub Centre	325(232)	322(95)	322(303)	322(173)
No of CHC	7(1)	7(3)	7(6)	7(2)
Hospitals bed per 10,000 population	10(2)	7(4)	7(3)	3(14)*
Achievement of BCG (%)	96.98 (73.02)	97.53(87.26)	97.53(97.26)	81.33(45.92)
Achievement of DPT-3 (%)	81.54(59.74)	84.29(76.88)	84.29(77.27)	79.91(40.65)
Achievement of OPV-3 (%)	82.16(68.85)	84.61(76.88)	84.61(77.27)	80.34(37.23)
Achievement of measles (%)	74.28 (49.18)	76.30(70.05)	76.30(70.62)	63.73(31.03)
Achievement of TT (%)	65.66(50.30)	65.66(58.09)	65.66(73.48)*	56.67(26.24)
Sterilization(%) (2006-07)	44.34(17.45)	22.88(44.80)*	22.88(.08)	6.33(15.00)
IUD insertion(%) (2006-07)	60.18(27.75)	77.36(27.80)	77.36(17.58)	35.40(43.50)*
CC users(%) (2006-07)	103.58(51.43)	110.50(23.25)	110.50(49.50)	13.67(56.29)*
OP users(%) (2006-07)	100.43(43.47)	95.93(6.73)	95.93(56.33)	36.13(76.50)*
Sterilization(%) (2007-08)	187.03(44.65)	187.03(36.94)	187.03(2.74)	187.03(19.35)
IUD insertion(%) (2007-08)	64.79(27.55)	97.51(73.63)	97.51(27.29)	57.54(97.51)*
CC users(%) (2007-08)	37.04(38.61)*	60.11(7.16)	60.11(49.24)	23.94(60.11)*
OP users(%) (2007-08)	89.07(59.07)	107.12(12.59)	107.12(59.23)	76.64(107.12)*
Household with toilet facilities (%)	63.26(73.17)*	63.26(16.37)	63.26(29.64)	17.05(34.61)*
Household with drinking water facility (%)	46.66(17.83)	46.66(48.58)*	46.66(56.10)*	46.66(45.54)
Any MNC check up (%)	77(58)	74.7(49.6)	74.7(37.8)	74.7(29.4)
3+ANC visits(%)	59.1(40.3)	59.1(30.8)	59.1(23.6)	59.1(17.1)
At least one TT injection(%)	77.9(63.6)	72.8(48.1)	72.8(48)	72.8(32.2)
Recd 100 or more IFA tablet or syrup (%)	17(7.6)	12.6(5)	12.6(6.4)	12.6(10.3)
Full ANC(%)	15.2(4.2)	8.5(4.6)	8.5(4.9)	8.5(7.3)
Safe delivery(%)	44(23.4)	44(25.3)	44(13)	44(13.9)
Village electrified (%)	82.34(72.13)	82.34(23.97)	82.34(62.01)	82.34(20.50)

* Indicates actual achievement that already better than the potential target.

Table 3.5 Ranking of districts based on PCA and CI scores.

Sl.No	Districts	Score PCA	Ranking based on	
			PCA	Narain et al.
[1]	Kokrajar	-0.6563	13	9
[2]	Dhubri	-4.4372	22	21
[3]	Goalpara	-2.2553	19	16
[4]	Bongaigaon	2.5389	7	18
[5]	Borpeta	1.8282	9	17
[6]	Kamrup	6.3376	1	1
[7]	Nalbari	3.6324	3	3
[8]	Darrang	1.5325	10	11
[9]	Marigaon	-1.0640	16	14
[10]	Nagaon	-0.7887	15	8
[11]	Sonitpur	1.8509	8	5
[12]	Lakhimpur	-0.6762	14	15
[13]	Dhemaji	-3.1083	21	22
[14]	Tinsukia	3.5583	4	12
[15]	Dibrugarh	6.1506	2	4
[16]	Sibsagarh	2.7384	6	6
[17]	Jorhat	3.1485	5	2
[18]	Golaghat	0.9620	11	7
[19]	Karbi Anglong	-1.7081	18	13
[20]	N.C.Hills	-6.4832	23	23
[21]	Cachar	-0.2241	12	10
[22]	Karimganj	-2.7100	20	20
[23]	Hailakandi	-1.4328	17	19

According to Principal Component Analysis Kamrup, Dibrugarh and Nalbari are taking rank first, second and third respectively. Demaji, Dhubri and N.C. Hills occupy latter positions respectively. The two methods Principal Component Analysis and Method is used by Narain et al. furnish the same result but little variation.

3.4 Results and discussion

From the study it is observed that for both methods Narain et al. and PCA Kamrup, Jorhat, Nalbari and Dibrugarh districts are placed in better position in health care service. Karimganj, Dhemaji, Dhubri and N.C.Hills are low developed in this sector. The study highlights that the district Dhubri is medium developed in infrastructure facilities of health care but it is coming out as low developed in the subsectors maternal health and performance has shown by demographic rate. Borpeta is also medium developed district in infrastructure but it is also low developed in performing programmes those are run by the health department. Karimganj, Dhemaji, and N.C.Hills show poor performance in all the

sub sectors. They are poor in infrastructure facilities of health care also. Model districts are found for each low developed district is observed in Table 3.3 and potential target are obtained for each indicator of low developed district in Table 3.4. It is observed from the Table 3.4 the actual achievement of at least two indicators of each low developed district is better than their potential target. The Infant Mortality Rate, Child Mortality Rate for both male and female and birth rate and Total Fertility Rate are not in better position than their potential target for low developed districts Karimganj, Dhemaji and Dhubri except N.C. Hills.

Chapter 4

Status of women

In this chapter Complete Fertility Rate in the state and the districts of Assam for the birth cohort of women (1951-1955) is computed by Parity Progression Ratio. The study reveals that fertility rate of women decrease when education levels increase. Different fertility behavior is observed between rural and urban women, between women of Hindu religion and Muslim religion. When both literacy and fertility indicators taking together and districts are ranked by method of Narain et al., Dibrugarh, Sibsagar, Jorhat and Cachar are placed in better positions in comparison to others.

Forty-three indicators are considered to study status of women among the districts of Assam. The indicators are divided in to three sub sectors and the districts are ranked according to position of development for each sub sector. On the basis of twenty nine key indicators overall status of women are computed for the districts. According to method of Narain et al. Dibrugarh, Kamrup and Sibsagar are high-developed districts. Potential targets are obtained for each indicator for low developed districts. According to Principal Component Analysis the districts Dibrugarh, Jorhat and Sibsagar are ranked as first, second and third respectively. In this chapter the status of women in sixteen other major Indian states are measured on the basis of twenty-five indicators. According to Narain et al. method Himachal Pradesh, Tamil Nadu and Kerela are coming out as better states than the others. According to Principal Component Analysis Punjab, Himachal Pradesh and Kerela are ranked as first, second and third respectively.

4.1 Introduction

Status refers to a position in a system or subsystem which is distinguishable from at the same time related to other positions through its designated rights and obligations. In the pure sociological sense, status does not imply rank or hierarchy but denotes only position vis-à-vis others in terms of rights and obligations. But as each

status position in a particular structure can be viewed in terms of superiority and inferiority (i.e. in terms of power, privileges, advantages and disadvantages) the notion of status involves comparison and grading.

Income is not only factor. Many poor countries of the world have been able to raise their female literacy rate with limited resource but strong political commitment. Doors of education and health opportunities have opened rapidly for women .But in political and economic opportunities have not equally opened yet. Life expectancy is taken as indicator for measuring social position of women in a society. Life expectancy in India for women being 61.4 years and for men 60.1 years in the year 1999. This is still below international level. According to famous demographer Asish Bose the virus of female foeticide is more dangerous than HIV/AIDS. India is the home of largest illiterate women of the world. It is found that female literacy is positively related with human development.

One of the important indicators is sex ratio for measuring position of women in a society. It is one of the basic demographic characteristics, which is important for any meaningful demographic analysis. Sex ratio is defined as the number of females per 1000 males in the population. It has been estimated that around the year 2000, the world had 986 females against 1000 males except Indonesia and Japan other Asian countries shows the low sex ratios. Some of the important reasons commonly put forward to explain consistently low level of sex ratio are

- 1) Neglect the girl child resulting in their mortality in younger age
- 2) High maternal mortality
- 3) Sex selective female abortions
- 4) Female infanticide

The women of Assam have played an important role in the society. But their position is not different from other parts of the country. Like women of other states they have also faced some specific problems such as patriarchal culture, inadequate access of productive resources, non accounting of women's domestic work, lack of advanced facilities in workplace, powerlessness etc. The sex ratio in Assam, as per the 2001 census is 932 against the all India average of 933. This is an improvement over the sex ratio in 1991 by 9 points against the all India average improvement of 6 points during the period. The decadal variation in the sex ratio for India indicates that over the decades there has been a steady decline in the female sex ratio whereas in case of

Assam, the sex ratio had a fluctuating increase over time. In 1901 the sex ratio was 919; it decreased to 915 in the next decade, which further showed a decline till 1951. In the year 1961, the sex ratio showed a little improvement with the increase in the ratio from 868 in the previous decade to 869 in 1961. From 1961 onwards, there has been a steady increase in the ratio till the present census of 2001. However, throughout the period the sex ratio in the state continued to be below the national average value. The difference between the two values touched the all time high of 77 points in 1951. Female literacy rate (FLR) is increasing from 39 percent in 1991 to 54.61 percent in 2001. An analysis of the main and marginal workers in agriculture, based on the 1991 and 2001 census data shows that fewer women were employed formally in the agricultural sector than men. A higher proportion of women than of men, were employed as marginal workers. Despite the large proportion of women that work in agriculture, cultivation and related activities are perceived as a male sphere. Traditionally men own land. In the 1990s, the employment of women in the organized sector as a proportion of total organized sector employment was around 30 percent. According to Census of Small Scale Industry (SSI) in 2001-02 the number of women enterprises are 11757 (6.05 percent), the number of SSI are managed by women 11189 (5.76 percent). The Maternal Mortality Rate (MMR) in 1998 for Assam was as high as 409 per 100,000 live births. This was marginally higher than the average for India, which were 407 maternal deaths per 100,000 births. Early marriages contribute to higher mortality rates. Through the 1990s there was a secular decline in the IMR in Assam, from 81 per 1000 live births (1991) to 76 per 1000 live births by the end of the decade (1999). There is a positive development, but the IMR in Assam is higher than the national average. In 2007 the IMR for rural Assam is 68 per 1000 where as for rural India it is 61 per 1000. Among urban population of Assam the IMR per 1000 is 41 and its corresponding rate for India is 37 per thousand.

The Birth rates in Assam continued to be higher than the all India average birth rates from 1951 to 1971. Although census was not conducted in Assam in 1981, as per interpolated figures, the birth rate in Assam was lower than the all India average birth rate, this continued till 1991. But in 2001, the rural birth rate in Assam with 27.8 was higher than the all India average rural birth rate of 27.1 although the birth rates for urban areas for the same year was lower in Assam with 18.5 against the all India urban birth rate of 20.2. The SRS data for the period 1998-2001 confirm that

the birth rates in rural Assam continued to be higher than the corresponding all India rates, whereas for urban areas, it was the reverse.

The Government had taken the Women Component plan as a strategy for the ninth five-year Plan and also has introduced women component in some of the sectoral programmes for the Tenth Plan. The Government also introduces a large number of social sector schemes for women. Less number of women in Assam is taking part in decision-making bodies. In many insurgency-affected areas, the women are the worst victims of different forms of crime both directly and indirectly. Overall crime rate in the State increased by approximately 36 percent over the period 1997-2002.

Trend of women voters and MLA in Assam (Fig in percentage)

Year	Voters in Assembly Election		Elected members of Legislative assembly
	Male	Female	
1972	58.46	41.53	0
1978	58.08	41.91	0.8
1983	58.43	41.56	1.83
1985	54.10	45.89	3.97
1991	54.07	45.92	3.97
2001	53.82	46.15	7.94
2006	52.08	47.84	10.32

Source: Election commission of India

India's GDI value and HDI value are 0.600 and 0.619 respectively. Out of 156 countries with both HDI and GDI values, 137 countries have a better ratio than India's. Census of India 2001 indicates that gender gap in literacy has come down for the country from 24.8 percentage points in 1991 to 21.7 percentage points in 2001. According to NFHS-3 the least number of women are experienced spousal violence is Himachal Pradesh (6.2 percent) and J.K. (12.6 percent) while in Kerela (16.4 percent) and Karnataka (20 percent). Maximum spousal violence faced in Bihar (59 percent). More than 40 percent women experienced spousal violence Rajasthan, Madhya Pradesh and Uttar Pradesh. Tamilnadu and West Bengal percentage of women who ever experienced spousal violence is 39.6 percent. According to NFHS-3, 70.1

percent of married women participate in household decision in Assam. Assam tops the list of selected 17 major states. West Bengal, Rajasthan, Madhya Pradesh, Uttar Pradesh and Karnataka have less than 50 percent of their married women who participate in household decision. Safety level, differ depending on where women live and recorded crimes against women are highest in Rajasthan with a rate of 246 cases per million persons, says the study, Madhya Pradesh (221), Delhi (190) follow this in (1999). There are no sign of crimes against women declining so far, with Mizoram and Madhya Pradesh recording particularly high rate of rape and molestation while torture and killing / burning of women is most prominent among the northern states. In 1999 crime against women including rape, molestation, sexual harassment, abduction, dowry deaths in the state has increased from 22 in 1997 to 44 to 2001. Cases of molestation and harassment had arisen from 686 in 1997 to 763 in 2001. According to data made available by the Assam government to the State Legislative Assembly in July 2008, the number of rape cases registered in the state went up from 785 in 2001 to 1311 in 2007. Similarly, the number of dowry related registered cases have increased nearly three fold in Assam between 2001 and 2007. Among the seventeen states maternal mortality data are not available for two states, from the remaining fifteen states Uttar Pradesh was on top with MMR (707), Gujarat at the bottom with MMR (28). Gujarat and Tamilnadu (79) are the two Indian states with MMR below 100. Six states with MMR above 300 were Orissa (367), Assam (409), Bihar (452), Madhya Pradesh (498), Rajasthan (670) and Uttar Pradesh (707). Other states with MMR between 100 and 300 were Haryana (103), Maharashtra (135), Andhra Pradesh (159), Karnataka (195), Kerala (198), Punjab (199) and West Bengal (266).

The enrolment of girls in schools even at the primary level is lower when compared to boys. In 1999-2000, the enrolment ratio for girls was 85 per cent in classes I-V (6-11 years). This dropped further to 50 per cent in classes VI-VIII (11-14 years). The emphasis laid upon training girls for marriage, inadequate facilities for girls in schools, absence of adequate female teachers, fear for their safety and so on are among the reasons for the low enrolment of girls in schools. This is further compounded by higher levels of dropouts among girls. In 1999-2000, 42 per cent of girls in primary schools had dropped out. Rajasthan, Uttar Pradesh, Bihar and West Bengal are some of the states where enrolment is low and dropout rate high, implying

a very low retention rate of girls at the primary school level. The use of girls in sibling care, as additional hands for helping mothers in the household, farm and off-farm work and so on operate to reduce the availability of formal education for them. Given low retention at the primary level, very few girls reach middle and secondary school or higher levels of education. This implies low human capital development, poor levels of skill/training to meet market demands, lowering the probability of women joining the labor market except in jobs that are in the informal sector, which are low-paid and virtually with no protection or security. Originally, the prejudice against girl children arose because girls by nature are vulnerable to sexual assault and kidnapping, thereby compromising family honour. Second, marriages were costly affairs, turning girls into financial liabilities. Son preference has been a steady reason for the discrimination against girl children. The data for IMR is based on the SRS of 1999 the infant mortality rate among females for India from this source is 71, while the male infant mortality rate is lower at 70. Among the 16 major states for which SRS provides information for 1999, eight states recorded higher mortality rates for females. The states of Haryana, Punjab, Rajasthan and Gujarat, where sex ratios among children of 0-6 years have been low and declining, are among those where infant mortality rates among females are higher than those of male infants. Tamil Nadu is a state that is joining this group. The states with low life expectancy at birth among females are Madhya Pradesh, Uttar Pradesh, Orissa, Assam, Bihar and Rajasthan, which rank among the poor states in the country. The states judged best by this indicator are Kerala, Punjab, Maharashtra, Himachal Pradesh and Tamil Nadu. Increased life expectancy at birth reflects a positive trend for gender development.

4.2 List of Indicators used for the study

4.2.1 Indicators of fertility and literacy

The composite index of development for different districts have been obtained on the basis of following development indicators.

- | | |
|------------------------|--------------------------|
| 1) Total literacy rate | 8) Total Fertility Rate |
| 2) Rural literacy rate | 9) Rural Fertility Rate |
| 3) Urban literacy rate | 10) Urban Fertility Rate |

- | | |
|-------------------------|---------------------------|
| 4) SC literacy rate | 11) SC Fertility Rate |
| 5) ST literacy rate | 12) ST Fertility Rate |
| 6) Hindu literacy rate | 13) Hindu Fertility Rate |
| 7) Muslim literacy rate | 14) Muslim Fertility Rate |

4.2.2 Indicators of status of women for districts

- 1) Work –Participation Rate for female (FWPR)
- 2) Sex Ratio
- 3) Sex Ratio (0-6)
- 4) Sex Ratio rural
- 5) Sex Ratio urban
- 6) Sex Ratio SC
- 7) Sex Ratio ST
- 8) Infant Mortality Rate for Female (FIMR)
- 9) Child Mortality Rate for female (FCMR)
- 10) % of Female Worker to Main Worker
- 11) % of Female agriculture labor
- 12) % of SSI managed by women
- 13) % of SHG of women
- 14) % of Female employee in SSI
- 15) % of Rural Female employee in SSI
- 16) % of Urban Female employee in SSI
- 17) % of Enterprise (SSI) owned by women
- 18) Female literacy rate (Total)
- 19) Female literacy rate (SC)
- 20) Female literacy rate (ST)
- 21) Female literacy rate (Hindu)
- 22) Female literacy rate (Muslim)
- 23) Female literacy rate (Urban Hindu)
- 24) Female literacy rate (Urban Muslim)
- 25) Female literacy rate (Rural Hindu)
- 26) Female literacy rate (Rural Muslim)

- 27) Gender disparity in literacy
- 28) Crude Birth Rate
- 29) Total Fertility Rate
- 30) % of Birth order above three
- 31) Gender disparities in main worker participation rate
- 32) Gender disparities in marginal worker participation rate
- 33) No of Female teacher of Primary School per lakh population
- 34) No of Female teacher of Middle School per lakh population
- 35) No of Female teacher of High School per lakh population
- 36) No of Female teacher of Higher Secondary School per lakh population
- 37) No of Female teacher of Junior College per lakh population
- 38) Female teacher of Arts/Science & Commerce College district wise (%)
- 39) Rural Mean age at marriage in years
- 40) Urban Mean age at marriage in years
- 41) % of Household access of safe drinking water
- 42) % of Household with sanitation facility
- 43) % of Household with electricity

4.2.3 Indicators of status of women for sixteen major Indian states

- 1) Literacy rate of female
- 2) Gap between male & female literacy rate
- 3) Infant mortality rate
- 4) Percentage of anemic women
- 5) Percentage of women participating household decision
- 6) FWPR
- 7) Gap of women and men gender gap in WPR
- 8) Drop out Rate
- 9) Enrolment Ratio (i-v) girls (6-11) Years
- 10) Enrolment Ratio (vi-viii) girls (11-14) Years
- 11) Sex Ratio
- 12) Sex Ratio (0-6)
- 13) Mean Age at marriage in years
- 14) Total Fertility Rate
- 15) % of household having electricity facility

- 16) % of household having drinking water facility
- 17) % of household having Toilet facility
- 18) % of women not involved in decision-making
- 19) % of women taking decision what to cook
- 20) % of women taking decision own health care
- 21) % of women taking decision in purchasing own jewelry
- 22) % of women are staying with own parents/siblings
- 23) % of women taking decision to go to market
- 24) % of women taking decision to visit friends/relatives
- 25) % of women access of money

4.3 Computation of CFR

A Parity Progression Ratio is simply the probability of a woman having another child given that she has already had a certain number. This ratio is normally calculated for marriage or birth cohorts of women who have completed their childbearing. The ratio can answer the question- among the women who had their third child what is the proportion who have a fourth child? The PPR is a sensitive indicator of family building patterns since it reflects the sequential nature of fertility decisions. The ratio is also a very useful for the study of the reproductive strategies followed in a population. The rate is generally represented by a series of a_n values; where a_0 means the proportion of women in the cohort who become mothers and a_n is the proportion of women who proceed from parity n to $n+1$. The data on children ever born can be tabulated either by birth cohort, or by marriage cohort, and from such tables PPR can be calculated (Chamie, 1977, Goldstein 1973).

The Complete Fertility Rate for the birth cohort (1951-1955) of women is computed by PPR for each district of Assam based on 2001 census data. The calculations of PPR are straightforward. At first the women are tabulated by parity. These figures are then cumulated from the bottom to give the number of women with at least 'n' children ever born. Lastly, adjacent figures are divided to give the probabilities. The CFR of a cohort, which is equivalent of TFR in the period measure, can be expressed as an arithmetic series of products of PPRs. The average number of children ever born to women in a birth cohort may be expressed as

$$CFR = a(0) + a(0)a(1) + a(0)a(1)a(2) + a(0)a(1)a(2)a(3) + \dots + a(0)a(1)\dots a(n)$$

Where a (0) is just the proportion of women in the cohort who become mothers. After computing CFR for districts of Assam it is tried to develop composite index for fertility for seven indicators separately and ranking the districts based on these indicators. Next to obtain overall development, the indicators of fertility and literacy taking together, composite index are computed and ranking has been done on the basis of it.

Table 4.1 Estimated PPR and CFR Rural, Urban, Literate and Illiterate population of Assam.

CEB.	Aggregate	Rural	Urban	Literate	Illiterate
0	.935	.938	.913	.936	.934
1	.932	.939	.894	.930	.934
2	.867	.886	.747	.829	.892
3	.788	.808	.635	.719	.830
4	.715	.732	.561	.632	.760
5	.671	.682	.538	.591	.705
6	.633	.640	.519	.565	.659
CFR	4.05	4.21	3.12	3.68	4.29

Source: Census Report of India, Government of India, 2001

Table 4.2 Estimated PPR and CFR based on Literacy of Rural and Urban population

CEB	Rural			Urban		
	Aggregate	Illiterate	Literate	Aggregate	Illiterate	Literate
0	.938	.936	.943	.914	.904	.917
1	.939	.935	.945	.894	.908	.888
2	.886	.895	.870	.747	.849	.711
3	.808	.835	.756	.653	.755	.586
4	.732	.765	.660	.561	.668	.503
5	.682	.355	.237	.538	.611	.407
6	.640	.663	.576	.519	.566	.477
CFR	4.21	4.34	3.95	3.12	3.63	2.94

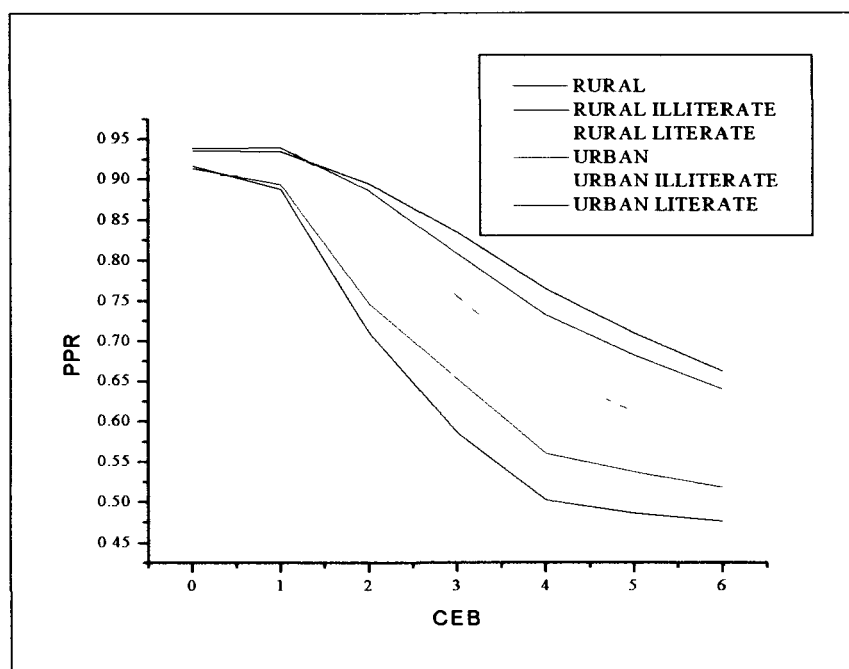


Fig 4.1: PPR against CEB based on literacy for rural and Urban Population

From the Figure 4.1 it is observed that Parity Progression Ratio for higher order birth for literate women decrease more rapidly than illiterate women. For higher order birth PPR for urban people always less than rural people. From the figure it is observed that for higher order birth PPR of urban illiterate is approximately equal to rural literate people.

Table 4.3 Estimated PPR and CFR based on level of Education of people of Assam

CEB	Literate	Graduate & above	Matric	Middle	Primary	Below primary
0	.936	.888	.920	.945	.946	.949
1	.930	.798	.901	.939	.945	.950
2	.829	.423	.708	.837	.882	.900
3	.791	.308	.524	.673	.768	.812
4	.632	.348	.425	.549	.654	.712
5	.595	.436	.425	.499	.594	.655
6	.565	.603	.431	.492	.558	.599
CFR	3.68	2.04	2.86	3.55	4.00	4.28

Source: Census Report of India, Government of India, 2001

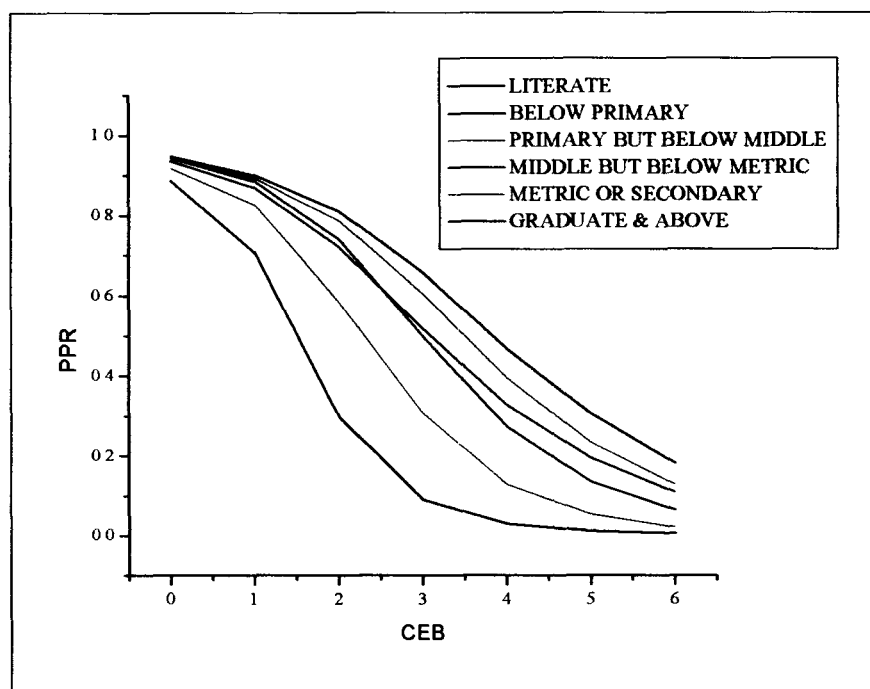


Fig 4.2: PPR against CEB based on level of Literacy

From the above Figure 4.2, it is clear that PPR is inversely proportional to CEB. Similarly, it is also inversely proportional to the level of education.

Table 4.4 Estimated PPR and CFR of Hindu and Muslim population of Assam

CEB	Hindu			Muslim		
	Aggregate	Urban	Rural	Aggregate	Urban	Rural
0	.932	.913	.936	.943	.915	.945
1	.926	.891	.934	.948	.908	.951
2	.846	.732	.869	.919	.833	.925
3	.747	.612	.770	.884	.771	.891
4	.655	.529	.672	.834	.705	.841
5	.600	.501	.610	.784	.670	.789
6	.553	.481	.559	.733	.619	.737
CFR	3.76	3.02	3.92	4.81	3.76	4.89

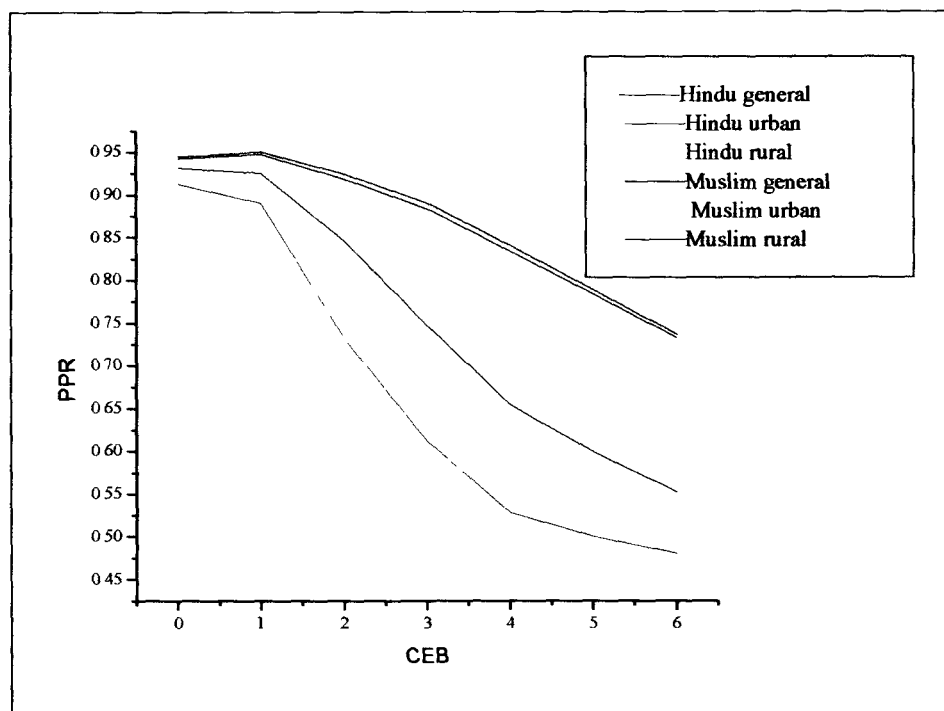


Fig 4.3: PPR against CEB based on Religion for rural and urban population

It is observed from the Figure 4.3 that PPR of Hindu's women decrease more rapidly than PPR for Muslim's women for higher order birth. For both Hindu's and Muslim's urban women PPR decrease more and more for higher order birth compared to rural women.

Table 4.5 Estimated PPR and CFR of ST and SC Population of Assam

CEB	SC			ST		
	Aggregate	Urban	Rural	Aggregate	Urban	Rural
0	.941	.932	.943	.938	.928	.938
1	.935	.919	.938	.943	.923	.944
2	.882	.831	.891	.891	.794	.895
3	.805	.732	.817	.814	.686	.819
4	.711	.624	.724	.727	.590	.732
5	.647	.563	.658	.655	.570	.657
6	.576	.491	.585	.601	.517	.603
CFR	4.12	3.62	4.21	4.21	3.44	4.24

Source: Census Report of India, Government of India, 2001

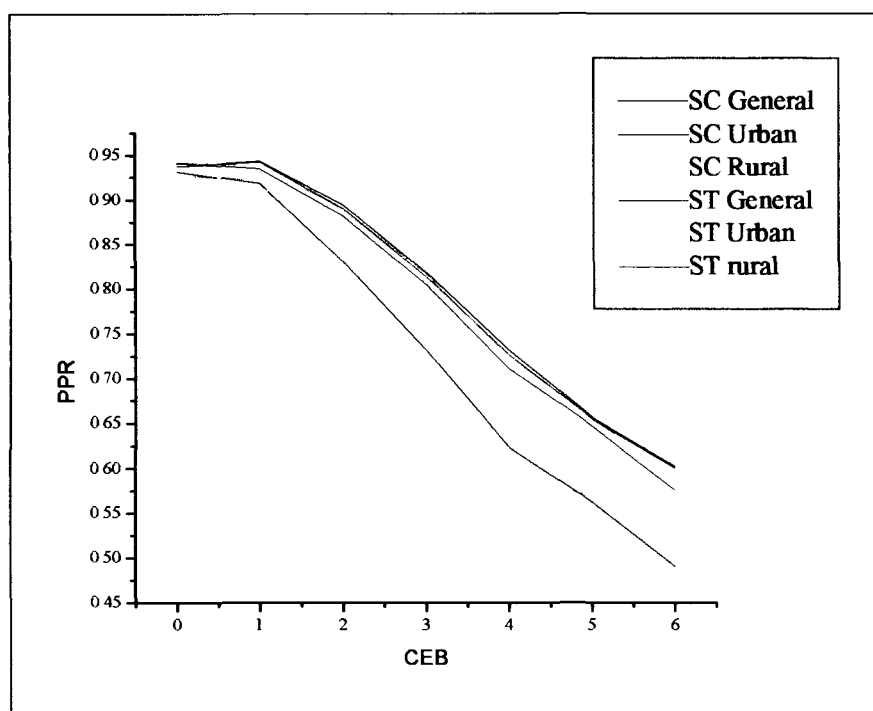


Fig 4.4 PPR against CEB based on Rural and Urban SC, ST population

It is clear from the Figure 4 4 that urban women PPR show decreasing trend for both SC and ST women for higher order birth than rural women

Table 4.6 Computed Complete Fertility Rate for districts of Assam

Name of Districts	Total fertility	Rural fertility	Urban fertility	Hindu fertility	Muslim fertility	SC fertility	ST fertility
Kokrajjar	4 50	4 11	3 39	3 90	4 72	4 21	3 96
Dhubri	4 70	4 90	3 77	3 86	5 17	4 13	4 07
Goalpara	4 60	4 71	3 88	4 15	5 06	4 44	4 36
Bongai gaon	4 33	4 51	3 37	3 97	5 09	4 35	4 54
Borpeta	4 57	4 64	3 83	3 93	5 14	4 34	3 95
Kamrup	3 61	4 18	2 72	3 37	4 58	3 85	3 72
Nalbari	4 13	4 15	3 53	4 00	4 70	4 09	3 94
Darrang	4 20	4 24	3 54	3 92	4 88	4 09	3 88
Mangaon	4 38	4 44	3 30	3 86	5 10	4 38	3 45
Nagaon	4 27	4 40	3 46	3 72	4 98	4 13	3 96
Sonitpur	4 00	4 11	3 10	3 87	3 61	4 23	4 28
Lakhimpur	4 42	4 50	3 37	4 35	4 78	4 36	4 98
Dhemaji	4 63	4 68	3 97	4 64	4 62	4 44	4 97
Tinsukia	3 65	3 81	3 09	3 63	3 80	4 04	4 24

Dibrugarh	3.39	3.54	2.87	3.38	3.48	3.87	3.49
Sibsagarh	3.60	3.65	3.09	3.59	3.57	3.81	4.32
Jorhat	3.50	3.64	2.85	3.51	3.21	3.97	4.58
Golaghat	3.85	3.90	3.33	3.81	4.07	3.87	4.44
Karbi Anglong	4.28	4.34	3.75	4.31	4.16	4.84	4.31
N.C.Hills	4.12	4.37	3.54	4.06	3.73	3.66	4.42
Cachar	3.75	3.91	2.92	3.47	4.30	4.01	3.75
Karimganj	4.02	4.14	2.81	3.62	4.48	4.05	3.67
Hailakandi	4.15	4.27	3.05	3.66	4.20	4.11	4.20

Source: Census Report of India, Government of India, 2001

From the Table 4.6 it is observed that fertility of urban women is less than rural women and the fertility of Muslim women for most of the districts are higher than Hindu women.

4.4 Ranking of the districts for Fertility & Literacy and Status of Women

According to Narain et al. method districts are ranked in Table 4.7 for fertility and taking indicators of fertility and literacy combinedly. In Table 4.8, ranking has been done of the districts for three subsectors namely sex ratio, female teacher, female literacy and for overall female status.

Table 4.7 Ranking of the districts for Literacy & Fertility by Narain et al. method.

Sl. No.	Name of Districts	Fertility Indicator	Rank	Literacy & Fertility Indicator	Rank
[1]	Kokrajjar	.5977	14	.7697	18
[2]	Dhubri	.8080	19	.8645	22
[3]	Goalpara	.8561	22	.7763	20
[4]	Bongaigaon	.7328	17	.7550	17
[5]	Borpeta	.7796	18	.7706	19
[6]	Kamrup	.3441	6	.4099	5
[7]	Nalbari	.5601	12	.6342	11
[8]	Darrang	.5826	13	.7012	15
[9]	Morigaon	.6568	16	.7004	14
[10]	Nagaon	.6032	15	.6033	10
[11]	Sonitpur	.4685	9	.6347	12
[12]	Lakhimpur	.8196	21	.6938	13
[13]	Dhemaji	.9651	23	.8705	23
[14]	Tinsukia	.3311	3	.4674	7
[15]	Dibrugarh	.1127	1	.2224	1
[16]	Sibsagar	.2960	2	.2516	2

[17]	Jorhat	.3434	5	.3034	3
[18]	Golaghat	.4385	8	.4368	6
[19]	Karbi Anglong	.8160	20	.8480	21
[20]	N.C. Hills	.5528	11	.5945	9
[21]	Cachar	.3125	4	.3783	4
[22]	Karimganj	.4007	7	.5127	8
[23]	Hailakandi	.4789	10	.7321	16

It is observed from the Table 4.7 that the districts on the basis of fertility indicators by Narain et al. method, Dibrugarh, Sibsagar, Tinsukia, Cachar and Jorhat districts are in better position than other districts. In case of combined indicators of literacy and fertility of the women for the districts of Assam, Dibrugarh, Sibsagar and Jorhat are found to occupy first, second and third position respectively.

Table 4.8 Ranking of the districts for status of women by Narain et al. method

Sl no	District	Sex ratio		Female teacher		Female literacy		Overall Female status	
		CI-1	Rank	CI-2	Rank	CI-3	Rank	CI-4	Rank
[1]	Kokrajjar	.3649	8	.8240	19	.8935	22	.9166	22
[2]	Dhubri	.2220	2	.8965	23	.7938	19	.8936	20
[3]	Goalpara	.1882	1	.8740	22	.6182	14	.8331	13
[4]	Bongaigaon	.2972	3	.7720	13	.8501	20	.9257	23
[5]	Borpeta	.3923	10	.7823	14	.7093	17	.8725	18
[6]	Kamrup	.7685	20	.6669	5	.4700	6	.5812	2
[7]	Nalbari	.3793	9	.7084	8	.5792	10	.7857	11
[8]	Darrang	.3286	6	.8129	17	.7513	18	.8497	15
[9]	Morigaon	.3206	4	.8394	20	.6585	15	.8485	14
[10]	Nagaon	.3357	7	.7915	15	.5189	8	.7109	5
[11]	Sonitpur	.5040	12	.7969	16	.6648	16	.7225	6
[12]	Lakhimpur	.4602	11	.5602	3	.5627	9	.7073	4
[13]	Dhemaji	.6769	19	.7403	11	.8569	21	.8904	19
[14]	Tinsukia	.6514	18	.7479	12	.5907	11	.7283	8
[15]	Dibrugarh	.5475	13	.7143	10	.3035	3	.5394	1
[16]	Sibsagar	.6029	15	.4526	2	.1863	1	.6521	3
[17]	Jorhat	.7953	22	.5641	4	.2430	2	.7616	9
[18]	Golaghat	.6511	17	.7005	6	.3978	4	.7248	7
[19]	Karbi Anglong	.6372	16	.8734	21	.9255	23	.9065	21
[20]	N.C.Hills	.9908	23	.3321	1	.6162	13	.8531	17
[21]	Cachar	.3243	5	.7067	7	.4161	5	.7734	10
[22]	Karimganj	.5713	14	.8154	18	.4948	7	.8154	12
[23]	Hailakandi	.7846	21	.7111	9	.6026	12	.8521	16

Source : (a) Statistical Hand Book, Directorate of Economics and Statistics, Government of Assam
2004-05, 2005-06, 2006-07.

(b) Census Report of India, Government of India, 2001

(c) Report on the third All-India Census of Small Scale Industrial Units, Assam. 2001-02

CI-1: Composite Index based on 6 Indicators

CI-2: Composite Index based on 6 Indicators

CI-3: Composite Index based on 9 Indicators

CI-4: Composite Index based on 29 Indicators

From the above Table 4.8 it is observed that composite index of development have been worked out for different districts by Narain et al. method for subsectors sex ratio, number of female teacher, female literacy and overall status of women separately. It is found that in the sub sector sex ratio Goalpara is in the first position N.C. Hills is in the last. In female teacher N.C. Hills is found to be first position and Dhubri is found to be in the last. For the sub sector female literacy Sibsagar is found to be first and Karbi Anglong is found to be in the last ranking. In overall female status Dibrugarh district is coming out as first and district Bongaigaon occupies last position.

4.4.1 Relative Share of Area and Population under Different Level of Development

An important aspect of the study is to find out the relative share of area and population affected under various stages of development in Fertility and Literacy and Status of Women in the state. The details are given in Table 4.9 and Table 4.10 respectively.

Table 4.9 Area and Population under different levels of development for fertility and literacy

Level of Development	No. of districts	Name of the Districts	Area %	Population %
High	04	[15],[16],[17],[21]	16.17	17.56
Medium	06	[18],[14],[6],[10],[20],[22]	28.43	30.50
Developing	10	[1],[4],[5],[3],[7],[8],[9],[8],[12],[23]	34.26	40.60
Low developing	03	[2],[19],[13]	20.99	11.34

On the basis of fourteen indicators of fertility and literacy, four districts Dibrugarh^[15], Sibsagar^[16], Jorhat^[17] and Cachar^[21] are highly developed districts and they cover 17.56 percent population and 16.17 percent area of the state. Where as

Golaghat^[18], Tinsukia^[14], Kamrup^[6], Nagaon^[10], N.C. Hills^[20] and Karimganj^[22] are in middle level of development and they occupy 30.50 percent population and 28.43 percent area of the state and Kokrajar^[11], Bongaigaon^[4], Borpeta^[5], Goalpara^[3], Nalbari^[7], Darrang^[8], Morigaon^[9], Sonitpur^[11], Lakhimpur^[12] and Hailakandi^[23] are in developing districts and they cover 40.60 percent population and 34.26 percent area of the state. Dhubri^[2], Karbi Anglong^[19] and Dhemaji^[13] are in lowest position and they cover 11.34 percent population and 20.99 percent area of the state .

Table 4.10 Area and Population under different levels of development for status of women

Sectors	No of indicators	Level of development	Serial no of districts according to level of development	Area %	Population %
Sex Ratio	06	High	[3],[2]	5.89	9.23
		Medium	[4],[9],[21],[8],[10],[1],[7],[5],[11],[12]	33.48	43.28
		Developing	[15],[22],[16],[19],[18],[14],[13]	43.53	31.54
		Low developing	[6],[23],[17],[20]	17.10	15.95
Female teacher	06	High	[20],[16],[12],[17]	16.17	11.74
		Medium	[7],[21],[6],[18],[23],[15]	23.71	29.23
		Developing	[13],[4],[14],[10],[5],[1],[9],[11],[8],[22]	40.93	46.75
		Low developing	[3],[19],[2]	19.19	12.28
Female literacy	09	High	[16],[17],[15]	11.35	12.14
		Medium	[18],[21],[6],[22],[10],[12],[7],[14]	32.81	42.86
		Developing	[23],[20],[3],[9],[11],[5],[8],[2]	31.16	33.01
		Low developing	[4],[13],[1],[19]	24.68	11.99
Overall Female status	29	High	[15],[6],[16]	13.25	17.85
		Medium	[12],[7],[11],[18],[10],[17],[14],[21]	35.38	39.67
		Developing	[22],[20],[8],[3],[9],[23],[13],[5],[2]	30.81	32.63
		Low developing	[1],[19],[4]	20.55	9.85

In case of sex ratio two districts Goalpara^[3], and Dhubri^[2] are developed districts which cover 5.89 percent area and 9.23 percent population of the state. Four districts Kamrup^[6], Hailakandi^[23], Jorhat^[17] and N.C. Hills^[20] are observed to be low developed these districts cover about 17.10 percent area and 15.95 percent population of the state. Ten districts namely, Bongaigaon^[4], Morigaon^[9], Cachar^[21], Darrang^[8], Nagaon^[10], Kokrajar^[11], Nalbari^[7], Borpeta^[5], Sonitpur^[11] and Lakhimpur^[12] are

classified as medium level developed districts. They cover about 33.48 percent area and 43.28 percent population of the state. The remaining seven districts namely, Dibrugarh^[15], Karimganj^[22], Sibsagar^[16], Karbi Anglong^[19], Tinsukia^[14] and Dhemaji^[13], Golaghat^[18] are grouped in to developing districts. They cover about 43.53 percent area and 31.54 percent population of the state.

In case of female teacher four districts N.C.Hills^[20], Sibsagar^[16], Lakhimpur^[12] and Jorhat^[17] are developed districts which cover 16.17 percent area and 11.74 percent population of the state. Three districts Karbi Anglong^[19], Goalpara^[3] and Dhubri^[2] are observed to be low developed these districts cover about 19.19 percent area and 12.28 percent population of the state. Six districts namely Kamrup^[6], Nalbari^[7], Golaghat^[18], Cachar^[21], Dibrugarh^[15] and Hailakandi^[23] are classified as medium level developed districts. They cover about 23.71 percent area and 29.23 percent population of the state. The remaining ten districts namely Karimganj^[22], Tinsukia^[14], Dhemaji^[13], Bongaigaon^[4], Nagaon^[10], Borpeta^[5], Kokrajar^[1], Morigaon^[9], Sonitpur^[11] and Darrang^[8] are grouped in to developing districts. They cover about 40.93 percent area and 46.75 percent population of the state.

In case of female literacy three districts Sibsagar^[16], Jorhat^[17] and Dibrugarh^[15] are developed districts which cover 11.35 percent area and 12.14 percent population of the state. Four districts Bongaigaon^[4], Dhemaji^[13], Kokrajar^[1] and Karbi Anglong^[19] are observed to be low developed these districts cover about 24.68 percent area and 11.99 percent population of the state. Eight districts namely Kamrup^[6], Karimganj^[22], Nagaon^[10], Lakhimpur^[12], Tinsukia^[14], Nalbari^[7], Golaghat^[18] and Cachar^[21] are classified as medium level developed districts. They cover about 32.81 percent area and 42.86 percent population of the state. The remaining eight districts namely Hailakandi^[23], Borpeta^[5], Morigaon^[9], Sonitpur^[11], Darrang^[8], N.C. Hills^[20], Goalpara^[3] and Dhubri^[2] are grouped in to developing districts. They cover about 31.16 percent area and 33.01 percent population of the state.

In case overall status of female in the districts three districts Dibrugarh^[15], Kamrup^[6], and Sibsagar^[16] are developed districts which cover 13.25 percent area and 17.85 percent population of the state. Three districts Kokrajar^[1], Karbi Anglong^[19] and Bongaigaon^[4], are observed to be low developed these districts cover about 20.55 percent area and 9.85 percent population of the state. Eight districts

namely Lakhimpur^[12], Nalbari^[7], Sonitpur^[11], Golaghat^[18], Nagaon^[10], Tinsukia^[14], Jorhat^[17] and Cachar^[21] are classified as medium level developed districts. They cover about 35.38 percent area and 39.67 percent population of the state. The remaining nine districts namely, Dhubri^[2], Karimganj^[22], N.C. Hills^[20], Darrang^[8], Goalpara^[3], Hailakandi^[23], Dhemaji^[13], Borpheta^[5], Morigaon^[9] are grouped in to developing districts. They cover about 30.81 percent area and 32.63 percent population of the state.

4.4.2 Model Districts and Potential Target for Low Developed District

Model districts for the low developed districts, on the basis of fourteen indicators of literacy and fertility and twenty nine indicators of status of women are given in Table 4.11 and Table 4.13 respectively. The best values of different indicators among the model districts will be taken as potential target of the indicators of low developed districts of both cases fertility and literacy and status of women are in Table 4.12 and Table 4.14 respectively. For both studies at best three model districts are considered on priority basis.

Table 4.11 Model districts for Low developed district in fertility and literacy

Low developed districts	Model districts
Dhubri	Bongaigaon, Darrang, Morigaon
Karbi Anglong	Nagaon, Sonitpur, N.C.Hills
Dhemaji	Morigaon, Nagaon, Lakhimpur

Table 4.12 Estimate of Potential Target and Actual achievement (given under the bracket).

Development indicators	Low developed districts		
	Karbi Anglong	Dhubri	Dhemaji
Total literacy	67.62 (57.70)	59.33 (48.21)	68.56 (64.48)
Rural literacy	58.30(54.48)	57.09 (43.90)	67.62 (63.19)
Urban literacy	89.58 (81.58)	85.86 (77.45)	84.62 (81.58)
SC literacy	78.72 (62.80)	60.46 (59.62)	71.60 (57.62)
ST literacy	63.66 (54.74)	63.08 (66.86)*	62.48 (59.99)
Hindu literacy	61.51 (45.48)	57.68(55.66)	61.51 (52.32)
Muslim literacy	42.52 (28.16)	33.87 (28.96)	48.61 (34.25)
Total fertility	4.00(4.28)	4.20 (4.74)	4.27 (4.63)

Rural fertility	4.11 (4.34)	4.24 (4.90)	4.40 (4.68)
Urban fertility	3.10 (3.75)	3.30 (3.77)	3.30 (3.97)
SC fertility	3.66 (4.84)	4.09 (4.13)	4.13 (4.44)
ST fertility	3.96 (4.31)	3.45 (4.07)	3.45 (4.97)
Hindu fertility	3.72 (4.31)	3.86(3.86)	3.72 (4.64)
Muslim fertility	3.61 (4.16)	4.88 (5.17)	4.78 (4.62)*

* Indicates actual achievement that already better than the potential target.

Table 4.13 Model districts for Low developed districts for status of women

Low developed districts	Model districts
Kokrajar	Nalbari, Sonitpur, Lakhimpur
Karbi Anglong	Sonitpur, Lakhimpur, Golaghat
Bongaigaon	Nalbari, Nagaon, Karimganj

Table 4.14 Estimate of Potential Target and Actual achievement for Low developed district of status of women (given under the bracket).

Development Indicator	Karbi Anglong	Kokrajar	Bongaigaon
FWPR	49.89(31.42)	49.89 (25.27)	18.07(15.23)
Sex Ratio	952(922)	952 (945)	944(945)*
Sex Ratio (0-6)	983(973)	983 (955)	981(978)
FIMR	56(75)	70(75)	70 (124)
FCMR	91(124)	101(114)	121(150)
Female worker to Main worker (%)	.00824(.00592)	.00824 (.00592)	.00766(.00980)*
Female Agriculture labor(%)	.021(.02876)	.023 (.02644)	.0264 (.034080)
SSI managed by women (%)	8.75(0.04)	8.75 (0.29)	6.91(1.18)
SHG of women (%)	20.84(3.95)	20.84 (2.36)	6.42 (1.55)
Female employee (%) in SSI	10.53(.25)	10.53 (0.29)	7.07(0.57)
Rural Female employee (%) in SSI	.92(.02)	.92 (0.07)	.42(0.08)
Urban Female employee (%) in SSI	.23(.05)	.23(0.05)	.32(0.02)
Enterprise (SSI) owned by women (%)	10.79(.05)	10.79 (0.32)	6.82(0.94)
SC FLR	61.73(51.49)	59.61(51.8)	63.05(45.65)
ST FLR	53.22(44.67)	51.22 (47.71)	54.53(12.51)
Hindu FLR	53.36(38.31)	53.63(38.71)	59.91(51.38)
Muslim FLR	54.91(27.36)	33.67(24.96)	36.78(25.21)

Gender disparity in literacy	75.73(71.43)*	75.73(68.90)*	75.73 (74.35)*
CBR	23(29.6)	23(33.7)	23(29.4)
TFR	2.7(3.7)	2.7(3.44)	2.7(3.5)
Birth order above 3 (%)	43.6(56.0)	45.3(53.0)	45.3(53.2)
Disparity in Main Worker	24.66(33.86)	18.68 (27.43)	13.07(16.17)
Disparity in Marginal Worker	172.78(192.75)*	172.78 (152.22)	136.73(143.98)*
Rural Mean age at marriage	18.82(18.72)	18.07(18.20)*	17.58(17.58)
Urban Mean age at marriage	19.02(19.02)	18.22(18.22)	18.19(18.18)
Household access of safe drinking water (%)	32.32(24.94)	29.99 (14.41)	73.17(28.21)
Household with sanitation facility (%)	59.50(33.88)	64.69 (8.93)	65.23(20.46)
Household with electricity (%)	17.33(12.94)	16.23 (12.16)	32.84(14.10)

*Indicates actual achievement that already better than the potential target.

Table 4.15 Ranking of districts based on PCA scores and CI for districts of Assam for status of women

Sl no	District	Narain et al.		PCA	
		CI	Rank	Score	Rank
[1]	Kokrajjar	.9166	22	-4.1172	19
[2]	Dhubri	.8936	20	-9.2751	23
[3]	Goalpara	.8331	13	-4.9474	20
[4]	Bongaigaon	.9257	23	-7.2257	22
[5]	Borpeta	.8725	18	-5.3937	21
[6]	Kamrup	.5812	2	6.3256	4
[7]	Nalbari	.7857	11	0.3456	10
[8]	Darrang	.8497	15	-3.3962	17
[9]	Morigaon	.8485	14	-3.8285	18
[10]	Nagaon	.7109	5	-1.4942	12
[11]	Sonitpur	.7225	6	1.1591	8
[12]	Lakhimpur	.7073	4	0.8061	9
[13]	Dhemaji	.8904	19	-2.4912	14
[14]	Tinsukia	.7283	8	4.8151	6
[15]	Dibrugarh	.5394	1	12.0153	1
[16]	Sibsagar	.6521	3	7.4595	3
[17]	Jorhat	.7616	9	9.1323	2
[18]	Golaghat	.7248	7	5.2143	5
[19]	Karbi Anglong	.9065	21	-1.7398	13
[20]	N.C.Hills	.8531	17	1.9196	7
[21]	Cachar	.7734	10	.1353	11
[22]	Karimganj	.8154	12	-2.8910	16
[23]	Hailakandi	.8521	16	-2.5266	15

According to Principal Component Analysis status of women in Dibrugarh, Jorhat and Sibsagar are found to be on first three places respectively and Borpeta, Bongaigaon and Dhubri are placed in latter position respectively.

Table 4.16 Ranking of districts based on PCA score and CI for Major states in India

Sl no	States	CI by Narain et al.	Rank	Score by PCA	Rank
1	Andhra Pradesh	.6302	9	-.7082	9
2	Gujarat	.5059	4	4.7502	5
3	Haryana	.6104	7	3.6947	6
4	Himachal Pradesh	.4283	1	7.2614	2
5	Karnataka	.6235	8	.4737	8
6	Kerela	.4610	3	6.0902	3
7	Maharastra	.5304	5	2.3952	7
8	Punjab	.5505	6	7.6276	1
9	Tamilnadu	.4327	2	6.0454	4
10	Assam	.7206	10	-1.7888	10
11	Bihar	.9033	15	-7.4933	15
12	Madhya Pradesh	.8054	13	-5.2708	13
13	Orissa	.7944	12	-4.9271	12
14	Rajas than	.8559	14	-6.4454	14
15	Uttar Pradesh	.9453	16	-8.3566	16
16	West Bengal	.7578	11	-3.3481	11

Source : (a) NFHS-3 State volumes (Mumbai IIPS ,2006)

(b) Census Report of India, Government of India, 2001

(c) India Development Report, 2004-05

The status of women among sixteen major Indian states are measured on the basis of twenty-five indicators and it is found from the Table 4.16 that according to Narain et al. method Himachal Pradesh, Tamil Nadu and Kerela is coming as high developed districts, according to Principal Component Analysis Punjab, Himachal Pradesh and Kerela are ranked as first, second and third and Rajasthan, Bihar and Uttar Pradesh are ranked as fourteen, fifteen and sixteen for both the methods.

4.5 Results and Discussions

From the study it is observed that for higher order birth estimated PPR decrease rapidly for literate women than illiterate women. When level of education qualification raise fertility rate also decrease accordingly. Same result is found for

CFR also. From the computed composite index of CFR it is found that fertility rate is high for the districts Dhemaji, Goalpara and Lakhimpur. The districts which are low developed in combined fertility and literacy are Dhemaji, Dhubri and Karbi Anglong. From the computed CFR it is observed that the Muslim women fertility rate of seventeen districts of Assam is higher than Hindu women fertility rate among selected 23 districts of Assam. The districts, low developed in overall status of women are Bongaigaon, Kokrajar and Karbi Anglong. But except Karbi Anglong other low developed districts are in better positions in sex ratio than developed districts in status of women viz. Kamrup, Dibrugarh and Sibsagar. Model districts are found for low developed districts for fertility and literacy in Table 4.11 and potential target for each indicator of low developed district are set in Table 4.12. Actual achievement of ST literacy of Dhubri and Muslim literacy of Dhemaji are better than potential target. Model districts for low developed districts are given for status of women in Table 4.13 and potential target for each indicator of low developed are set in Table 4.14. Actual achievement of two indicators of low developed districts Kokrajar and Karbi Anglong and four indicators of Bongaigaon are in better position than potential target. Other indicators must be improved to make the districts developed. In status of women among sixteen major Indian states Assam is placed in position tenth for both the methods Narain et al. and PCA.

Chapter 5

Education sector

On the basis of forty-eight indicators development disparities of educational sector among the districts of Assam is measured. The education sector is divided into six sub sectors and ranking of the districts for each sub sector is done. In overall education sector based on result, literacy and enrolment Kamrup, Dibrugarh and Jorhat are high developed districts according to method is used by Narain et al. Potential targets are obtained for each indicator of low developed districts from the model districts. According to Principal Component Analysis Kamrup, Jorhat and Sibsagar have been assigned the first three positions in this sector.

5.1 Introduction

Education is an important social resource and means of reducing inequality in the society. It helps the individual to raise its social status in various ways. Knowledge, skill, values and attitude acquired through education. It helps one lead to a better quality of life. Beyond being basic need, education especially vocational, technical, professional is necessary for job placement and thus acquiring a higher social status. It thus acts as a catalyst in improvement in many other aspects of life. There is general consensus that education is an important aspect of development. Almost all the composite indices of development proposed in recent years have taken education as one of the component indicators. Literacy plays a major role to develop a nation. It spreads awareness among the people. It leads a good employment opportunities. If literacy rate is high in a nation then there will be more number of entrepreneurs and flow of money will be huge and it finally put a great impact on nation's economy. In India at the time of the first census enumeration in 1951, after independence about one fourth of male population (above 5 years) could read and write. Among females hardly one in a hundred was literate. Literacy among both males and females has increased considerably after independence. The literacy rate in the country has increased from 18.3 percent 1951 to 65.38 percent as per 2001 census.

The female literacy rate has also increased from 8.86 percent in 1951 to 54.16 percent in 2001. It is noticed that the female literacy rate during the period 1991-2001 increased by 14.87 percent whereas male literacy rate rose by 11.72 percent. Hence the female literacy rate actually increased by 3.15 percent more compared to male literacy rate. Total literacy rate of Assam increased from 52.89 percent in 1991 to 63.25 percent in 2001, with male literacy rate increasing from 64 percent to 71.28 percent. Female literacy rate increasing from 39 percent to 54.61 percent, the rural and urban literacy rate are 59.74 percent and 85.35 percent respectively in Assam, it presents wide disparity in her literacy front. There is inter district disparities in literacy rate in Assam, Jorhat has the highest literacy rate of 74.07 percent and Dhubri has the lowest literacy rate 49.8 percent. Any effort for fulfillment of constitutional obligation of universalisation of primary education in the state must pay utmost attention.

Assam, the most populous state of North East shows her literacy rate (63.25 percent) below the national average (65.38 percent) as census report, 2001. Like other Indian states, Assam also maintains a wide gap between rural and urban areas. Assam has attained a marked progress during the post independence period in the promotion of literacy through expansion of primary level of formal education. Even after that the achievement is not to be satisfaction of the intelligentsia of the state. The bitter fact before all of us that, in spite of increase in literacy growth the increase in the absolute number of illiterates could not be stopped till the last decade. However, the latest census (2001) is showing a marginal positive growth in literacy, which may certainly be termed as the beginning of a healthy trend. During the census year 1961, 1971, 1991 and 2001 the literacy rate of Assam are 32.98, 33.94, 52.89 and 63.25 percent and number of illiterate persons in those years are 5.8, 6.7, 8.4 and 7.9 millions respectively

Elementary education covers the primary (6-11 years) and upper primary (11-14 years) age group. The essence of the goal is for every 14- year old to have 'acquired foundation skill such as ability to read and write with fluency, innumeracy, comprehension, analysis, reasoning and social skills such as teamwork. Enrolment in schools measured by Gross Enrolment Ratio and Net Enrolment Ratio has increased for the middle school level, the growth rate in Assam in the 1990's were among the highest in the country. There is a gap in enrolment in school between boys and girls, but the gap is narrowing. The pupil teacher ratio in primary and upper primary level in

Assam are among the most favorable in the country. 94 percent of rural habitations of India have access to primary school facilities within 1 km and 84 percent have access to upper primary facilities within a distance of 3 km. In Assam there are still a number of habitations without government/provincialised primary schools. At the upper primary level, less than half of the population is served by a school, within a km of habitations. These figures are below the average, indicating that there continues to be a requirement for school in some areas.

There continues to be many children either out of school or attending school irregularly. The grade wise repetition rates for Assam are higher than all India average. It is estimated that there are twelve lakhs out of school children in 1999. The incidence of child labour is reported to be higher in poorer families. Some steps are taken by state Government to improve the situation, these include supply of textbooks, attendance, merit and achievement scholarship and provision of mid day meals at the primary stage etc. Some initiatives are taken for the out of school students in panchayat and block level. These include summer camp to prepare children for enrolment in formal schools and bridge or transition courses for detained children and for those who have been absent from school for long periods. Drop out rates at the high school and higher secondary level continues to be high. For class one to nine drop out rate increase from 65.09 percent in 1981-82 to 76 percent in 1998-99. But this is in contrast to trends witness at the all –India level where drop out rate declined from 82.33 percent to 67.44 percent during the same period. Despite favorable aggregate pupil-teacher ratio, there are inter district and intra district variations indicative of non-objective and skewed placement of teacher. Traditionally, village communities in Assam have played an active role in setting up and management of schools. Many Village Education Committees (VEC) are constituted in the state for awareness generation. According to Assam Human Development Report 2003 (2) there are almost 21,000 VEC operating in the state and 1,000 Tea Garden Education Committees, almost 2500 Gaon Panchayat Education Committees have been constituted.

Although there has been an overall improvement in school infrastructure, yet there are some deficiencies also, in particular for additional class room, drinking water, toilet facilities etc at the primary and upper primary level. Between 1950-51 and 1997-98 the number of high school in Assam records a more than ten fold increase during the period 1980-81 to 1997-98; there was a more than two fold

increase in enrolment. The number of schools is increasing but success rate is low. In the four years 1997-2000 the average percentage of students who passed High School Leaving Certificate examination was only 32.66 percent of which only 3.42 percent get first division.

5.2 List of Indicators used for the study

Indicators are given District- wise

A) Combined Enrolment Ratio

- 1) Combined Enrolment Ratio for men
- 2) Combined Enrolment Ratio for female

B) Number of Educational Institution having various facilities in Assam till March 2008 (in percentage)

- 1) Primary School having Pacca Building
- 2) Primary School having drinking water facility
- 3) Primary School having cooking shade (for midday meal)
- 4) Primary School having toilet facility
- 5) Middle School having Pacca Building
- 6) Middle School having Drinking water facility
- 7) Middle School having toilet facility

C) Literacy Rate of 2001

- 1) Total literacy
- 2) Rural literacy
- 3) Urban literacy
- 4) SC literacy
- 5) ST literacy
- 6) Hindu literacy
- 7) Muslim literacy

D) Number of Teachers up to Higher Secondary stages in Assam 2005-2006

(per lakh population)

- 1) Primary School female teacher
- 2) Primary School total teacher
- 3) Middle School female teacher
- 4) Middle School total teacher

- 5) High School female teacher
- 6) High School total teacher
- 7) Higher Secondary school female teacher
- 8) Higher Secondary school total teacher
- 9) Junior College female teacher
- 10) Junior College total teacher

E) Results of High School Leaving Certificate Examination 1997-2000

- 1) HSLC Examination 1997 pass percentage
- 2) HSLC Examination 1997 First Division percentage
- 3) HSLC Examination 1998 Pass percentage
- 4) HSLC Examination 1998 First Division percentage
- 5) HSLC Examination 1999 Pass percentage
- 6) HSLC Examination 1999 First Division percentage
- 7) HSLC Examination 2000 Pass percentage
- 8) HSLC Examination 2000 First Division percentage
- 9) Performance of students HSLC Examination, 1997-2000 Pass percentages
- 10) Performance of students HSLC Examination, 1997-2000 First Division percentages

F) Number of Institution in Assam 2007-2008 (per lakh population)

- 1) LP Schools
- 2) MV Schools
- 3) UP Schools
- 4) Recognized UP Schools
- 5) Composite Schools
- 6) Recognized composite Schools
- 7) High Schools
- 8) Recognized High Schools
- 9) Schools under SSA
- 10) Venture School
- 11) Private School
- 12) Others

5.3 Ranking of Districts based on Education

Composite index of development has been worked out for different districts by the method used by Narain et.al for subsector namely teachers per lakh population, number of schools per lakh population, facilities the schools have got, number of teachers and number of schools per lakh population combined, literacy rate, result in HSLC and result enrolment and literacy combined. But it is known that real development of education can be measured on result, enrolment and literacy rate. The districts have been ranked on the basis of composite index. The composite index of development along with the district ranks is presented in Table 5.1.

Table 5.1 Composite indices (CI) of Development

Sl No	District	Teacher		School		Facility		Literacy		Result		Teacher & School		Enrolment, Result & Literacy	
		CI-1	Rank	CI-2	Rank	CI-3	Rank	CI-4	Rank	CI-5	Rank	CI-6	Rank	CI-7	Rank
[1]	Kokrajjar	.7824	14	.8366	17	.7003	11	.8649	22	.7025	15	.8303	14	.8327	21
[2]	Dhubri	.8677	22	.7989	11	.7092	12	.8614	21	.6633	11	.8580	20	.8102	20
[3]	Goalpara	.8284	21	.7604	10	.7499	15	.6267	12	.7425	19	.8180	12	.7701	16
[4]	Bongaigaon	.7364	11	.8107	13	.7650	17	.7263	17	.6723	12	.7933	11	.7366	14
[5]	Borpetta	.7006	10	.7574	9	.7435	14	.7060	16	.5562	5	.7477	9	.6629	10
[6]	Kamrup	.6672	7	.8446	18	.4467	1	.4418	6	.0242	1	.7772	10	.2446	1
[7]	Nalbari	.5980	5	.7144	4	.5638	2	.6669	13	.6041	8	.6736	6	.6497	9
[8]	Darrang	.8089	18	.8216	15	.6303	8	.7603	19	.6876	14	.8368	16	.7712	17
[9]	Marigaon	.8082	17	.8121	14	.6472	10	.6961	14	.8400	22	.8317	15	.8523	22
[10]	Nagaon	.7532	12	.8594	19	.6226	7	.5621	9	.6082	10	.8270	13	.6330	8
[11]	Sonitpur	.8265	20	.8684	20	.5882	6	.7293	18	.4895	3	.8694	21	.6222	7
[12]	Lakhimpur	.4782	3	.5149	1	.7855	18	.4775	7	.7587	20	.5093	2	.7202	13
[13]	Dhemaji	.6471	6	.5753	3	.9680	22	.6962	15	.7143	18	.6304	3	.7418	15
[14]	Tinsukia	.7853	15.5	.9339	23	.7382	13	.5456	8	.5011	4	.8823	23	.5721	5
[15]	Dibrugarh	.7568	13	.9093	21	.6456	9	.2820	3	.3703	2	.8552	19	.3770	2
[16]	Sibsagarh	.4231	2	.8067	12	.5701	4	.1753	1	.6033	7	.6523	4	.5410	4
[17]	Jorhat	.5931	4	.7176	5	.5674	3	.2326	2	.5594	6	.6728	5	.5099	3
[18]	Golaghat	.6896	9	.7436	8	.5773	5	.4051	4	.7120	16	.7350	8	.6718	11
[19]	Karbi Anglong	.8934	23	.7292	6	.9007	20	.8227	20	.9546	23	.8413	18	.9815	23
[20]	N.C.Hills	.2932	1	.5225	2	1.0335	23	.5992	11	.8253	21	.4295	1	.7979	18
[21]	Cachar	.7853	15.5	.9155	22	.7963	19	.4115	5	.6070	9	.8725	22	.5898	6
[22]	Karimganj	.8091	19	.8232	16	.7550	16	.5744	10	.6818	13	.8377	17	.6897	12
[23]	Hailakandi	.6787	8	.7406	7	.9038	21	.8746	23	.7136	17	.7278	7	.8055	19

Source : (a) Statistical Hand Book, Directorate of Economics and Statistics, Government of Assam
 (b) Census Report of India, Government of India, 2001
 (c) Human Development Report Assam 2003,

From the Table 5.1 it is observed that in the subsector number of teachers per lakh population district N.C. Hills is found to be first and Karbi Anglong district is in the last. In case of number of schools per lakh population district Lakhimpur is in the first Tinsukia occupies the last position. In the subsector percentage of schools have got various facilities Kamrup district is coming out as first and N.C. Hills is in the last. In literacy rate Sibsagar is found to be first and Hailakandi is found to be in the last. Result in HSLC examination Kamrup has got the first ranking Karbi Anglong has got the last ranking. In overall education sector is based on result, literacy and enrolment Kamrup is found to be first and Karbi Anglong district is found to be in the last.

5.3.1 Relative Share of Area and Population under Different Level of Development

An important aspect of the study is to find out the relative share of area and population affected under various stages of development in each sub sector of education field in the state. The details are given in Table 5.2.

Table 5.2 Area and Population under Different levels of Development

Sectors	Level of development	No of districts	Area in percentage	Population in percentage
Teacher (10 indicators)	High	03	12.54	7.99
	Middle	07	26.47	31.43
	Developing	11	44.12	51.38
	Low developing	02	16.87	9.19
School (12 indicators)	High	03	13.26	6.19
	Middle	07	32.43	25.96
	Developing	10	40.35	53.67
	Low developing	03	13.96	14.18
Facility (7 indicators)	High	04	15.45	21.47
	Middle	08	32.93	41.09
	Developing	07	26.27	29.5
	Low developing	04	25.35	7.94
Teacher & School (22 indicators)	High	03	13.26	6.19
	Middle	06	20.21	23.77
	Developing	13	61.70	65.73
	Low developing	01	4.83	4.31
Result (10 indicators)	High	02	9.85	13.91
	Middle	08	35.56	42.91
	Developing	10	33.08	36.51
	Low developing	03	21.51	6.66
Literacy (7 indicators)	High	03	11.35	12.14
	Middle	08	32.94	33.57
	Developing	08	32.65	39.66
	Low developing	04	23.07	14.63
Result, Enrolment and Literacy (19 indicators)	High	03	13.48	17.66
	Middle	08	36.39	42.71
	Developing	10	34.85	33.67
	Low developing	02	15.28	5.96

In case of number of teachers in schools three districts namely N.C. Hills, Sibsagar, Lakhimpur are found to be better developed. These districts cover about 12.54 percent area and 7.99 percent population of the state. Similarly two districts namely Dhubri, Karbi Anglong are observed to be low developed. These districts cover about 16.87 percent area and 9.19 percent population of the state. Seven districts namely Borpeta, Jorhat, Nalbari, Dhemaji, Kamrup, Hailakandi and Golaghat are classified as middle level developed districts. They cover about 26.47 percent area and 31.43 percent population of the state. The remaining eleven districts namely Nalbari, Cachar, Sonitpur, Goalpara Dibrugarh, Darrang Tinsukia, Karimganj, Bongaigaon, Kokrajar, and Morigaon are grouped in to developing districts. They cover about 44.12 percent area and 51.38 percent population of the state.

In terms of number of schools three districts namely Lakhimpur, N.C. Hills and Dhemaji are found to be better developed. These districts cover about 13.26 percent area and 6.19 percent population of the state. Similarly three districts namely Tinsukia, Dibrugarh and Cachar are observed to be low developed these districts cover about 13.96 percent area and 14.18 percent population of the state. Seven districts namely, Nalbari, Jorhat, Karbi Anglong, Hailakandi, Golaghat, Borpheta and Goalpara are classified as middle level developed districts. They cover about 32.43 percent area and 25.96 percent population of the state. The remaining ten districts namely Sibsagar, Bongaigaon, Kokrajar, Dhubri, Morigaon, Darrang, Karimganj, Kamrup, Nagaon and Sonitpur are grouped in to developing districts. They cover about 40.35 percent area and 53.67 percent population of the state.

In case of number of facility in schools four districts namely Kamrup, Nalbari, Jorhat and Sibsagar are found to be better developed. These districts cover about 15.45 percent area and 21.47 percent population of the state. Similarly Karbi Anglong, Hailakandi, Dhemaji and N.C. Hills are observed to be low developed. These districts cover about 25.35 percent area and 7.94 percent population of the state. Eight districts namely Nagaon, Sonitpur, Golaghat, Dibrugarh, Darrang, Morigaon, Kokrajar and Dhubri are classified as middle level developed districts. They cover about 32.93 percent area and 41.09 percent population of the state. The remaining seven districts namely Cachar, Karimganj, Bongaigaon, Tinsukia, Goalpara, Borpheta and Lakhimpur are grouped in to developing districts. They cover about 26.27percent area and 29.5percent population of the state.

In case of number of teacher and schools taking together three districts namely N.C. Hills, Lakhimpur, Dhemaji are found to be better developed. These districts cover 13.26 percent area and 6.19 percent population of the state. Similarly one district, Tinsukia are observed to be low developed these districts cover about 4.83percent area and 4.31 percent population of the state. Six districts namely Nalbari, Golaghat, Jorhat, Sibsagar, Hailakandi and Borpheta are classified as middle level developed districts. They cover about 20.21 percent area and 23.77 percent population of the state. The remaining thirteen districts namely Kamrup, Karimganj, Bongaigaon, Kokrajar, Morigaon, Goalpara Karbi Anglong, Sonitpur, Dibrugarh, Nagaon, Cachar, Darrang and Dhubri are grouped in to developing districts. They cover about 61.70 percent area and 65.73 percent population of the state.

In case of result of HSLC two districts namely Kamrup, Dibrugarh are found to be better developed. These districts cover 9.85 percent area and 13.91 percent population of the state. Similarly Karbi Anglong, N.C. Hills, Morigaon are observed to be low developed these districts cover about 21.51 percent areas and 6.66 percent population of the state. Eight districts namely Nalbari, Sonitpur, Jorhat, Sibsagar, Tinsukia, Borpeta, Cachar, Nagaon are classified as middle level developed districts. They cover about 35.56 percent area and 42.91 percent population of the state. The remaining ten districts namely Karimganj, Bongaigaon, Lakhimpur, Kokrajar, Goalpara, Hailakandi, Sonitpur, Dhubri, Dhemaji and Golaghat are grouped in to developing districts. They cover about 33.08 percent area and 36.51 percent population of the state.

In case of literacy rate three districts namely Sibsagar, Jorhat, Dibrugarh are found to be better developed. These districts cover 11.35 percent area and 12.14 percent population of the state. Similarly Hailakandi, Karbi Anglong, Dhubri, Kokrajar are observed to be low developed. These districts cover about 23.07 percent area and 14.63 percent population of the state. Eight districts namely Golaghat, Cachar, Kamrup, Lakhimpur, Tinsukia, Nagaon, Karimganj and N.C. Hills are classified as middle level developed districts. They cover about 32.94 percent area and 33.57 percent population of the state. The remaining eight districts namely Nalbari, Bongaigaon, Morigaon, Goalpara Sonitpur Darrang, Dhemaji and Borpeta are grouped in to developing districts. They cover about 32.65 percent area and 39.66 percent population of the state.

With regard to result, enrolment ratio and literacy rate as a whole, the three developed districts are Kamrup, Dibrugarh and Jorhat . These districts cover about 13.48 percent area and 17.66 percent population of the state. Similarly two districts namely Morigaon and Karbi Anglong is observed to be low developed. These districts cover about 15.28 percent area and 5.96 percent population of the state. Eight districts namely Sibsagar, Tinsukia, Cachar, Sonitpur, Nagaon, Nalbari, Borpeta, and Golaghat are classified as middle level developed districts. They cover about 36.39 percent area and 42.71 percent population of the state. The remaining ten districts namely, Karimganj, Lakhimpur, Bongaigaon, Dhemaji, Goalpara, Darrang, N.C. Hills, Hailakandi, Dhubri and Kokrajar are grouped in to developing districts. They cover about 34.85 percent area and 33.67 percent population of the state.

5.3.2 Model Districts and Potential Target for Low Developed District

Model districts for the low developed districts are given in Table 5.3. An important aspect of the study is to suggest potential target for different indicators in respect to low developed districts for bringing improvement in the level of development. The best values of different indicators among the model districts will be taken as potential target of the low developed districts in the Table 5.4. It would show the path how much improvement required in different indicators for balanced development in the state. Here high values of literacy, enrolment and results are taken as positive contribution to the level of development of education in the state.

Table 5.3 Low Developed District along with their Model Districts

Low developed districts	Model districts
Morigaon	Nagaon, Golaghat, Cachar
Karbi Anglong	Goalpara, Bongaigaon, Darrang

Table 5.4 Estimate of Potential Target and actual achievement (given under the bracket).

Sl. No	Development indicator	Karbi Anglong	Morigaon
1	Combined enrolment ratio of men	58.22(50.2)	50.82(48.85)
2	Combined enrolment ratio of female	50.31(35.4)	42.23(43.8)*
3	Total literacy	69.38(57.70)	59.33(58.53)
4	Rural literacy	67.63(54.48)	56.25(57.09)*
5	Urban literacy	87.45(81.58)	85.86(84.21)
6	SC literacy	71.60(62.80)	64.89(60.46)
7	ST literacy	76.60(54.74)	73.27(60.77)
8	Hindu literacy	61.51(45.48)	61.72(57.68)
9	Muslim literacy	35.49(28.16)	31.44(33.87)*
10	HSLC passed percentage 1997	28.53(18.67)	26.32(18.43)
11	1 st division percentage 1997	1.70(1.16)	1.90(1.58)
12	HSLC passed percentage 1998	29.05(18.06)	28.93(22.41)
13	1 st division percentage 1998	1.93(0.97)	2.23(0.98)
14	HSLC passed percentage 1999	30.02(15.86)	29.12(25.45)
15	1 st division percentage 1999	2.37(0.98)	2.44(1.67)
16	HSLC passed percentage 2000	39.83(18.92)	35.49(25.36)
17	1 st division percentage 2000	2.59(1.16)	3.06(1.96)
18	Performance during 1997-2000	31.73(17.8)	32.72(22.42)
19	1 st division during 1997-2000	2.10(1.50)	2.37(2.00)

Indicates actual achievement that already better than the potential target.

Table-5.5 Composite Index of development and rank of the districts of Education sector for methodology Narain et al. and PCA.

Sl.No	Districts	CI by Narain et al.	Rank	Score by PCA	Rank
[1]	Kokrajhar	.8327	21	-7.1123	20
[2]	Dhubri	.8102	20	-4.6814	18
[3]	Goalpara	.7701	16	-1.7670	15
[4]	Bongaigaon	.7366	14	-1.0136	13
[5]	Borpeta	.6629	10	1.1159	8
[6]	Kamrup	.2446	1	17.7578	1
[7]	Nalbari	.6497	9	4.2607	6
[8]	Darrang	.7712	17	-0.3888	11
[9]	Marigaon	.8523	22	-3.6067	17
[10]	Nagaon	.6330	8	5.7227	5
[11]	Sonitpur	.6222	7	0.0794	10
[12]	Lakhimpur	.7202	13	-2.1320	16
[13]	Dhemaji	.7418	15	-7.9752	22
[14]	Tinsukia	.5721	5	-1.3843	14
[15]	Dibrugarh	.3770	2	7.1604	4
[16]	Sibsagarh	.5410	4	8.2256	3
[17]	Jorhat	.5099	3	9.5434	2
[18]	Golaghat	.6718	11	.5185	9
[19]	Karbi Anglong	.9815	23	-11.5277	23
[20]	N.C.Hills	.7979	18	-6.7926	19
[21]	Cachar	.5898	6	2.2992	7
[22]	Karimganj	.6897	12	-0.5555	12
[23]	Hailakandi	.8055	19	-7.7466	21

From the Table-5.5 it is observed that according to PCA on the basis of nineteen indicators Kamrup, Jorhat and Sibsagar occupy the first, second and third ranking and Hailakandi, Dhemaji and Karbi Anglong are in the latter positions respectively.

5.3 Results and discussion

The study reveals that according to Narain et al. method for the low developed districts Morigaon and Karbi Anglong model districts are found, given in Table 5.3 and estimate potential target for each indicator of low developed district from the model districts, in Table 5.4. Here it is observed that actual achievement of three indicators of Morigaon district are better than potential target. From the study it is found that Tinsukia, Dibrugarh and Cachar districts are low developed in number of schools and developing stage according to number of teachers. But they have occupied better position in education sector in terms of result, enrolment and literacy rate than the districts N.C. Hills, Lakhimpur and Dhemaji that those who have more number of schools and more number of teachers. Those districts are developed in terms of result enrolment and literacy rate, their more percentage of schools have got better facilities than schools of low developed districts and they are also situated in socio- economically developed districts.

Chapter 6

Basic Infrastructure Services

The status of development in basic infrastructure services among districts of Assam has been estimated with the help of composite index based on optimum combination of forty development indicators. Composite index are computed using different methods i.e. equal weighted index method, deprivation method, the method is used by Narain et al. and Principal Component Analysis. According to four methods are mentioned already districts Kamrup, Nagaon, Jorhat and Sibsagar are coming out as possessing better infrastructure facilities compared to other districts. For bringing about uniform regional development in the state, model districts have been identified for fixing up the potential target of different developmental indicators for low developed districts. Taking fourteen indicators of banking sector for districts of Assam and twenty seven indicators of North East states data are analyzed to find development disparities in banking sector among districts of Assam and among North East states respectively. Kamrup and Dibrugarh are found to be better developed according to the four methods are mentioned above and among North East states Meghalaya and Assam have occupied first two ranks respectively.

6.1 Introduction

Adequate infrastructure support is a prerequisite for accelerated economic development. Infrastructure comprises all those activities and facilities, which help to sustain the growth in production and income generation in the rest of the economy rather than production and income generation within the infrastructure enterprises themselves. Rural infrastructure is said to strengthen the foundation of which is the pace setter of our economic growth. The World Development report, which focuses on infrastructure for development brought out a strong positive relationship between the level of GDP and infrastructure stock per capita. Good infrastructure helps in raising productivity and lowering the unit cost in the production activities of the economy. In a developing economy like India infrastructure facilities are generally weak and inadequate. Many people, especially the rural poor, and areas do not have

access to even minimal infrastructure services. If a nation aspires to attain maturity in economic growth, it must give stress on physical infrastructure like energy, transport etc. Access to modern energy sources is important for human development. In particular, electricity expands one's set of capabilities as it provides lighting, access to mass media and telecommunications, and permits cooling of rooms and the preservation of edibles. Generally, indicators of well being such as income, education or access to clean water increase with access to electricity, whereas the absence of any electricity use is often associated with poverty Assam has total road length of approximately 69,000 Kms. covering both metalled and non-metalled surfaces. That accounts for approximately 60 percent of the total road length in the Northeast. In Infrastructure facility Assam is not in a good position. The road length of Assam under Public Works Department was 37,700 Kms. in 2007-08 (including 2754 Kms. under National High Way). Out of total road length 3134 Kms. State High way, 4414 Kms. major district road, 26221 Kms. rural road and 1177 Kms. urban road. Excluding National High Way surface road is 10488 Kms. and unsurface road 24458 Kms. Average road length per lakh of population is 141 Kms. and road length per 100 sq km of geographical area 49 Kms. The railway route link in Assam at the end of 2007-08 was 2283.71 Kms. comprising 1126.59 Kms. under Broad gauge 1057.12 Kms. under Meter gauge. The state Directorate of Inland Water Transport and Central Inland Water Transport Corporation operate water transport services between Guwahati and Kolkata for carrying of goods. The Inland Water Transport department Assam, operating 61 numbers ferry services. Assam is connected with rest of the country through air transport. The state has the highest number of operational civil airport Tezpur, Guwahati, Jorhat, Dibrugarh, North Lakhimpur and Silchar. The information available from Chief Post Master General, Assam the total number of post offices are 4006, out of which 3708 are rural post offices and 298 are urban post offices. The total letter box numbers are 18486. To maintain peace in the state, according to sources of Director General of Police, Assam there are 274 number of police stations 173 numbers of out posts 13 Government railway police stations and 18 outposts and 4 river police stations 6 outposts in the districts of Assam. In respect of educational institution up to 30th September 2007 the number of total primary schools in Assam 30094, middle schools 11347, high schools 5052, higher secondary schools 620 and junior colleges 209. There are 375 numbers Arts/Sc/ Commerce colleges. The number of universities are 5, medical college 13(including

Hemeo/Aurvedic/Dental/Pharmacy/Nursing) number of agriculture and forestry colleges 2, engineering colleges 2, law colleges 22, veterinary colleges 2 and polytechnique institutions 32. The number of habitations fully covered to 2008 providing with drinking water are 70391. The total numbers of inhabited villages are electrified (up to 31st March 2007) 14516, out of 25124 villages. The total number of hospitals is 22, PHC 610, Dispensaries 331, number of beds 7534, CHC 100 and Sub Center 5109.

Though Assam is lack of proper infrastructure facilities yet priorities are given in each plan for development in infrastructure sector. During first plan the outlay for infrastructure was Rs. 11.6 crores, which was 54.46 percent of the total plan outlay. This figure had been increased to Rs. 122.03 crores in the fourth plan, which was 61.50 percent of the total outlay of that plan. In the sixth plan the percentage of expenditure of total outlay is highest that is 67.50 percent and expenditure in Rs 866.12 crores. The percentage of expenditure of seventh, eighth, ninth and tenth plan are 59.80 percent, 40.00 percent 28.67 percent and 37.7 percent respectively.

Total number of handloom training center is 102, number of trainees in handloom training center are 1650, number of weaver's extension service unit are 98 and handloom production center are 20, Total number of handloom demonstration circle are 225. There are 9373 sericulture villages in Assam, total number of families are engaged eri, muga and mulberry are 181758, 30851 and 26672 respectively. The installed capacity of generating power in the state has come down to 415.5 MW in 2006-07 and further to 401.5 MW in 2007-08 from 574.4MW during 2005-06. It is due to decommissioning of Bongaigaon Thermal Power Station and Mobile G.T. sets and derating of age-old units of Namrup TPS. The energy requirement of the state was worked out as 5280.00 Million Units during the year 2007-08 as against 4585.00 Million Units during the previous year. But availability of energy during the periods was 4015.00 Million Units and 3826.546 Million Units respectively. Per capita availability of electricity for the last three years is 114.638 KW in 2005-06, 115.760 KW in 2006-07 and 137.077 KW in 2007-08. In the year 2007-08 electricity is used for domestic purpose 38.99 percent, for commercial purpose 12.98 percent, for industrial purpose 18 percent and for tea garden 11.71 percent in the state.

The network of schedule commercial Banks has been playing an important role in mobilization of saving and investment in the State. According to the Quarterly Statistics of deposits and credit of scheduled commercial Banks of Reserve Bank of

India, March 2008, the number of reporting Bank offices of all schedule Commercial Banks in Assam stood at 1317, of which, 403 were regional rural bank. The average population covered per branch office (based on 2001 census population) in the State stands just above 20,000 in March 2008 which is however quite unsatisfactory in comparison to all India average of 14000 population during the same time. The banking network operating in the country as well as the state have been grouped under (i) State bank of India and its Associates (ii) Nationalized Banks (iii) Foreign Banks (iv) Regional Rural Banks and (v) Other Scheduled Commercial Banks. Out of the 1317 reporting Offices 775 bank branches i.e. about 60 percent are located in the rural area of Assam. During March 2008, the reporting bank branch offices situated in semi –urban and urban area were 296 and 246 respectively. However their corresponding credit-deposit ratio was far from satisfactory, they are 59.0 percent in rural, 39.9 percent in semi-urban and 36.1 percent in urban areas. The aggregate deposit with Schedule Commercial Banks in Assam Rs. 25,757 crore in March 2007 has increased to Rs. 31,666 crore in March 2008. The volume of deposits was about 23.0 percent higher over previous year. The per capita deposit stood at Rs.10807 in March 2008. The total volume of credit disbursed by these banks Rs.11, 154 crore in March 2007, has increased to Rs. 13, 057 crore March, 2008 and thereby recorded a growth of 17.06 percent over the previous year. During March 2008 Assam accounted for a meager 0.54 percent of total disbursement of in the country as a whole. The per capita credit has been worked out at Rs.4456 in March 2008. The Credit-Deposit Ratio of all Schedule Commercial Banks in Assam has been worked out at 41.2 percent as on March 2008 as against all India ratios of 74.2 percent. The per capita priority sector advances had significantly increased from Rs. 818.00 to Rs.3122.00 during the period 2003-08. As per state level bankers Committee reports, the advances outstanding under priority sector extended by banks have increased from Rs.6148.70 crore in 2006-07 to Rs. 8322.25 crore in 2007-08 registering a growth of 35.4 percent over the previous year. This growth was 281 percent when compared with the credit to priority sector during the year 2003-04. As against the target of Rs. 652.83 crore of credit flow to agriculture and allied activities [including crop loan] under the Annual Credit Plan for 2007-08, bank operating in the state has disbursed Rs. 566.70 crore as on 31st March 2008 achieving 87 percent of the target. Commercial banking sector play an important role for supply a big portion of institutional finance in each state.

The low level of banking development had much to do with the socio-economic and geographical reasons. Except the plain area of Assam and Barak Valley, Tripura valley and Imphal valley, the rest are hilly states inhabited by more than one hundred different tribes. According to 2001 census 85.0 percent people live in rural areas compared to national average 72.0 percent. The poor transport and communication network in hilly areas with sparse population, the subsistence nature of traditional tribal economy has limited the demand for modern financial services here the following indicators are considered to estimate the development in banking sector in north eastern states. Here some selected indicators are taken to study impact of scheduled commercial bank in NER. The branch network of SCB in the region expanded much more rapidly during 1970s and 1980s. So APPBO decrease rapidly in the decade than national average. The region characterized by sparse population, despite lower APPBO a large section of the population may not be effectively served by existing bank branches. In case of Arunachal Pradesh, Meghalaya and Mizoram where APPBO is lower, but average area per bank branch range from 121 sq. km. to 1232 sq. km. far higher than national average of 47 sq. km. Branch expansion and decline in APPBO should lead to increased recourse of banking transaction by the adult population. There was also wide interdistrict divergence. The total deposit accounts per 100 populations reveal the following.

In 2005, the range in the ratio within a state was for example

Arunachal Pradesh- from 3.4 (Dibang valley) to 55 (West Kameng)

Assam- From 13.6 (Dhubri) to 56.4 (Kamrup)

The districts that had the highest ratio were the district with respective state capital or commercial town/cities having better banking facility. The higher gap in credit vis-à-vis deposit from the national average is reflected on the lower CD ratio in the region. However there are differences between the CD ratio as per sanction and utilization.

6.2 List of Indicators used for the study

6.2.1 Indicators of BIS for the districts

- 1) % of Handloom training center
- 2) % of Weaver extension unit

- 3) % of Handloom demonstration circle
- 4) No of Higher Secondary School per lakh population
- 5) No of Junior college per lakh population
- 6) % of Household having Toilet facilities
- 7) % of Household having Drinking water
- 8) % of villages having post, telegraph and telephone facilities
- 9) % of villages having bus service
- 10) % of villages having colleges
- 11) % of Police station
- 12) Commercial bank per lakh population
- 13) Female literacy rate
- 14) Male literacy rate
- 15) % of Urban population 2001
- 16) % of Veterinary hospital
- 17) % of AI center
- 18) % of Agriculture sub division
- 19) % of Agriculture development officer circle
- 20) % of Village level extension worker
- 21) No. of Hospitals
- 22) No. of PHC
- 23) No. of Dispensaries
- 24) No. of Rural FWPC
- 25) No. of Sub Center
- 26) No. of CHC
- 27) Hospital beds per 10,000 populations
- 28) Surface road in km
- 29) Unsurface road in km
- 30) State High way in km
- 31) Major district road in km
- 32) Rural road in km
- 33) Urban road in km
- 34) Road length in km per lakh population
- 35) Road length in km per (00) sq km of geographical area
- 36) % of Villages have power Supply

- 37) % of Village Electricity Used in domestic purpose
- 38) % of Village Electricity Used in agricultural purpose
- 39) % of Household Connection
- 40) % of Village electrified

6.2.2 Indicators of banking sector for districts

- 1) % of state average of reporting offices SCB in Assam
- 2) % of state average of deposits SCB in Assam
- 3) % of state average of Credit SCB in Assam
- 4) % of state average of reporting offices SRB in Assam
- 5) % of state average of deposits SRB in Assam
- 6) % of state average of credit SRB in Assam

Percentage of Outstanding credit of SCB in Assam according to occupation

- 7) Agriculture
- 8) Industry
- 9) Transport & other service
- 10) Professional & other service
- 11) Personal loans
- 12) Trade
- 13) Finance
- 14) All others

6.2.3 Indicators of banking sector for North Eastern States

- 1) Average population per branch
- 2) Area per SCB Branch Sq Km
- 3) Current & Savings account per 100 Adult Population
- 4) Credit account per 100 Adult Population
- 5) % of per capita deposit as ratio to national average
- 6) % of per capita credit as ratio to national average

Sectoral Share of Utilized Credit (indicators 7 - 19)

- 7) % of Agriculture

- 8) % of Direct finance
- 9) % of Indirect finance
- 10) % of Industry
- 11) % of Transport operators
- 12) % of Professional & other services
- 13) % of Personal loans
- 14) % of Rest of Personal loans
- 15) % of Trade
- 16) % of Wholesale trade
- 17) % of Retail trade
- 18) % of Finance
- 19) % of All others
- 20) % of of deposit NSDP Ratio
- 21) % of Credit deposit ratio
- 22) % of of Personal loan to Deposit Ratio
- 23) Deposit per branch
- 24) Credit per branch
- 25) Deposit per Employee
- 26) Credit per Employee
- 27) % of Share of current deposits

6.3 Ranking of Districts based on Banking sector & BIS

The composite indices of development and their corresponding ranking of districts of Assam for BIS and Banking sector computed by Deprivation method, Methodology is used by Narain et al. Indexing method and PCA are given in Table 6.1 and 6.2 respectively.

Table 6.1 Composite Index of development and rank of the districts for BIS

Sl No	Districts	Deprivation method		Method Narain et al.		Indexing method		PCA	
		EDI value	Rank	CI	Rank	DI	Rank	Score	Rank
[1]	Kokrajjar	.2511	22	.8725	21	45.817	22	-3.6122	21
[2]	Dhubri	.3053	19	.8355	15	46.774	21	-1.6929	15
[3]	Goalpara	.3095	18	.8434	18	57.546	17	-2.3007	18
[4]	Bongaigaon	.3121	17	.8310	16	55.431	18	-3.0790	20
[5]	Borpeta	.4127	8	.7097	6	62.617	10	0.8685	9
[6]	Kamrup	.6914	1	.4873	1	94.648	1	9.2967	1
[7]	Nalbari	.5234	4	.6734	5	71.690	6	3.8262	4
[8]	Darrang	.4281	7	.7377	9	57.858	14	1.3475	7
[9]	Morigaon	.3784	11	.7949	12	69.616	7	-0.3865	11
[10]	Nagaon	.6190	2	.5716	2	81.503	3	6.7307	2
[11]	Sonitpur	.4085	9	.7212	7	59.832	12	1.0252	8
[12]	Lakhimpur	.3362	15	.8200	15	55.331	19	-1.5158	13

[13]	Dhemaji	.2165	23	.9891	23	40.431	23	-4.5891	22
[14]	Tinsukia	.3137	16	.8182	14	57.965	13	-2.0505	16
[15]	Dibrugarh	.4358	6	.7295	8	72.751	5	1.5038	6
[16]	Sibsagar	.5364	3	.6342	4	77.832	4	3.5581	5
[17]	Jorhat	.5232	5	.6306	3	83.749	2	4.0546	3
[18]	Golaghat	.3939	10	.7506	10	64.013	9	0.2467	10
[19]	Karbi Anglong	.2863	20	.8717	20	55.094	20	-2.6174	19
[20]	N.C.Hills	.3423	14	.8598	19	57.560	15	-1.9109	14
[21]	Cachar	.3675	13	.7828	11	62.135	11	-1.0823	13
[22]	Karimganj	.3570	12	.8141	13	66.300	8	-2.1335	17
[23]	Hailakandi	.2602	21	.9106	22	56.054	16	-5.4874	23

Source: (a) Statistical Hand Book 2004-05, 2005-06, 2006-07, 2007-08, 2008-09
(b) RBI Basic Statistics.2005-06

From the Table 6.1 it is seen that, according to Narain et al. Kamrup, Nagaon, Jorhat and Sibsaagar are at the top in ranking Hailakandi and Dhemaji are at the bottom. According to Deprivation method Kamrup, Nagaon and Sibsaagar occupy first three positions respectively and it reveals that Kamrup, Nagaon, Sibsaagar, Nalbari and Jorhat are moderately developed, all others are backward districts. According to indexing method Kamrup, Jorhat and Nagaon, occupy first, second and third ranking and Dhubri, Kokrajar and Dhemaji get the last three ranking respectively. From the method PCA it reveals that Kamrup, Nagaon and Jorhat are ranked first, second and third and Kokrajar, Dhemaji and Hailakandi are placed in latter positions respectively.

Table 6.2 Composite index of development and rank of the districts for banking sector

Sl. No	Districts	Method Narain et al.		Indexing method		Deprivation method		PCA	
		CI	Rank	DI	Rank	EDI	Rank	Score	Rank
[1]	Kokrajar	.8392	19	2.972	19	.1114	19	-3.5248	19
[2]	Dhubri	.8166	18	3.143	18	.1338	18	-2.8623	18
[3]	Goalpara	.7953	15	3.569	17	.1665	16	-2.1471	15
[4]	Bongaigaon	.8093	17	3.584	16	.1396	17	-2.6986	17
[5]	Borpeta	.7343	10	5.674	6	.2862	11	0.2212	11
[6]	Kamrup	2887	1	26.333	1	.8032	1	13.8677	1
[7]	Nalbari	.7420	11	5.370	12	.3017	8	.3655	10
[8]	Darrang	.7199	9	5.420	11	.2967	9	.4908	9
[9]	Morigaon	.8623	20	2.240	20	.0701	20	-4.1918	20
[10]	Nagaon	.7034	8	4.828	14	.3747	6	2.0690	6
[11]	Sonitpur	.6320	4	8.251	6	.4284	4	3.7927	3
[12]	Lakhimpur	.6475	5	8.694	5	.4112	5	3.1428	5
[13]	Dhemaji	.8752	21	1.783	21	.0651	21	-4.6806	21
[14]	Tinsukia	.7440	12	5.579	7	.2176	14	0.2451	12
[15]	Dibrugarh	.5797	2	10.824	2	.4745	2	5.5328	2
[16]	Sibsagar	.6638	6	10.486	3	.3477	7	1.2709	7
[17]	Jorhat	.6900	7	7.242	5	.2893	10	.9273	8
[18]	Golaghat	.7601	13	4.831	13	.2332	12	-0.9313	13
[19]	Karbi Anglong	.7967	16	3.649	15	.2328	13	-1.4188	14
[20]	N C Hills	.9020	23	1.583	23	.0143	23	-5.4860	23
[21]	Cachar	.6047	3	8.889	4	.4307	3	3.7294	4
[22]	Karimganj	.7928	14	3.656	14	.1693	15	-2.2032	16
[23]	Hailakandi	.8875	22	1.752	22	.0370	22	-5.0204	22

Source : (a) Statistical Hand Book 2004-05, 2005-06, 2006-07, 2007-08, 2008-09

The table 6.2 highlights that for the method Narain et al. Kamrup, Dibrugarh and Cachar are ranked–first, second and third. For Equal weighted index method Kamrup, Dibrugarh and Sibsagar are ranked first, second and third and in Deprivation method above positions occupied by Kamrup, Dibrugarh and Cachar and for Principal Component Analysis these districts are Kamrup, Dibrugarh and Sonitpur but for the four methods same districts i.e. N.C. Hills Dhemaji and Hailakandi occupy the last three positions. According to Deprivation method only Kamrup district are high developed all other districts are backward.

6.3.1 Relative Share of Area and Population under Different Level of Development.

An important aspect of the study is to find out the relative share of area and population affected under various stages of development in the state. The details are given in Table 6.3 and Table 6.4 for BIS and banking sector respectively.

Table 6.3 Area and Population under Different levels of Development for BIS

Sectors	No of indicators	Level of development	No of districts	Area %	Population %
BIS	40	High	[6],[10],[17],[16]	17.64	25.84
		Medium	[7],[5],[11],[15],[8],[18]	27.01	30.44
		Developing	[1],[2],[3],[4],[9],[12],[14],[19],[20],[21],[22]	49.53	39.54
		Low developed	[23],[13]	5.82	4.18

From the Table 6.3 it is seen in case of overall infrastructure districts Kamrup^[6], Nagaon^[10], Jorhat^[17] and Sibsagar^[16] developed districts which cover 17.64 percent area 25.84 percent population of the state. Hailakandi^[23] and Dhemaji^[13] are observed to be low developed these districts cover about 5.82 percent area and 4.18 percent population of the state. Nalbari^[7], Borpeta^[5], Sonitpur^[11], Dibrugarh^[15], Darrang^[8], Golaghat^[18] are classified as medium level developed districts. They cover about 27.01 percent area and 30.44 percent population of the state. The remaining eleven districts namely, Kokrajar^[1], Dhubri^[2], Goalpara^[3], Bongaigaon^[4], Morigaon^[9], Lakhimpur^[12], Tinsukia^[14], N.C.Hills^[20], Karbi

Anglong^[19], Cachar^[21] and Karimganj^[22] are grouped in to developing districts. They cover about 49.53 percent area and 39.54 percent population of the state.

Table 6.4 Area and Population under different levels of Development for banking sector

Sector	Indicators	Level of Development	No. of districts	Area %	Population %
Banking Sector	14	High	[6], [15]	13.48	17.66
		Medium	[17], [16], [11], [10], [8], [12], [21]	45.56	39.58
		Developing	[14], [22], [4], [18], [9], [5], [3], [1], [7], [19], [2]	23.36	28.82
		Low Developed	[20], [13], [23]	17.59	13.94

From the Table 6.4 it is observed that in case of banking sector the districts Kamrup^[6] and Dibrugarh^[15] developed districts which cover 13.48 percent area 17.66 percent population of the state. Jorhat^[17], Sibsagar^[16], Sonitpur^[11], Nagaon^[10], Darrang^[8], Lakhimpur^[12] and Cachar^[21] are classified as medium level developed districts. They cover about 45.56 percent area and 39.58 percent population of the state. Tinsukia^[14], Karimganj^[22], Bongaigaon^[4], Golaghat^[18], Morigaon^[9], Borpeta^[5], Goalpara^[3], Kokrajar^[1], Nalbari^[7], Karbi Anglong^[19] and Dhubri^[2] are grouped in to developing districts. They cover about 23.36 percent area and 28.82 percent population of the state. N.C. Hills^[20], Dhemaji^[13] and Hailakandi^[23] are observed to be low developed these districts cover about 17.59 percent area and 13.94 percent population of the state.

6.3.2 Model Districts and Potential Target for Low Developed District

For BIS sector Hailakandi and Dhemaji and for banking sector Dhemaji, Hailakandi and N.C. Hills come out as low developed districts are depicted in Table 6.5 and Table 6.7. For each case at best three model districts are considered for low developed districts. The best value of the model districts are considered as potential target for each indicator of low developed district are given in the Table 6.6 and Table 6.8.

Table 6.5 Model Districts for Low Developed District of overall infrastructure

Low developed districts	Model districts
Hailakandi	Tinsukia, Golaghat, Karimgang
Dhemaji	Dibrugarh, Sibsagar, Jorhat

Table 6. 6 Estimate of Potential Target and Actual Achievement (given under the bracket)

Indicators	Hailakandi	Dhemaji
Handloom Training Centre (%)	4.90(.980)	9.80(1.96)
Weaver Extension Unit (%)	4.08(2.04)	7.14(4.08)
Handloom Demonstration circle(%)	4(2.22)	7.11(2.67)
Higher secondary school per lakh population	2.48(2.03)	3.90(2.62)
Junior college per lakh population	.87(2.03)*	.25(2.62)*
Toilet facilities (%)	73.17(60.97)	48.18(16.37)
Drinking water facility(%)	73.96(18.54)	67.22(48.58)
Percentage of village having post,telegraph and telephone facilities	44.59(41.28)	34.99(7.61)
Percentage of village having bus facilities	67.10(43.12)	49.53(44.97)
Percentage of village having colleges	2.16(0)	.81(1.54)*
Police station (%)	.99(1.22)*	1.84(.32)
Commercial bank per lakh population	6.09(3.50)	6.39(2.97)
Female literacy	62.07(50.65)	68.00(56.11)
Male literacy	78.01(68.47)	82.08(75.15)
Urban Population 2001 (%)	19.47(8.12)	19.28(6.79)
Vetrinary Hospital(%)	3.64(1.655)	6.29(4.304)
AI Centre(%)	3.87(2.4)	7.33(3.066)
Agriculture sub division	4.76(1.587)	6.35(3.174)
AgricultureDevelopmentOfficerCircle(%)	3.66(1.832)	6.28(2.879)
Village Level Extension Worker	4.04(2.137)	4.41(1.933)
No. of hospitals	8(2)	7(3)
No. of PHC	32(8)	37(9)
No of dispensaries	24(2)	19(5)
No. of FWPC	6(4)	8(1)
No of sub centre	232(112)	275(95)
No of CHC	5(1)	5(3)
Hospital bed per 10000 population	4(1)	12(4)
Surface road	15.85(13.338)	26.57(2.626)
Unsurface road	36.76(16.126)	40.78(35.156)
State high way	4.57(1.2811)	5.18(1.390)
Major district road	18.96(7.460)	11.62(1.297)
Rural road	39.03(24.943)	50.52(33.611)
Urban road	1.74(.452)	1.63(.216)
Road length per lakh population	170(61)	515(215)
Road length per 00 sq km of geographical Area	47(23)	67(38)
% of village have power supply	78.68(51.38)	91.29(20.47)
% of village electricity is used in domestic purpose	73.17(80.43)*	89.30(20.47)
% of village electricity is used in agriculture	1.31(4.28)*	2.29(0)
% of household connection	32.84(19.03)	26.72(3.52)
% of village electrified	74(91)*	96(32)

Indicates actual achievement that already better than the potential target.

Table 6.7 Model Districts for Low Developed District for banking sector

Low developed districts	Model districts
Dhemaji	Goalpara, Borpeta, Golaghat
Hailakandi	Goalpara, Golaghat, Karimganj
N.C. Hills	Goalpara, Karimganj, Golaghat

Table 6.8 Model Districts and Potential Target for Low Developed District

Indicators	Dhemaji	Hailakandi	N.C. Hills
% of reporting office of SCB	4.73(1.3633)	4.17(1.5237)	4.17(1.2831)
% of Credit of of SCB	2.42(1.0236)	2.36(.9582)	2.36(1.1847)
% of Deposite of of SCB	2.98(.8372)	2.12(.7276)	2.12(.7276)
% of reporting office of Rural bank	8.54(4.5226)	8.54(2.0101)	8.54(2.2613)
% of Credit of Rural bank	6.24 (2.7290)	4.97(2.5828)	4.97(1.5107)
% of Deposite of Rural bank	6.75 (2.4108)	5.78(1.4465)	5.78(.9643)
Outstanding Credit of SCB in agriculture	5.01 (.9927)	5.01(1.1191)	5.01(.7411)
Outstanding Credit of SCB in industry	1.33 (.0909)	1.31(.3204)	1.31(.2374)
Outstanding Credit of SCB in transport & operators	1.69 (.3031)	2.38(1.0730)	2.38(1.6648)
Outstanding Credit of SCB in professional& other Services	2.42 (.5073)	19.84(.8417)	19.84(.1332)
Outstanding Credit of SCB in personal loans	35.73 (.8774)	3.46(10.0431)*	3.46(10.6599)*
Outstanding Credit of SCB in trade	3.56(.7200)	1.16(.8585)	1.16 (.3795)
Outstanding Credit of SCB in finance	1.16(.0743)	2.44(0)	2.44 (.0991)
Outstanding Credit of SCB in all others	2.44(.5103)	(1.0167)	(.3119)

Table 6.9 Composite index of development and rank of the NE states

Sl No	States	Composite index	Rank
1	Arunachal	.7266	4
2	Assam	.5941	2
3	Manipur	.8097	5
4	Meghalay	.5264	1
5	Mizoram	.8751	7
6	Nagaland	.7239	3
7	Tripura	.8717	6

Source: (a) RBI Basic Statistics, 2005-06
(b) Statistical Hand Book, 2007-08

From the Table 6.9 it is found that among the North Eastern Region in banking sector Meghalaya and Assam have occupied first and second ranking and Tripura and Mizoram are ranked sixth and seventh.

6.4 Results and Discussion

According to four methods are mentioned before Kamrup, Jorhat, Sibsagar and Nagaon are developed districts in BIS. Dhemaji and Hailakandi are coming as low developed districts in this case. There is little variation is observed in rankings done by four methods. For each low developed district model districts are found in Table 6.5. From the model districts best value of each indicator is taken as potential target for each indicator of low developed districts furnished in Table 6.6. From the table it is observed that five indicators of district Hailakandi and two indicators of Dhemaji show better prospect than their potential target. For banking sector Kamrup and Dibrugarh are high developed districts and N.C. Hills, Dhemaji and Hailakandi are coming as low developed districts. Model districts for low developed districts are obtained and potential targets have been found for each indicator of low developed district in Table 6.8. It is observed from the Table 6.8 only one indicator of each low developed district show better performance than potential target. The other indicators must be improved to change the level of development of the low developed districts.

Chapter 7

Industrial sector

It is an attempt to find development disparities in industry sector among the districts of Assam. In the study sixty-five indicators are considered. The whole industrial sector is divided in to five sub sectors and districts are ranked according to position of development for each sub sector. According to equal weighted index method, deprivation method, the method is used by Narain et al. and Principal Component Analysis, Kamrup and Dibrugarh districts occupy first and second ranking and for low developed districts model districts are found and potential targets are set for each indicator for low developed district.

7.1 Introduction

Assam had a great legacy of modern industrial development. European tea planters established tea gardens in Assam beginning from 1835 and tea was exported to England and other countries. Along with tea, oil refinery, was established in Digboi in 1901. Coalmines were developed in Ledo - Margherita area during post independence. During post independence plan period a number of major industries based on the rich mineral and forest resources were set up under the central public sector viz. Oil India Ltd, ONGC, Guwahati, Bongaigaon, Numaligarh refineries, Fertilizer industry Namrup, Cement factory Bokajan and Paper mill at Jagiroad etc.

The partition of the country in 1947 hit hard the prospect of industrial development of Assam and entire N.E. region was turned in to a land lock region with access to the mainland through a narrow corridor of 22 km. It created serious transport bottleneck for Assam. Tea industry is the largest industry in Assam; a big share of state income comes from tea. The total number of registered big tea estates in Assam increased from 751 in 1970 to 777 in 1980 and finally to 790 in 2006. According to All Assam Small Tea Growers Association total number of small tea growers in Assam increased considerably from 5064 in 1983 to 40,000 in September 2003. There are about eleven lakh labors in the tea industry in Assam. Many industries like plywood, aluminum, rubber, and fertilizer are grown with tea industry.

Assam produces three unique varieties of silk; the golden muga, the white pat and warm eri. Sericulture is one of the biggest contributors of state income. It is also a major source of employment particularly in rural areas. It is practiced in more than 9373 villages and provides employment to 2.4-lakh families. Eri contributes Rs 31.5 crores where as muga contributes Rs 40 crores and pat silk contributes Rs 120 crores out of total Rs 190 crores generated annually through the silk industry in Assam. The major traditional industries of the state are pottery, black smithy, bell-metal and brass-metal works, gold smithy, village carpentry, bamboo and cane works, spinning of eri, muga and mulberry silk, vegetable dyeing, wood carving, hand pounding of rice, manufacture of ivory products etc. Some of these industries are decaying due to competition from machine made goods, lack of marketing facilities etc.

Weaving is one of the biggest and oldest industries in Assam. The Assam Handloom Industry is known for its tradition of making handloom and handicraft products. At present, 11570 villages of the state with 1319754 weavers are covered by the directorate of Handloom and Textiles for its Handloom activities. The production of Handloom Fabrics was 132.6 million meters during 2007-08 as against 145 million meters during the year 2006-07.

The Small Scale Industrial Sector is a vital constituent of the total industrial sector. It is a dynamic and vibrant sector of Indian economy. The sector act as a nursery for the development of entrepreneurial talent and has been contributing significantly to National Gross Domestic Product besides meeting the social objectives including that of providing employment opportunities to millions of people across the country. It is estimated that the total SSI sector comprises 194397 units, spreading over the length and breadth of the state. According to census of SSI during November 2002 to June 2003, about 73.90 percent of these units were located in rural Assam, about 98.12 percent of the units in the total SSI sector of the state were found to be of proprietary type of ownership. Entrepreneurs belonging to socially backward classes managed about 27.16 percent of the units. The number of women enterprises was 11757 (6.05 percent). The number of enterprises actually managed by women was 11189 (5.76 percent). The SSI sector employed 429004 persons during 2001-02. The five districts Kamrup (26.04 percent), Sonitpur (14.52 percent), Dibrugarh (10.02 percent), Tinsukia (7.18 percent), Nagaon (6.59 percent) put together had a share of 64.35 percent in total employment. Electricity, good roads and transport system are the key indicators of development in a region. A better transport system increase

income, employment opportunities, tourism, and industrial development in many ways.

7.2 List of Indicators used for the study

- | | |
|--|--|
| 1) No. Of HTC | |
| 2) No. Of trainees in HTC | |
| 3) No. Of WESU | |
| 4) Production of WESU | |
| 5) No.of HDC 2006-07 | |
| 6) No. of HDC 2007-08 | |
| 7) No. of village 2006-07 | |
| 8) No. of village 2007-08 | |
| 9) No. of weavers engaged 2006-07 part time | |
| 10) No. of weavers engaged 2007-08 part time | |
| 11) No. of weavers engaged 2006-07 full time | |
| 12) No. of weavers engaged 2007-08 full time | |
| 13) No. of Sericulture village | |
| 14) No. of family engaged in eri | |
| 15) No. of family engaged in muga | |
| 16) No. of family engaged in mulberry | |
| 17) Total area under silkworm food plants (eri) | |
| 18) Total area under silkworm food plants (muga) | |
| 19) Total area under silkworm food plants (mulberry) | |
| 20) Yield of Eri Cocoons | |
| 21) Yield of Muga Cocoons | |
| 22) Yield of Mulberry Coçoons | |
| 23) Raw silk production (Eri) | |
| 24) Raw silk production (Muga) | |
| 25) Raw silk production (Mulberry) | |
| 26) Employee of SSI (%) | |
| 27) Female employee of SSI (%) | |
| 28) Rural Female employee SSI (%) | |
| 29) Surface road in km | |
| | [Indicators (42-60) are from SSI] |
| | 42) Rural Female SC employee(%) |
| | 43) Rural Female ST employee(%) |
| | 44) Rural Female OBCemployee (%) |
| | 45) Urban Female employee(%) |
| | 46) Urban Female SC employee(%) |
| | 47) Urban Female ST employee(%) |
| | 48) Urban FemaleOBCemployee (%) |
| | 49) Rural working unit(%) |
| | 50) Urban working unit(%) |
| | 51) Rural closed unit(%) |
| | 52) Urban closed unit(%) |
| | 53) Enterprise managed by women(%) |
| | 54) Enterprise owned by women(%) |
| | 55) Total value export(%) |
| | 56) Unregistered units(%) |
| | 57) Distribution of units(%) |
| | 58) Distribution of gross output (%) |
| | 59) Distribution of fixed investment (%) |
| | 60) Original value of plant and machinery total SSI sector (%) |
| | 61) % of factories |
| | 62) % of workers |
| | 63) % of industry worker to main worker |
| 30) Unsurface road in km | 64) Small tea growers (%) |

- | | |
|---|------------------------------|
| 31) State High way in km | 65) Registered area of small |
| 32) Major district road in km | tea grower |
| 33) Rural road in km | |
| 34) Urban road in km | |
| 35) Road length in km per lakh population | |
| 36) Road length in km per (00) sq km of geographical area | |
| 37) % of Villages have power Supply | |
| 38) % of Village Electricity Used in domestic purpose | |
| 39) % of Village Electricity Used in agricultural purpose | |
| 40) % of Household Connection | |
| 41) % of Village electrified | |

7.3 Ranking of Districts based on Industry

Composite index of development has been worked out by the method used by Narain et al. for different districts for the sectors Handloom, Sericulture, Small Scale Industries, electricity consumption, transport facility and overall industry sector separately. The number of indicators are used for each sector are twelve, thirteen, twenty-two, five, eight and fifty-two respectively. The districts have been ranked on the basis of developmental index. The composite index of development along with the rank of the districts are presented in Table 7.1

Table 7.1 Composite index of development and ranking of the districts

SL no	Districts	Handloom		Sericulture		SSI		Electricity		Road		Overall Industry	
		CI-1	Rank	CI-2	Rank	CI-3	Rank	CI-4	Rank	CI-5	Rank	CI-6	Rank
[1]	Kokrajjar	.9174	22	.7166	12	.8577	20	.5841	13	.9210	22	.8891	18
[2]	Dhubri	.8736	19	.9180	21	.7973	8	.6325	18	.8809	18	.8991	20
[3]	Goalpara	.8126	15	.6462	6	.8458	19	.6171	16	.6749	8	.8458	12
[4]	Bongaigaon	.7881	13	.8883	20	.8457	18	.5861	14	.6936	11	.8964	19
[5]	Borpeta	.5389	2	.8819	19	.8589	21	.5039	10	.7764	15	.8593	16
[6]	Kamrup	.4961	1	.6568	7	.3923	1	.4557	7	.6215	6	.5327	1
[7]	Nalbari	.6574	5	.8639	18	.8256	15	.3964	5	.6319	7	.8538	15
[8]	Darrang	.6588	6	.6350	4	.8094	10	.6303	17	.5270	2	.7869	7
[9]	Morigaon	.8524	18	.7843	15	.8254	14	.5354	12	.5941	5	.8752	17
[10]	Nagaon	.6029	3	.7505	14	.7450	4	.3019	1	.5602	4	.7642	6
[11]	Sonitpur	.7558	11	.7047	10	.6927	3	.4602	8	.7981	17	.7375	3
[12]	Lakhimpur	.6882	7	.4566	1	.7818	7	.7909	20	.7121	12	.7506	5
[13]	Dhemaji	.8471	17	.5687	2	.8656	22	1.1548	23	.8812	19	.8536	14
[14]	Tinsukia	.7473	8	.7990	16	.7770	6	.5251	11	.8998	20	.8110	10
[15]	Dibrugarh	.7915	14	.6941	9	.5901	2	.3813	4	.6892	10	.6997	2
[16]	Sibsagar	.6459	4	.5891	3	.7695	5	.4039	6	.4914	1	.7417	4
[17]	Jorhat	.7860	12	.6432	5	.8249	13	.3791	3	.5440	3	.8093	9
[18]	Golaghat	.7523	9	.7100	11	.8093	9	.6834	19	.6830	9	.8013	8
[19]	Karbi Anglong	.7553	10	.6699	8	.8453	17	.9530	22	.7375	14	.8208	11
[20]	N.C.Hills	.8817	20	.8248	17	.8762	23	.9159	21	.7904	16	.9224	22
[21]	Cachar	.8170	16	.7421	13	.8241	12	.3341	2	.9573	23	.8472	13
[22]	Karimganj	.8911	21	.9473	22	.8176	11	.5975	15	.7204	13	.9161	21
[23]	Hailakandi	.9518	23	.9536	23	.8271	16	.4633	9	.9059	21	.9398	23

Source : (a) Statistical Handbook Assam, Directorate of Economics and Statistics,
Government of Assam. 2004-05, 2005-06, 2006-07.

(b) Report on the third All-India Census of Small Scale Industrial Units, Assam. 2001-02

CI-1: Composite Index based on 12 Indicators

CI-2: Composite Index based on 13 Indicators

CI-3: Composite Index based on 22 Indicators

CI-4: Composite Index based on 5 Indicators

CI-5: Composite Index based on 8 Indicators

CI-6: Composite Index based on 52 Indicators

From the above Table 7.1 it is observed that in Handloom sector Kamrup gets first ranking and Hailakandi is in the bottom. In sericulture sector Lakhimpur is ranked first and Hailakandi is in the last. In SSI sector Kamrup comes out as first and N.C. Hills is in the last. In Electricity sector Nagaon is found to be as first and Dhemaji is in the last, in

Road sector Sibsagar district is found to be first Cachar is found to be last and Overall industry sector Kamrup is in the first position and Hailakandi is in the last position.

7.3.1 Relative Share of Area and Population under Different Level of Development

An important aspect of the study is to find out the relative share of area and population affected under various stages of development in the state. The details are given in Table 7.2.

Table 7.2 Area and Population under Different levels of Development

Sectors	No of indicators	Level of development	No of districts	Area %	Population %
Handloom	12	High	[6],[5],[10]	14.74	24.33
		Middle	[16],[7],[8],[12],[14],[19],[18]	36.22	28.15
		Developing	[17],[2],[3],[4],[9],[11],[15],[13],[21]	34.30	37.60
		Low developing	[20],[22],[23],[1]	14.74	9.92
Sericulture	13	High	[12],[13],[16]	10.43	9.43
		Middle	[8],[1],[17],[3],[6],[19],[15],[11],[18]	49.31	42.69
		Developing	[7],[14],[20],[21],[9],[10]	25.81	26.35
		Low developing	[5],[4],[2],[22],[23]	14.45	21.53
SSI	22	High	[6],[15]	9.85	13.91
		Middle	[11],[10],[16],[12]	19.59	22.64
		Developing	[1],[2],[3],[4],[5],[7],[8],[9],[13],[14],[17],[8],[19],[20],[21],[22],[23]	70.56	63.45
		Low developing	***		
Electricity	05	High	[10],[21]	9.89	14.10
		Middle	[17],[15],[7],[16],[6],[11],[23],[5],[14],[9]	39.19	47.67
		Developing	[1],[2],[3],[4],[8],[18],[22]	24.36	28.99
		Low developing	[12],[20],[19],[13]	26.56	9.24
Road	08	High	[16],[8],[17],[10]	16.53	22.02
		Middle	[9],[6],[7],[3],[18],[15],[4],[12],[22]	29.45	38.28
		Developing	[5],[11],[19],[20]	30.47	16.24
		Low developing	[2],[13],[14],[23],[1],[21]	23.55	23.46
Industry	52	High	[6],[15]	9.85	13.91
		Middle	[16],[12],[11],[10],[8],[17],[18]	30.69	35.21
		Developing	[4],[5],[2],[3],[7],[9],[14],[13],[19],[21],[1]	49.23	44.36
		Low developing	[22],[20],[23]	10.23	6.52

In case of handloom sector districts Kamrup^[6], Borpheta^[5] and Nagaon^[10] are developed districts which cover 14.74 percent area and 24.33 percent population of the state. Four districts N.C. Hills^[20], Karimganj^[22], Hailakandi^[23] and Kokrajhar^[1] are observed to be low developed, these districts cover about 14.74 percent area and 9.92 percent population of the state. Seven districts viz., Sibsagar^[16], Nalbari^[7], Darrang^[8], Tinsukia^[14], Lakhimpur^[12], Karbi Anglong^[19] and Golaghat^[18] are classified as medium level developed districts. They cover about 36.22 percent area and 28.15 percent population of the state. The remaining nine districts viz., Jorhat^[17], Dhubri^[2], Goalpara^[3], Bongaigaon^[4], Morigaon^[9], Sonitpur^[11], Dibrugarh^[15], Dhemaji^[13] and Cachar^[21] are grouped in to developing districts. They cover about 34.30 percent area and 37.60 percent population of the state.

In case of sericulture sector districts Lakhimpur^[12], Dhemaji^[13] and Sibsagar^[16] are developed districts which cover 10.43 percent area and 9.43 percent population of the state. Five districts Borpheta^[5], Bongaigaon^[4], Dhubri^[2], Karimganj^[22] and Hailakandi^[23] are observed to be low developed, these districts cover about 14.45 percent area and 21.53 percent population of the state. Nine districts viz., Darrang^[8], Kokrajhar^[1], Jorhat^[17], Goalpara^[3], Kamrup^[6], Karbi Anglong^[19], Dibrugarh^[15], Sonitpur^[11] and Golaghat^[18] are classified as medium level developed districts. They cover about 49.31 percent area and 42.69 percent population of the state. The remaining six districts namely, Nalbari^[7], Tinsukia^[14], N.C. Hills^[20], Cachar^[21], Morigaon^[9] and Nagaon^[10] are grouped in to developing districts. They cover about 25.81 percent area and 26.35 percent population of the state.

In case of SSI sector districts Kamrup^[6] and Dibrugarh^[15] are developed districts which cover 9.85 percent area and 13.91 percent population of the state. Four districts namely, Sonitpur^[11], Nagaon^[10], Sibsagar^[16] and Lakhimpur^[12] are classified as medium level developed districts. They cover about 19.59 percent area and 22.64 percent population of the state. The remaining seventeen districts namely, Dhemaji^[13], Nalbari^[7], Tinsukia^[14], N.C. Hills^[20], Cachar^[21], Morigaon^[9], Borpheta^[5], Bongaigaon^[4], Dhubri^[2], Karimganj^[22], Hailakandi^[23], Darrang^[8], Kokrajhar^[1], Jorhat^[17], Goalpara^[3], Karbi Anglong^[19] and Golaghat^[18] are grouped in to developing districts. They cover about 70.56 percent area and 63.45 percent population of the state. There is not a low developed district in the state in SSI sector.

In case of infrastructure of electricity districts Nagaon^[10] and Cachar^[21] are developed districts which cover 9.89 percent area 14.10 percent population of the

state. Lakhimpur^[12], N.C. Hills^[20], Karbi Anglong^[19] and Dhemaji^[13] are observed to be low developed, these districts cover about 26.56 percent area and 9.24 percent population of the state. Jorhat^[17], Dibrugarh^[15], Nalbari^[7], Sibsagar^[16], Kamrup^[6], Sonitpur^[11], Hailakandi^[23], Borpeta^[5], Tinsukia^[14] and Morigaon^[9] are classified as medium level developed districts. They cover about 39.19 percent area and 47.67 percent population of the state. The remaining seven districts Kokrajar^[1], Dhubri^[2], Goalpara^[3], Bongaigaon^[4], Darrang^[8], Golaghat^[18] and Karimganj^[22] are grouped in to developing districts. They cover about 24.36 percent area and 28.99 percent population of the state.

In case of infrastructure of road districts Sibsagar^[16], Darrang^[8], Jorhat^[17] and Nagaon^[10] are developed districts which cover 16.53 percent area 22.02 percent population of the state. Dhubri^[2], Dhemaji^[13], Tinsukia^[14], Hailakandi^[23], Kokrajar^[1] and Cachar^[21] are observed to be low developed, these districts cover about 23.55 percent area and 23.46 percent population of the state. Morigaon^[9], Kamrup^[6], Nalbari^[7], Goalpara^[3], Golaghat^[18], Dibrugarh^[15], Bongaigaon^[4], Lakhimpur^[12] and Karimganj^[22] are classified as medium level developed districts. They cover about 29.45 percent area and 38.28 percent population of the state. The remaining four districts Borpeta^[5], Sonitpur^[11], Karbi Anglong^[19] and N.C. Hills^[20] are grouped in to developing districts. They cover about 30.47 percent area and 16.24 percent population of the state.

In case of as a whole industry sector sector districts Kamrup^[6] and Dibrugarh^[15] are developed districts which cover 9.85 percent area and 13.91 percent population of the state. Three districts Karimganj^[22], N.C. Hills^[20] and Hailakandi^[23] are observed to be low developed these districts cover about 10.23 percent area and 6.52 percent population of the state. Seven districts namely, Sonitpur^[11], Nagaon^[10], Sibsagar^[16], Lakhimpur^[12], Darrang^[8], Jorhat^[17] and Golaghat^[18] are classified as medium level developed districts. They cover about 30.69 percent area and 35.21 percent population of the state. The remaining eleven districts namely, Dhemaji^[13], Nalbari^[7], Tinsukia^[14], Cachar^[21], Morigaon^[9], Borpeta^[5], Bongaigaon^[4], Dhubri^[2], Kokrajar^[1], Goalpara^[3] and Karbi Anglong^[19] are grouped in to developing districts. They cover about 49.23 percent area and 44.36 percent population of the state.

7.3.2 Model Districts and Potential Target for Low Developed District

Model districts for the low developed districts are obtained in Table 7.3, on the basis of composite index of development and the developmental distances between different districts. An important aspect of the study is to suggest potential target for different indicators of poor developed districts for bringing improvement in the level of development. The best values of different indicators among the model districts will be taken, as potential target of the low developed districts in the Table 7.4. Here at best three model districts are considered on priority basis.

Table 7.3 Low Developed District along with their Model Districts

Low developed districts	Model districts
Karimganj	Darrang, Golaghat, Nagaon
Hailakandi	Sonitpur, Sibsagar, Nagaon
N.C. Hills	Sonitpur, Sibsagar, Nagaon

Table 7.4: Estimate of Potential Target and Actual Achievement (given under the bracket)

Indicators	Karimganj	Hailakandi	N.C.Hills
HTC	6.59(1.33)	6.59(0.86)	6.59(0.61)
No. of trainees in HTC	7.07(1.47)	10.53(2.46)	10.53(0.18)
WESU	0.42(0.23)	0.92(0.96)	0.92(0.03)
Production of WESU	0.25(0.56)*	0.56(0.07)	0.56(0.04)
No. of circle 2006-07	0.27(0.03)	0.41(0.01)	0.41(0.12)
No. of circle 2007-08	.71(0.29)	1.37(0.16)	0.84(0.01)
No. of village 2006-07	0.28(0.32)*	0.37(0.03)	0.32(0.04)
No. of village 2007-08	0.25(0.37)*	0.25(0.04)	0.25(0.11)
No. of Part time weavers 2006-07	0.15(0.03)	0.18(0)	0.18(0.17)
No. of Part time weavers 2007-08	0.39(0.16)	0.75(0.05)	0.75(0.07)
No. of Full time weavers 2006-07	63.12(47.49)	69.4(57.5)	69.4(28.23)
No. of Full time weavers 2007-08	42.34(52.51)*	50.2(42.5)	50.2(71.77)*
No. of Sericulture village	68.47(40)	67.39(48.96)	67.39(20.45)
No. of family engaged in eri	52.74(60)*	52.74(51.04)	52.74(79.55)*
No. of family engaged in muga	0.612(0.3574)	0.612(0.438)	0.612(0.183)
No. family engaged in mulberry	0.633(.5103)	0.449(0.434)	0.449(0.677)*
Total area under silkworm food plants (eri)	8.95(.47)	8.95(1.85)	8.95(6.77)
Total area under silkworm food plants (muga)	7.96(1.47)	7.96(0.52)	7.96(0.48)
Total area under silkworm food plants (mulberry)	7.11(1.56)	7.11(0.54)	7.11(0.51)
Yield of Eri Cocoons	4.22(0.7)	4.22(2.14)	4.22(0.09)
Yield of Muga Cocoons	4.85(1.14)	4.85(4.34)	4.85(0.62)
Yield of Mulberry Cocoons	5.65(1.22)	5.65(1.7)	5.65(0.43)
Raw silk production (Eri)	7.843(1.96)	7.843(0.980)	7.84(3.922)
. Raw silk production (Muga)	7.576(1.82)	7.576(0.909)	7.576(3.636)

Raw silk production (Mulberry)	7.143(3.06)	7.143(2.041)	7.143(5.102)
Employee	15.711(.355)	15.711(0.398)	15.711(0)
Female employee	7.556(4)	7.556(2.222)	7.556(4.889)
Rural Female employee	7.556(4)	7.556(2.222)	7.556(4.889)
Rural Female SC employee	5.38(2.67)	10.11(1.167)	10.11(1.711)
Rural Female ST employee	5.38(2.67)	10.11(1.167)	10.11(1.711)
Rural Female OBC employee	7.19(3.22)	5.70(4.021)	5.70(1.182)
Urban Female employee	4.18(.181)	21.294(1.875)	21.29(0.218)
Urban Female SC employee	7.19(3.22)	5.704(4.024)	5.70(1.184)
Urban Female ST employee	4.11(.186)	20.700(1.873)	20.70(0.232)
Urban Female OBC employee	12.642(1.526)	12.642(2.614)	12.64(1.547)
Rural working unit	4.38(.257)	8.54(0.249)	8.54(2.513)
Urban working unit	2.31(.412)	21.21(0.506)	21.21(0)
Rural closed unit	.521(1.076)	1.36(0.292)*	1.36(0.225)
Urban closed unit	2.91(1.408)	5.07(1.886)*	5.07(4.475)*
Enterprise managed by women	4.45(0.726)	14.37(1.670)	14.373(0.411)
Enterprise owned by women	7.38(.296)	7.38(0.135)	7.38(2.155)
Total value export	6.81(1.941)	4.63(1.319)	4.63(9.417)
Unregistered units	9.15(.002)	25.03(0.003)	25.03(0.016)
Distribution of units	17.118(0.255)	17.118(0)	9.45(0.055)
Distribution of gross output	6.79(1.938)	4.62(1.313)	4.62(9.420)*
Distribution of fixed investment	8.65(.0021)	23.65(.003)	23.65(0.015)
Original value of plant and machinery total SSI sector	16.67(.949)	8.86(0)	8.86(0.105)
% of factories	6.37(1.555)	5.09(0.732)	5.09(0.671)
% of workers.	4.99(0.961)	6.66(1.696)	6.66(0.453)
% of industry worker	4.34(5.82)*	4.56(4.14)	4.56(3.1)
All tea growers (%)	21.736 (.570)	7.24 (.325)	7.24(.081)
Registered area of small tea grower	21.99(.808)	5.81(.5311)	5.81(.104)

*Indicates actual values are already better than the potential target.

Table-7.5 Composite Index of development and rank of the districts of Industry sector for Deprivation method, Methodology Narain et al., Indexing method and PCA.

Sl No	Districts	Deprivation method		Narain et al.		Indexing method		PCA	
		EDI value	Rank	CI	Rank	DI	Rank	Score	Rank
[1]	Kokrajar	0.1861	17	.8891	18	9.867	19	-4.1950	18
[2]	Dhubri	0.1549	19	.8991	20	10.229	18	-3.8185	20
[3]	Goalpara	0.2103	16	.8458	12	10.336	17	-2.3185	12
[4]	Bongaigaon	0.1493	20	.8964	19	9.726	20	-4.4565	19
[5]	Borpeta	0.2177	14	.8593	16	10.487	15	-1.3316	16
[6]	Kamrup	0.5881	1	.5327	1	20.473	1	17.0256	1
[7]	Nalbari	0.2258	12	.8538	15	10.776	12	1.1538	15
[8]	Darrang	0.2840	8	.7869	7	11.693	11	1.2707	7
[9]	Morigaon	0.1793	18	.8752	17	10.392	16	-2.1624	17
[10]	Nagaon	0.3181	6	.7642	6	12.405	6	3.3755	6
[11]	Sonitpur	0.3402	5	.7375	3	13.745	4	4.6353	3
[12]	Lakhimpur	0.3650	3	.7506	5	13.952	3	1.0650	5
[13]	Dhemaji	0.2147	15	.8536	14	10.719	13	-3.7820	14
[14]	Tinsukia	0.2588	11	.8110	10	11.947	9	-0.5127	10
[15]	Dibrugarh	0.4319	2	.6997	2	16.102	2	6.0089	2
[16]	Sibsagar	0.3440	4	.7417	4	13.261	5	1.2416	4
[17]	Jorhat	0.2651	10	.8093	9	12.129	8	.0783	9
[18]	Golaghat	0.2650	9	.8013	8	12.165	7	.4759	8
[19]	Karbi Anglong	0.3038	7	.8208	11	11.725	10	1.5729	11
[20]	N.C.Hills	0.1469	21	.9224	22	9.059	23	-3.9694	22
[21]	Cachar	0.2209	13	.8472	13	10.691	14	-3.0682	13
[22]	Karimganj	0.1251	22	.9161	21	9.374	21	-3.6570	21
[23]	Hailakandi	0.985	23	.9398	23	9.132	22	-4.6318	23

From the Table 7.5 it is seen that Kamrup and Dibrugarh occupy first and second position for all the above mentioned methods and Hailakandi is in the last except indexing method. In indexing method N.C. Hills is found to be in the last. According to Deprivation method only Kamrup district is moderately developed.

7.4 Results and discussion

In an industrially backward state Assam displaying high level of inter district disparity in industrial development, the promotion of SSI units in the backward districts of the state with proper plan perspective could have helped in reducing disparity to a considerable extent. Most of the districts are coming out as medium or developing district in the SSI sub sector. It is due to more or less the Small-scale industries have been distributed in each district of Assam. Proper attention should be given in the sub sectors where they are in better position, from the study it reveals that

in sericulture subsector the rank of Dhemaji district is second but in handloom and SSI sector its position is seventeen and twenty two only, so if proper emphasis is given in development of sericulture industry of Dhemaji then the district can be developed on the basis of it. For the low developed districts N.C. Hills, Karimganj and Hailakandi model districts are found in Table 7.3 and potential target is set for each indicator of low developed district observed in Table 7.4. From the Table 7.4 it is observed that actual achievement of at least two indicators of each district is better than potential target. By improving other indicators, a low developed district could be transformed to a high developed one.

Chapter-8

Socio-Economic sector

For computing development disparities in socio-economic sector among the districts of Assam fifty-four indicators are considered. According to method is used by Narain et al. and Principal Component Analysis the districts Kamrup, Dibrugarh and Jorhat are found to be high developed districts. Potential targets are obtained for each indicator for low developed districts from the model districts.

To study the disparities in socio-economic sector among seventeen major Indian states twenty-five indicators are considered. According to the method is used by Narain et al., Tamil Nadu, Kerela and Maharastra occupy first three ranks as developed states and Orissa, Uttar Pradesh and Bihar are in the last three positions respectively. According to Principal Component Analysis Kerela, Tamil Nadu and Punjab are in the first three positions Bihar, Orissa and Madhya Pradesh occupy the last three ranks respectively. Among NE states Mizoram and Nagaland have occupied first and second ranks and Arunachal Pradesh and Assam occupy rank seventh and eight respectively.

8.1 Introduction

Despite its importance as a goal of current international and national policy, there is no clear definition of socio-economic development. There is also no single objective criterion of it against which to validate measurement devices. As a single dimension measure the per capita national income is not a good general measure of socio-economic development. It has several major limitations.

- (1) The per capita national income. As a monetary concept, does not take in to account the values that lie outside the monetary sphere, nor the social values of things that may differ from their prices.

- (2) The per capita income is measured by states on the basis of prices of goods in the state that time. Since prices of commodities are different in different states so it cannot be comparable among states.

On the other hand, in this study a broad range of the components of socio-economic development is incorporated in the construction of composite index. On the social side, the components covered are health, education, communications; electricity and on economic side, agriculture, industry etc.

Bordering six states and two countries, Assam accounts for about 2.4 percent of the country's geographical area. Its 26.64 million people (2001 census) are 2.59 percent of the country's population and its population density of 340 persons per square km is marginally higher than the average density for the country. The state's 23 districts vary considerably in size and population. Most people of Assam, in fact seven of every eight people (87.28 percent) live in rural areas. In the 20th century between the years 1901 and 2001 the population of the state increased by a little over eight fold, clearly outpacing the average rate of growth of population of the country. The decadal variation in population in Assam has been very much larger than that in India as a whole especially in the first half of the century. It is only in the last decade that the decadal variation in Assam has declined to a rate less than that of India. At the beginning of the 20th century the sex ratio in Assam was decidedly adverse. It has improved significantly in the recent decades. Assam is blessed with fertile soil and a climate conducive to agriculture. The state has the potential to expand its agricultural production manifold. A nascent industrial infrastructure capable of being built upon already exists in Assam. Despite this Assam's economic development is lagging behind that of the rest of the country and the gap is increasing.

Assam's achievement in literacy is not so bright, its position in middle range. The literacy rate of Assam in 2001 census is 63.25 percent; in 1991 census it was 52.89 percent. There is a large gender gap, the literacy rate for men being as much as 71.28 percent and for women it was more than 15 percent lower at 54.61 percent. There is a large urban rural gap as well. Urban literacy is 85.35 percent and rural literacy is 59.74 percent. The schedule cast and schedule tribe literacy rate are 66.78 and 62.52 respectively.

An assessment of health status is possible from key indicators such as IMR, CBR, CDR, and Life Expectancy etc. There are differences in among the districts in IMR rates. The rural urban difference is extremely high in child mortality also. The CBR has declined significantly in Assam, over the last few decades, but it continues to be higher than national average. In Assam, as in the rest to the country, the CBR is much higher in rural areas as compared to that of urban areas. The Total Fertility rate was 3.3 children per women in 1995-97, a substantial decline from 1980-81, when it was as high as 4.1 children. The TFR for all India were 3.4 in the 1995-97 period, there is a substantial rural urban gap in fertility rate as well CDR is another indicator of the health status of a population. The death rate in Assam decline quite significantly in the early nineties, but in mid nineties, the decline came to a virtual standstill and the rate even showed a marginal increase.

India has been ranked 128th out of 177 nations in terms of UNDP's HDI and is classified in the group Middle Human Development with an HDI of 0.619 for the year 2005. The last five worst performing states – Bihar, MadhyaPradesh, Rajasthan, Uttar Pradesh and Orissa – form a large geographical block that demands a more serious and intellectual attention than it has received so far. One should note that it is not only the Bimaru states (denoting the first four) but also Bimaru plus in which Orissa occupies a prominent place. The group of these Bimaru states account for nearly 40 percent of the total population of the country according to 2001 census. Thus, Uttar Pradesh's contribution to population growth was 25.8 percent against its population share of 16.2 percent and Bihar's contribution was 28.4 percent against its share of population of 8.07 per cent. Already States like Kerela and Tamilnadu have got the replacement level of total fertility. The four states are Haryana, Punjab, Himachal Pradesh and Maharastra are going to reach the replacement level of TFR by 2025. The states Uttar Pradesh, Bihar, Madhya Pradesh and Rajasthan show high birth rate and low level of death rate and significantly high level of TFR. Assam, Orissa and West Bengal have experienced moderate birth and death rate relatively moderate TFR. High women's literacy levels is achieved in Kerela. It is the state where the gap in literacy rates between men and women is low. Bihar and U.P. remain the worst states in terms of women's literacy, but some improvements are seen over the decade. The states of Madhya Pradesh, Orissa and

Andhra Pradesh exhibit literacy levels that are below the all-India average. These are also the states with higher gender gaps in literacy. The situation among other disadvantaged groups such as the Scheduled Castes and Scheduled Tribes is even worse. While taking into consideration, poverty estimate (head count ratio) for the year 2001, it was observed that the average poverty estimate was 26.10 for whole of India. Orissa, Bihar and Madhya Pradesh were the three states with maximum amount of poverty. In Jammu and Kashmir, Punjab, Haryana and Himachal Pradesh, it was below 10 per cent with J&K at the top with just 3.48 per cent. The average IMR of India is 71 and there are five Indian states that have IMR at more than this level. They are Orissa (98), Madhya Pradesh (97), Uttar Pradesh (85), Rajasthan (83) and Assam (78). The lowest IMR is in Kerala at 16. The diversity in the states regarding this variable is visible from the fact that, on the one hand, there is state like Kerala and on the other there is Orissa and Madhya Pradesh. The HDI for the country as a whole improved from 0.302 in 1981 to 0.472 in 2001. Kerala remains at the top with an HDI of 0.638 in 2001 while Orissa is almost at the bottom of the list, with an index of 0.404. Bihar has the lowest HDI value with 0.367 for 2001. Indian states, which have done well in terms of HDI in 2001, are Punjab (0.537), Tamil Nadu (0.531) and Maharashtra (0.523). During the last twenty years from 1981 to 2001, the maximum amount of increase in HDI value was in Tamil Nadu, as it ranked at 8th position in 1981 and in 2001 its rank shifted to 3rd position. Moreover, its HDI value shifted from 0.343 in 1981 to 0.531 in 2001. During the last twenty years, Bihar witnessed the slowest growth. There are five states in India, which have more than 90 per cent of their households having access to electricity facility while on the other hand; there is Bihar with just 27.7 per cent of its households with this facility. Five states with more than 90 per cent electricity facility to households are Himachal Pradesh (98.4 per cent), Punjab (96.3 per cent), Jammu and Kashmir (93.2 per cent), Haryana (91.5 per cent) and Kerela (91 per cent). While analyzing percentage of households using piped drinking water in different states of India, it was observed that Tamil Nadu tops the list with 84.6 per cent, while Bihar was at the bottom with just 4.2 per cent of households using piped drinking water. It was surprisingly observed that Kerela, which otherwise is amongst the best performers in almost all variables, lags behind in providing this facility to its population. Only 24.6 percent of households in Kerela were using piped drinking water,

which is below all other states except Bihar (4.2 per cent), Orissa (10.2 per cent) and Uttar Pradesh (10.3 percent). According to National Family Health Survey-3, the percentage of households having toilet facilities in India improved in 2005-06 and was estimated to be 44.5 percent. Kerala tops the list of this variable with covering 96 per cent households with this facility and Assam is on the second place with 76.4 per cent of households. Orissa is the worst performer in the provision of this facility with covering only 19.3 per cent and Bihar at 25.2 per cent.

Assam, Arunachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland and Tripura are the seven states of North East India are located between latitudes 22°N and $29^{\circ}3' \text{N}$ and longitude $89^{\circ}46' \text{E}$ and $97^{\circ}30' \text{E}$. The land area of North Eastern Region (NER) 255,083 sq km and its population 38.5 million (2001). The area is 7.7 percent of land surface of India and contains 3.74 percent of total population of the country. It is a land locked region and physiographically not a homogeneous unit. With the inclusion of Sikkim in North Eastern Council, the region virtually constituted as many as eight states. The whole of North East is poor as compared to India, and Assam seems to be the poorest state, going neck in neck with Manipur in terms of real per capita income. The economic structure of the states of NE is dominated by agriculture. But only 16 percent land area is favorable for cultivation. It varies from 2.5 percent in A.P., 7.2 percent in Manipur, 9.4 percent in Meghalaya, 4 percent in Mizoram, 15 percent in Nagaland, 36 percent in Tripura and 45 percent in Assam. Flood, Draught and bank erosion are the obstacles in front of development in the region. Three important groups of people are the hill tribes, the plain tribes and non-tribal population of the plains. The economy of the NE dominated by forest. From these forests they collect products like timber, fuel, food, fodder, shelter, fiber, orchids and medicinal plants. The NER is the least urbanized region in the country. Assam has the highest number of urban population, Mizoram with 49.50 percent is the most urbanized state in the region, and Assam has 12.72 percent followed by Tripura 17.02 percent, Nagaland 17.74 percent, Meghalaya 19.63 percent, Arunachal Pradesh 20.41 percent and Manipur 23.88 percent.

There is a remarkable change in demographic and settlement structure of NER. The population of NE India was only one million in the year 1831 which grew by four times to 4 million in 1901. The population of NE increased gradually from 1901 to 1941.

When population growth rate of India decreased by 0.31 percent during 1911-21, Assam population growth rate increased 20.48 percent, Manipur 10.92 percent, Meghalaya 7.21 percent, Mizoram 7.90 percent, Nagaland 6.55 percent and Tripura 32.59 percent. The population of Assam has increased 9 times from about 3.3 million in 1901 about 27 million in 2001. During the same time the population of Manipur grew by 8 times, Tripura 16 times, Nagaland 20 times and Mizoram 11 times. India's total population increased by 51.80 percent in the period 1951-71, 54.39 percent in 1971-91 and 21.35 percent in the period 1991-2001, where as NER respective growth rate are 90.86 percent, 62.11 percent and 22.02 percent. At the same time population share of NER in India increased from 2.84 percent in 1951 to 3.75 percent in 2001. The population density of Assam rank first 340 persons per sq km followed by Tripura (304), Nagaland (120), Manipur (107), Mizoram (42), Arunachal Pradesh (13). The sex ratio of NE India 937 where as national average 933. It is found highest in Manipur (978), followed by Meghalaya (975), Tripura (950), Mizoram (938), Assam (932), Nagaland (909) and Arunachal Pradesh (901). Birth rate and death rate are declining in the region. The literacy rate of NE India 65.77 percent as against the national 65.33 percent 2001. Mizoram had the highest literacy rate i.e. 88.49 percent, Tripura 73.66 percent, Manipur 68.87 percent, Nagaland 67.31 percent, Assam 63.25 percent, Meghalaya 63.31 percent, Arunachal Pradesh 54.74 percent. The female literacy rate is highest in Mizoram (95 percent), followed by Nagaland (77 percent), and lowest in Arunachal Pradesh (48 percent). The gender gap in literacy is different in different states of NER but all the states of NER are below all India (28.84 percent) level. According to Human Resource Development, GOI 1994-95, the drop out rate of primary stage was only 39 percent but it increased to 77 percent when they reach class X in Assam. The drop out rate is quite high in NER. The Work Participation Rate in Assam was 36.37 percent, Arunachal Pradesh 47.46 percent, Manipur 41.5 percent, Meghalaya 43.06 percent, Nagaland 44.20 percent, Mizoram 43.96 percent and Tripura 31.36 percent according to 1991 census. The region has 12.98 percent of National Highways of the country. The distribution of railway per 100 sq meters in Assam, Tripura and Nagaland are 3 km, 0.12km and 0.08 km respectively which is quite inadequate and it is not existent in Meghalaya, Arunachal Pradesh, Mizoram and Manipur. The partition of India in 1947 virtually cut off the whole

NE India from the rest of the country which made the region completely isolated from the mainstream economy. Besides the difficulty of transport, lack of marketing facilities, inadequate finance, low level of local entrepreneurship, lack of skilled labour is the greatest hurdle to the industrialization of the region. The region has failed to attract outside entrepreneur so no large-scale industries in private sector exist and industrial sector remain underdeveloped. Consequently the share of industry in NSDP ranged from meager 0.15 percent in Nagaland to 8.96 percent in Meghalaya and 15.33 percent in Assam as against national average of 20.6 percent. Barring Assam with 49.8 percent the share of tertiary sector is distinctly higher than national average of 57.0 percent in all the states, ranging from 60.6 percent in Arunachal Pradesh to a high as 74.0 percent in Mizoram. Though agriculture is the mainstay of the regional economy and provided livelihood to the 85 percent of the population in NER but agriculture productivity in the region is much lower than national average. The factors which contributing to improvement in agriculture production are irrigation, fertilizer, appropriate crop rotation, selective scientific modern mechanization are not fully used. In NE India only 8.1 lakh hectare or 22.50 percent of total agricultural land is under irrigation, which is less than national average 25.55 percent. The total area under HYV of rice which stood at 12.01-lakh hectare during 1996-97 has increased to about 14.50 lakh hectare during 2000-01. The operational holding sizes in Assam, Manipur and Tripura ranged from 0.60 hectare to 1.17 hectare as against national average 1.41 hectare. In these three states, marginal and small operational holding account for 44 percent Assam to 76 percent Tripura of the total holdings as against the national average 36 percent. The yield rate per hectare in the plain area is higher than the national average, yield per population dependent on agriculture not necessary higher because of higher population pressure. As a result available marketable surplus is lower. In hilly areas, large areas under shifting cultivation. The yield rate per hectare and per cultivator is low. In Arunachal Pradesh and Nagaland the operational holding size is ranging from 3.31 hectare to 4.82 hectare but the food grain yield ranged from 1103 kg per hectare to 1550 kg per hectare in 2000-01. It is observed that per capita consumption of electricity is much lower in the states of NER as compared to country's consumption 338.5 kW. Among the states of NER the higher per capita consumption is observed in the state of Meghalaya 134.5 kw and lowest in Tripura

80.4 kw in 1996-97. Regarding the safe drinking water facilities, all the states of NER except Arunachal Pradesh 70.02 percent are less than national average 62.3 percent. There are only 4.32 percent of PHC in the states of NER as compared to India's figure and only in Assam there are 64 percent of PHC among the states of NER. The same pattern is observed in case of SC and CHC.

8.2 List of Indicators used for the study

8.2.1 Indicators for districts of Assam

The data mostly pertaining to the year 2001 on the following developmental indicators

- 1) Child –Women Ratio (-)
- 2) Work –Participation Rate
- 3) Work –Participation Rate for female
- 4) Crude Birth Rate (-)
- 5) Total Fertility Rate (-)
- 6) Infant Mortality Rate for Male (-)
- 7) Infant Mortality Rate for Female (-)
- 8) Child Mortality Rate for Male (-)
- 9) Child Mortality Rate for female (-)
- 10) % of urban population 2001
- 11) % Of Agriculture labors (-)
- 12) % Of Household Industrial Worker
- 13) % of S.C. population (-)
- 14) % of S.T. population (-)
- 15) Sex Ratio
- 16) Population density per sq km (-)
- 17) Population Growth Rate (-)
- 18) Sex Ratio 0-6
- 19) Male literacy Rate (MLR) 2001
- 20) Female literacy Rate (FLR) 2001
- 21) % of Industrial Employee
- 22) % of Urban population 1991

- 23) Male literacy Rate 1991
- 24) Female literacy Rate 1991
- 25) Gross District Domestic Product for Assam for 2003-2004 (P), at current price.
- 26) Per Capita Real Income (Rs) at 1993-94 (constant) prices (1997-98)
- 27) Per Capita NSDP (2000-2001) at 1993-94 constant prices.
- 28) Cropping intensity
- 29)% of Forestland
- 30) Average size of holding
- 31) % Of Village used electricity in agriculture
- 32) % Of Net area irrigated to net area sown
- 33) % Of Net area sown per cultivator
- 34) % Of Area HYV used to net sown area
- 35) % Of Area sown more than once to net sown area
- 36) Fertilizer used 1 kg per hectare net sown area (Ravi)
- 37) Fertilizer used 1 kg per hectare net sown area (Kharif)
- 38) Fertilizer used 1 kg per hectare net sown area (Total)
- 39) Number of Veterinary Dispensary
- 40) Number of AI center
- 41) Number of Agriculture subdivision
- 42) Number of Agriculture Development officer Circle.
- 43) Number of Village Level Extension Worker.
- 44) Rice production in kg per hectare
- 45) Wheat production in kg per hectare
- 46) Road length per lakh population
- 47) Road length per 00 sq km of geographical area
- 48) % of Village electrified
- 49) % Of Habitation provides drinking water
- 50) Number of PHC
- 51) Number of FWPC
- 52) Number of Hospitals per 10,000 populations
- 53) Distribution of units of total SSI sector

54) % of Factories.

Component 1,4,5,6,7,8,9,11,13,14,16 and 17 are thought to correlate negatively to over all development.

8.2.2 Indicators for Major seventeen states

- 1) Decadal growth rate(-)
- 2) Density of population(-)
- 3) Sex Ratio
- 4) Sex Ratio (0-6)
- 5) % SC Population(-)
- 6) % ST Population(-)
- 7) Female Literacy
- 8) Total Literacy
- 9) Male Work Participation Rate
- 10) Female Work Participation Rate
- 11) % of worker to total worker
- 12) % of Rural Poverty(-)
- 13) % of Urban Poverty(-)
- 14) Birth Rate(-)
- 15) Death Rate(-)
- 16) Infant Mortality Rate(-)
- 17) Growth in entrepreneur
- 18) Growth in employee
- 19) Average size of operational holding
- 20) Credit Deposit Ratio
- 21) % experience spousal violence(-)
- 22) % participate household decision
- 23) % of house holds having electrified
- 24) % of house holds having drinking water
- 25) % of house hold having toilet facility

8.2.3 Indicators for North Eastern States

- 1) Per capita NSDP (current price)
- 2) Per capita NSDP (constant price)
- 3) Yield in Food grain kg/hac
- 4) Yield in Cereals grain kg/hac
- 5) Fish production
- 6) Handloom Exhibition
- 7) Credit- Deposite ratio
- 8) Male Work Participation Rate
- 9) Female Work Participation Rate
- 10) Main worker/ Total worker
- 11) % of population under Below Poverty Level(-)
- 12) Birth Rate(-)
- 13) Death Rate(-)
- 14) Infant Mortality Rate(-)
- 15) % of urban population
- 16) Operational holding
- 17) Decadal growth rate(-)
- 18) Population Density(-)
- 19) Sex Ratio
- 20) Sex Ratio (0-6)
- 21) Female literacy
- 22) Total literacy
- 23) % of village electrified

8.3 Ranking of Districts based on Socio-Economic sector

Composite index of development have been worked out for different districts of Assam, seventeen major states and for eight North Eastern states in socio-economic sector. The districts have been ranked on the basis of developmental index. The

composite index of development along with the rank of the districts are presented in Table 8.1.

Table 8.1 Composite indices of development

Sl.No	Districts	Score of PCA	Rank, PCA	CI, Narain et al.	Rank, Narain et al.
[1]	Kokrajhar	-2.3331	14	.8489	14
[2]	Dhubri	-4.0777	19	.9684	23
[3]	Goalpara	-3.5334	18	.9013	18
[4]	Bongaigaon	-2.8354	16	.8576	16
[5]	Borpeta	-0.6248	12	.8344	13
[6]	Kamrup	13.1576	1	.6126	1
[7]	Nalbari	2.4204	7	.7620	8
[8]	Darrang	-0.3419	11	.8341	12
[9]	Marigaon	-4.2473	21	.9217	20
[10]	Nagaon	3.6941	5	.7357	6
[11]	Sonitpur	3.1020	6	.7342	5
[12]	Lakhimpur	-4.1115	20	.8565	15
[13]	Dhemaji	-6.4599	23	.9299	21
[14]	Tinsukia	1.4610	9	.7707	9
[15]	Dibrugarh	6.1392	2	.6761	2
[16]	Sibsagarh	4.5291	3	.7298	4
[17]	Jorhat	4.6386	4	.7058	3
[18]	Golaghat	1.5311	8	.7377	7
[19]	Karbi Anglong	-3.0583	18	.8096	11
[20]	N.C.Hills	-2.9282	17	.9081	19
[21]	Cachar	1.2789	10	.7839	10
[22]	Karimganj	-2.5375	15	.8646	17
[23]	Hailakandi	-4.8629	22	.9366	22

Source : (a) Census of India 2001, Govt of India
 (b) Assam Human Development Report 2003, Govt of Assam
 (c) Statistical Hand Book 2004-05, 2005-06, 2006-07, 2007-08, 2008-09
 (d) Economic Survey 2004-05, 2005-06, 2006-07, 2007-08, 2008-09

From the table 8.1 the district Kamrup is ranked first and district Dhubri is ranked last according to Narain et al., the value of the composite index varied from 0.61 to 0.97. According to PCA method Kamrup is ranked first and district Dhemaji is ranked last.

8.3.1 Relative Share of Area and Population under Different Level of Development

An important aspect of the study is to find out the relative share of area and population affected under various stages of development in the state. The details are given in Table 8.2.

Table 8.2 Area and Population under different levels of development

Level of Development	No. of districts	Area %	Population %
High	[6], [15], [17]	13.48	17.66
Medium	[16], [11], [10], [18], [21], [7], [14], [19]	45.56	39.58
Developing	[22], [4], [8], [5] [3], [1], [12]	23.36	28.82
Significantly low	[20], [9], [13], [23] [2]	17.59	13.94

With regard to the socio-economic development, three districts namely Kamrup^[6], Dibrugarh^[15] and Jorhat^[17] are found to be high developed. These districts cover about 13.48 percent area and 17.66 percent population of the state. Similarly five districts namely N.C. Hills^[20], Morigaon^[9], Dhemaji^[13], Hailakandi^[23] and Dhubri^[2] are observed to be low developed these districts cover about 17.59 percent area and 13.94 percent population of the state. Eight districts namely Sibsagar^[16], Sonitpur^[11], Nagaon^[10], Golaghat^[18], Cachar^[21], Nalbari^[7], Tinsukia^[14] and Karbi Anglong^[19] are classified as medium level developed districts. They cover about 45.56 percent area and 39.58 percent population of the state. The remaining seven districts namely Karimganj^[22], Bongaigaon^[4], Darrang^[8], Borpeta^[5], Goalpara^[3], Kokrajar^[1] and Lakhimpur^[12] are grouped in to developing districts. They cover about 23.36 percent area and 28.82 percent population of the state.

8.3.2 Model Districts and Potential Target for Low Developed District

The list of model districts identified for various low developed districts is given in the Table 8.3. The potential targets of important indicators have been estimated and presented in Table 8.4.

Table 8.3 Model Districts and Potential Target for Low Developed District

Low developed districts	Model districts
N.C.Hills	Karbi Anglong
Morigaon	Nalbari, Sonitpur, Golaghat
Dhemaji	Tinsukia, Golaghat, Karbi Anglong
Hailakandi	Nalbari, Tinsukia, Cachar
Dhubri	Kokrajjar, Borpheta, Darrang

Table 8.4 Estimate of Potential Target and Actual Achievement (given under the bracket)

SL NO	Development indicators	N.C.Hills	Morigaon	Dhemaji	Hailakandi	Dhubri
1	CWR	508.87 (446.06)*	389.06 (553.42)	223.57 (468.11)	223.57 (543.28)	483.87 (629.17)
2	WPR	40.57 (37.54)	41.58 (33.93)	41.58 (44.3)*	40.77 (33.33)	37.14 (28.87)
3	FWPR	31.42 (24.41)	30.90 (16.33)	31.42 (38.20)*	29.91 (16.55)	25.27 (8.04)
4	CBR	29.6 (26.4)*	23.8 (31.8)	23.3 (27.7)	23.0 (30.2)	29.0 (35.2)
5	TFR	3.70 (3.10)*	2.70 (3.90)	2.70 (3.50)	2.70 (3.80)	3.40 (4.30)
6	IMR (Male)	76 (109)	66 (106)	66 (113)	82 (101)	56 (123)
7	IMR (Female)	75 (100)	56 (97)	56 (117)	63 (97)	75 (132)
8	Male Child Mortality Rate	125 (119)*	97 (141)	90 (140)	90 (136)	96 (169)
9	Female Child Mortality Rate	124 (116)*	91 (127)	80 (138)	80 (116)	114 (162)
10	% of Urban Population 2001	11.30 (31.60)*	10.45 (4.89)	19.47 (6.79)	19.47 (8.12)	4.97 (11.75)*
11	% of Agriculture Labor	3.60 (.274)*	3.18 (4.10)	2.28 (1.44)*	2.28 (2.03)*	5.97 (8.86)
12	% of Household Industry worker	3.56 (.49)	6.41 (2.51)	3.56 (1.97)	6.41 (1.66)	7.95 (5.05)
13	% Of SC Population	3.63 (1.79)*	5.23 (12.93)	2.72 (5.33)	2.72 (10.91)	3.44 (3.86)
14	% Of ST population	55.69 (68.28)	9.93 (15.55)	5.85 (47.29)	1.29 (.15)*	7.48 (1.97)*
15	Sex-Ratio	926(884)	926 946)*	930(941)*	945 (935)	944(947)*
16	Density	78(38)*	270 (500)	78(177)	303 (409)	256(585)
17	Growth rate	22.72 (24.72)	13.03 (21.35)	14.27(19.45)	13.03 (20.89)	12.00 (23.63)
18	Sex- Ratio(0-6)	973(951)	983(965)	973(957)	956 (903)	974(984)*
19	MLR 2001	48.65	62.07	62.07	59.85 (50.65)	48.16

		(59.40)*	(52.36)	(56.11)		(56.61)*
20	FLR 2001	68.11 (76.59)*	78.26 (66.13)	78.01 (75.15)	76.51 (68.47)	65.95 (42.64)
21	% of Urban Population 2001	10.63 (22.87)*	7.3 (5.16)	55.10 (1.86)	19.08 (7.6)	7.02 (12.16)*
22	MLR 1991	45.34 (54.53)*	40.82 (45.48)*	40.82 (52.73)*	56.05 (52.11)	42.04(36. 37)
23	FLR 1991	28.81 (37.83)*	14.52 (31.02)*	17.18 (32.95)*	40.78 (33.18)	26.64 (42.64)*
24	Industrial employee	3.8 (.61)	7.3(1.06)	19.08 (.11)	7.18 (.86)	2.1(1.99)
25	GDDP of Assam 2003-04 current prices	9588 (5234)	8021 (11152)*	9588 (3511)	5897 (5507)	7616 (10211)*
26	Per Capita Real Income at 1993-94 constant prices (1997-98)	15789 (31074)*	16888 (11886)	25153 (11906)	25153 (11004)	16517 (4360)
27	Per Capita NSDP(2000- 01)at 1993-94 constant prices	5637 (10120)*	5915 (4221)	5915 (3721)	6126 (4187)	8089 (4144)
28	Cropping Intensity	142 (136)	151 (165)*	142 (160)*	139 (128)	182 (163)
29	% of forest land	.41 (.38)	.15 (.02)	.15 (.11)	.11 (.12)*	.17 (.02)
30	Average size of holding	1.35 (1.08)	1.09 (.63)	1.90 (1.14)	1.76 (1.30)	1.22 (1.48)
31	% of Village used Electricity in Agriculture	1.90 (.17)	6.52 (7.09)*	12.6 (0)	6.52 (4.28)	3.90 (.87)
32	% of Net area irrigated per net sown area	12.6 (13.3)*	7.19 (.46)	12.6 (.013)	1.77 (.033)	8.37 (.73)
33	% of Net area sown per cultivator	65.19 (82.12)*	103.62 (66.05)	68.52 (34.29)	107.45 (72.80)	86.23 (81.09)
34	% of area HYV used per net sown area	67.17 (29.48)	66.20 (41.88)	67.17 (30.40)	62.22 (56.93)	54.17 (58.49)*
35	% of area sown more than once per net sown area	57.25 (37.37)	36.68 (14.94)	57.25 (68.67)*	42.90 (47.68)*	63.02 (33.49)
36	Fertilizer used in kg per hectare net sown area (Ravi)	3.15 (.78)	27.45 (24.01)	27.45 (.94)	24.95 (16.73)	40.15 (42.61)*
37	Fertilizer used in kg per hectare net sown area	2.86 (.82)	44.89 (33.73)	33.30 (3.20)	44.89 (10.42)	61.59 (16.90)

	(Kharif)					
38	Fertilizer used in kg per hectare net sown area (Total)	6.01 (1.60)	65.60 (57.74)	45.36 (4.14)	65.60 (27.15)	86.67 (59.51)
39	Number of veterinery Hospital	9(6)	19(9)	11(13)	19(5)	15(12)
40	Number of AI Centre	10(1)	79(41)	29(23)	47(18)	50(10)
41	Number of Agriculture subdivision	2(1)	5(1)	3(2)	5(1)	5(3)
42	Number of Agriculture Development Officer Circle	14(5)	24(12)	14(11)	19(7)	26(21)
43	Number of Village Level Extension Worker	102 (36)	179 (88)	119 (57)	179 (63)	186 (186)
44	Rice production in kg per hectare	1444 (1733)*	2036 (1441)	2036 (1074)	1627 (2121)	1231 (1565)*
45	Wheat production in kg per hectare	1460 (60)	1415 (797)	1460 (985)	1415 (1066)	1168 (847)
46	Road length per lakh population	515 (798)*	170 (132)	515(215)	124 (23)	162 (57)
47	Road length per 00 sq km of geographical area	40 (31)	63 (60)	46 (38)	63 (61)	80 (33)
48	% Of village electrified	16.52 (20.50)*	81.83 (54.22)	65.49 (23.97)	81.83 (74.01)	82.34 (62.01)
49	% Of habitation provide drinking water	5.91 (1.09)	6.13 (2.25)	5.91 (2.87)	5.92 (1.83)	6.12 (6.13)
50	Number of PHC	35 (12)	41 (13)	35 (9)	42 (8)	41 (23)
51	Number of FWPC	8 (3)	7 (30)*	8 (1)	8 (4)	9 (7)
52	No of hospitals per 10,000 population	6 (14)*	10 (2)	6(4)	7 (1)	4 (3)
53	Distribution of units of total SSI sector	2.31 (.51)	14.64 (1.17)	7.84 (.08)	7.84 (.54)	2.64 (1.44)
54	% of factories	.76 (.67)	8.66 (.76)	13.99 (.091)	13.99 (.73)	3.14 (1.52)

Indicates actual values are already better than the potential target.

Urbanization is the physical growth of urban areas as a result of global change. Urbanization is closely linked to modernization, industrialization and sociological process of rationalization. In order to examine the role of urbanization on Literacy rate y_1 and Infant Mortality Rate y_2 , functional relationship has been established based on census report 2001.

The computed functional forms are

- 1) Regression of Total Literacy Rate y_1 , on Percentage urban population x .

$$y_1 = 58.67 + 0.37x; \quad R^2 = 0.9893$$

(0.0989)

- 2) Regression of Infant Mortality Rate y_2 , on Percentage urban population x .

$$y_2 = 92.91 - 0.5337x; \quad R^2 = 0.9394$$

(0.3320)

(Figures in brackets indicate standard error of the regression coefficient)

The estimated functional relationship reveals that percentage of urban population is significantly influencing the literacy and IMR of the districts. The coefficient of multiple determination (R^2) showed that about 99 and 94 percent of the variability of literacy rate and IMR is explained by the percentage of urban population respectively. 1 percent increase in urban population 0.37 percent increase in literacy and 0.53 percent decrease in IMR. So urbanization can impact on socio-economic development of a society by enhancing the affect of indicators which are responsible for development of a society and controlling the indicators which create obstacle in the developmental path.

Table 8.5 Raking of major states by the method of Narain et.al and PCA

Sl no	State	CI, Narain et al.	Rank	Score, PCA	Rank
1	Andhra Pradesh	.5918	4	0.5421	8
2	Assam	.7282	10	-0.2509	12
3	Bihar	1.0035	17	-3.8637	15
4	Gujrat	.6444	6	-0.1873	11
5	Haryana	.6994	9	.8401	6
6	Himachal Pradesh	.6921	8	.5931	7
7	Jammu & Kasmir	.7686	13	.4811	9
8	Karnatak	.6239	5	.3246	10
9	Kerela	.5547	2	7.0026	1
10	Madhya Pradesh	-.8596	14	-4.6917	17
11	Maharastra	.5601	3	1.5670	4
12	Orissa	.8788	15	-3.9029	16
13	Punjab	.6678	7	2.5865	3
14	Rajasthan	.7641	12	-3.2347	14
15	Tamilnadu	.4688	1	3.8468	2
16	Uttarpradesh	.9260	16	-2.6773	13
17	West Bengal	.7361	11	1.0246	5

Source: a) Statistical Hand book Assam 2005-06, 2006-07, 2007-08, 2008-09
 b) Census Report of India, Government of India, 2001
 c) NFHS-3 State Volumes (Mumbai: IIPS, 2006)

The Table 8.5 reveals that, according to the method of Narain et al. Tamil Nadu, Kerela and Maharashtra occupy first three ranks as developed districts and Orissa, Uttar Pradesh and Bihar are in the last three positions respectively. According to Principal Component Analysis Kerela, Tamil Nadu and Punjab are in the first three positions Bihar, Orissa and Madhya Pradesh occupy the last three ranks.

Table 8.6 Ranking of North Eastern states by the method of Narain et al. and PCA

Sl no	States	CI, Narain et al.	Rank	Score, PCA	Rank
1	Arunachal Pradesh	.8691	7	-0.7342	5
2	Assam	.9746	8	-3.6250	8
3	Manipur	.8281	4	2.1139	2
4	Meghalaya	.8693	6	-1.2475	6
5	Mizoram	.6712	1	2.61571	1
6	Nagaland	.7934	2	2.0992	3
7	Tripura	.8339	5	0.3306	4
8	Sikkim	.8025	3	-1.5527	7

Source : a) NEDFI data bank 2005-06, 2006-07, 2007-08

b) Statistical Hand book Assam 2005-06, 2006-07, 2007-08, 2008-09

It is observed from the Table 8.6 among NE states Mizoram and Nagaland occupy first two ranks according to the method of Narain et al. and Arunachal Pradesh and Assam are in last positions respectively in development. According Principal Component Analysis the states Mizoram and Manipur are ranked as first and second and Sikkim and Assam are ranked as seventh and eight for twenty-three key indicators of development.

8.4 Results and Discussion

From the study it reveals that according to method Narain et al. one hill district viz. N.C Hills, one district from Barak valley Hailakandi and three districts from Brahmaputra valley, Morigaon, Dhemaji and Dhubri are low developed districts in socio-economic sector. To make them developed, model districts are found for low developed districts and best value of the model districts are taken as potential target for each indicator of low developed district have been observed in Table 8.4. It has been found from the table that the actual achievement of at least two indicators of each district is better than potential target. Other indicators must be improved to bring the low developed districts into develop status. Same result is obtained from PCA but little variation. From the fitted regression lines it is found that when percentage of urban population raises literacy rate will be increased and IMR will be decreased accordingly. The position of Assam in Socio-Economic sector among seventeen major Indian states is tenth according to Narain et al. method and according to PCA its rank is twelve. Among eight NE states the position of Assam in socio-economic sector is at the bottom.

Chapter 9

Overall results, discussion and Conclusion

Here the districts are ranked on the basis of their corresponding composite index for overall nine sectors namely Banking, Fertility and Literacy, Agriculture, Health, Socio-economic, Education, Status of Women, BIS and industry sector.

9.1 Results and discussion

According to the method used by Narain et al., Principal Component Analysis, Deprivation method, and Equal Weighted method the districts are ranked in the following Table 9.1.

Table 9.1 Ranking districts overall nine sectors

Sl No	Districts	Ranking of the Districts			
		Narain et al.	PCA	Deprivation	Equal weighted
[1]	Kokrajar	18	18	17	18
[2]	Dhubri	19	21	20	22
[3]	Goalpara	15	15	15	15
[4]	Bongaigaon	16	16	16	16
[5]	Borpeta	11	13	13	14
[6]	Kamrup	1	1	1	1
[7]	Nalbari	7	9	10	9
[8]	Darrang	12	12	12	12
[9]	Marigaon	17	17	18	17
[10]	Nagaon	5	6	6	7
[11]	Sonitpur	6	5	5	5
[12]	Lakhimpur	13	11	11	11
[13]	Dhemaji	23	23	22	23
[14]	Tinsukia	10	10	9	10
[15]	Dibrugarh	2	2	2	2
[16]	Sibsagarh	4	3	3	3
[17]	Jorhat	3	4	4	4
[18]	Golaghat	8	7	7	8
[19]	Karbi Anglong	20	19	19	19
[20]	N.C.Hills	21	22	23	20
[21]	Cachar	9	8	8	5
[22]	Karimganj	14	14	14	13
[23]	Hailakandi	22	20	21	21

From the method ~~is~~ used by Narain et al. Kamrup, Dibrugarh, Jorhat, Sibsagar and Nagaon are highly developed districts, Sonitpur, Nalbari, Golaghat, Cachar, Tinsukia and Borpheta are medium developed districts, Darrang, Lakhimpur, Karimganj, Goalpara, Bongaigaon, Marigaon and Kokrajhar are developing districts and Dhubri, Karbi Anglong, N.C.Hills, Hailakandi and Dhemaji are found to be low developed districts for overall nine sectors. According to Principal Component Analysis Kamrup, Dibrugarh, Sibsagar, and Jorhat are found to occupy the first four places and Karbi Anglong, Hailakandi, Dhubri, N.C.Hills and Dhemaji occupy the latter positions respectively. According to Deprivation method the district Kamrup is highly developed and Dibrugarh Sibsagar Jorhat, Golaghat, Cachar, Nagaon and Sonitpur are moderately developed districts and all others are backward districts. According to Equal Weightage method Kamrup, Dibrugarh, Sibsagar and Jorhat occupy the first four places of developed districts and Dhemaji, Dhubri and Hailakandi occupy the latter positions.

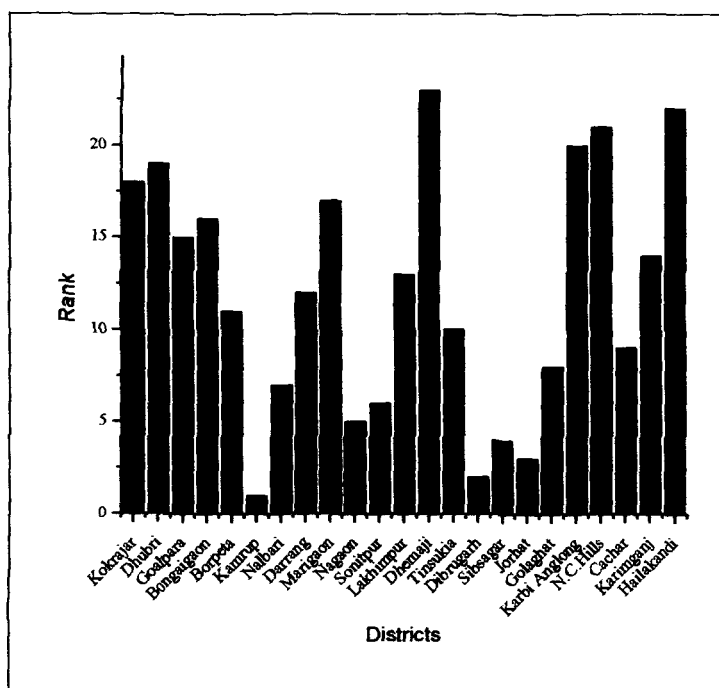


Fig 9.1: Ranks of districts on the basis of overall composite index.

Table 9.2 Correlation table

Bank	Fertility literacy	Agriculture	Health	Socio-Economic	Education	Women	BIS	Industry
1	.5789 *	.4216	.8055**	.8055**	.6117**	.7889**	.7632**	.9090**
	1	-.0221	.5825**	.8283**	.7834 **	.8041**	.5904**	.4974*
		1	.3559	-.1915	.3009	.0931	.5061*	.2731
			1	.6897**	.6971**	.7041**	.7979**	.8088**
				1	.7311**	.7812 **	.4913*	.6644**
					1	.8526**	.7285**	.7512**
						1	.6725**	.8162**
							1	.7141**
								1

* Significance at 0.05 level

** Significance at 0.01 level

Here it is reflected from the Table 9.2 that there is no significant correlation between agriculture sector with any other sector except BIS. But Banking, Industry, Education, Health, BIS, Socio-Economic, Fertility and Literacy and Status of Women sectors are correlated among themselves. To identify the sectors for variation of overall economic development across the districts a regression equation by taking composite index of overall sectors in 23 Districts of Assam as dependent variable and composite index Fertility and Literacy, Agriculture, Health, Socio-Economic, Education, Status of Women, BIS and Industry sector as explanatory variable is obtained below. The computed t values are given in brackets.

$$Y = -.9522 + .0987X_1 + .2329X_2 + .3465X_3 + .1350X_4 + .2276X_5 + .2828X_6 + .2625X_7 + .4415X_8$$

(12.6731) (2.0809) (2.9671) (6.0019) (1.8788) (4.8574) (3.2548) (4.6702) (4.4783)

$$t_{0.05} = 1.761 \text{ for 14 d.f.}$$

$$t_{0.01} = 2.624 \text{ for 14 d.f.}$$

- Y= Overall development Composite Index (based on 324 indicators)
- X₁= Composite Index of Fertility and Literacy (based on 14 indicators)
- X₂= Composite Index of Agriculture (based on 83 indicators)
- X₃= Composite Index of Health (based on 35 indicators)
- X₄= Composite Index of Socio-Economic (based on 54 indicators)
- X₅= Composite Index of Education (based on 19 indicators)
- X₆= Composite Index of Status of Women (based on 29 indicators)
- X₇= Composite Index of Basic Infrastructure (based on 40 indicators)
- X₈= Composite Index of Industry (based on 52 indicators)

The sectors Agriculture, Health, Education, BIS, Industry and Status of Women are exercising highly significant influence on overall development. But Fertility and Literacy and Socio-Economic sector are significant at 5 percent level only. R^2 value is computed to be .9969 indicating that about 99.7 percent of interdistrict variations in development are explained by the regression model. So to keep pace with the developmental path the above mentioned sectors must be improved.

It is also observed that the variation within a particular sector among different districts is different from other sectors. The highest variation (CV=32.54%) is observed in Fertility and Literacy sector among the districts and lowest variation (CV=7.78%) is seen in Agriculture sector. The Variation among the sectors within a district is range from high developed district Kamrup (CV=34.52%) to low developed district Dhemaji (CV=8.13%). It is observed in the study that the districts which are coming as high developed, their coefficient of variation among the sectors is larger than the districts which are come out as low developed. The coefficient of variation among different sectors of developed districts Kamrup, Dibrugarh, Sibsagar and Jorhat are 34.52%, 32.63%, 27.50% and 26.73% respectively. For low developed districts Dhemaji, Dhubri, Hailakandi and N.C.Hills the coefficient of variation among different sectors are 8.13%, 6.78%, 8.22% and 14.28% respectively. It is clear that developed districts are not equally developed in all the sectors. To test if there is correlation between rankings obtained by four methods, Spearman rank correlation coefficient is used. Here the ranking of the banking sector of districts of Assam is considered.

Table 9.3 Spearman rank Correlation Coefficient

Pair of Methods	Rank Correlation Coefficient
Narain et.al.& Aggregate method	0.948**
Narain et al& Deprivation method	0.980**
Narain et al& Principal component Analysis	0.991**
Aggregate method& Deprivation method	0.895**
Aggregate method& Principal component Analysis	0.912**
Deprivation method & Principal component Analysis	0.993**

* Significance at 0.05 level

** Significance at 0.01 level

From the Table 9.3 it is seen that Correlation Coefficient between the methods are highly significant.

Disparities can be eliminated if the policy maker gives special emphasis on the fundamental weakness in the crucial sector of region's economy. The first and foremost requirement is a firm political commitment not enormous financial wealth. It is really required dynamic foresighted leadership both at the local and state level. They should try to use the wide ranging resources of the state, to overall benefit for Assam and not only for the privileged handful of unscrupulous people. For economic development in the state the exploration of the natural resources in general and minerals in particular must receive top priority. There are just a few promising sign in other states, for example in Bihar, the state government has been much better than its predecessor. But how much improvement it can bring to an abjectly poor state of 90 million people where only a income is not a decisive factor. People say that all mines went to Jarkhand but the minds are still with Bihar and the Government have appointed more than two lakhs teachers in Govt. schools. The Govt. had provided 27 lakh bicycles in past five years to students to ensure that none of the miss out on basic education. They take all steps to decline MMR in the state. Bihar's economic growth rate is 11 percent, Buddhist tourists are the one key factor of it, and more than 4 lakhs foreign tourists have visited various Buddhist sites last year. For Assam also tourism sector could play an important role in economic growth of the state. Regional Director, Union ministry of tourism, Deepa Laskar, said NER registered growth of 6.9 percent of foreign tourists during 2010 over 2009 where as all India growth is just more than one percent. Similarly, it registered a growth of 8.09 percent of domestic tourist visits to the region during 2010 over 2009 where as all India growth is about 7 percent. The number of foreign tourists who visited Assam 14,942 in 2009 and 15,157 in 2010. While Manipur got 337 foreign tourists in 2009 and 389 in 2010, Mizoram played host to 513 foreign tourists in 2009 and 731 in 2010. In the domestic tourist front, Assam received 38,50,521 in 2009, which increase to 40,50,924 in 2010. Similarly Meghalaya got 5,91,398 tourists in 2009 and 6,52,756 in 2010. Several of world's poor nations have been able to raise female literacy with limited resources but strong political commitment. China, Sri Lanka, Zimbabwe raised their adult women literacy rate to 70

percent or more. To eliminate rural urban disparities it is essential to generate awareness among rural masses on various aspects of education, health and hygiene, mother and childcare etc. motivate rural people for achieving economic self-sufficiency using traditional skill and local resources. Empower rural women so that they can take part in decision-making process. Rural people should be trained on various development issues. Although the Government has made much more effort to reduce the regional disparities the positive result is not found. It is recognized that lack of proper planning to development. It is need to study the problems, which create hindrance in the path of development in micro level. -

Misuse and wastage of resources and plan money have also retarded the growth of the economy. The LOC scandal of Veterinary, N.C. Hills scandal is few examples of how the plan money is being put to misuse. Widespread corruption plaguing the entire administration from the top to the bottom, so the state cannot achieve required result. Insurgency is the major problem inflicting the region. It is a stumbling block in course of development. The sectionist movement either for sovereignty or for separate homeland, began to lock horn leading to a vertical division among various ethnic group.

Through public policies interstate regional disparities have been reduced first in 1956. Kerela was formed at the time of state reorganization then there were substantial disparities in the social development of Malabar region vis-à-vis the Travancore- Cochin region. Over the last four decades there have been remarkable improvement social indicators of Malabar to catch up with the rest of the Kerela as a result of appropriate public policies. The development of drought prone districts of Haryana through irrigation is another remarkable example in reduction in economic disparities across the region within a state. Tamilnadu could be considered as one state, which is most successful in reducing regional disparities in economic and social development even when there was substantial variation in the natural endowments in different part of the state. This was achieved by a combination of public policies and private initiatives. In other states, especially in Maharastra, Gujrat and Rajasthan there are a number of successful cases of NGOs which succeeded in transforming pockets of destitution in to areas enjoying very high level of socio-economic development.

Without any involvement of local people the various programmes are planned and implemented by bureaucrats. More often discontent and agitation on the basis of perceived neglect of the backward region by the rulers at the state level and at the center are led by the local leaders who demand some form of autonomy to determine their own destiny. Even those who demand separate state for their region are often willing to settle for autonomous regions within the existing state with considerable financial and administrative power. The problem, however, is that the state level rulers are generally unwilling to part with their own power of patronage. There have been times when central policies of indifference had created popular resentment and fostered regional sentiments in North Eastern states. A turning point in the development strategy came in 1973 with the establishment of North Eastern Council Having the following objectives

- 1) To make all around effort for bring about socio-economic development in the entire North Eastern region through coordinating regional planning.
- 2) Remove regional disparities and inequalities through balanced regional development.
- 3) To increase cooperation, coordination and integration among the North Eastern states.

Since 1996-97 consecutive three P.M. – Deve Gowda (June 1996 to April 1997) A.B. Bajpae (1998-2004) Monmohan Singh (since 2004) took some bold decisions to bring about structural change in economy in the North Eastern states. Except a few all the central ministers are requires to expend 10 percent of their respective budget allocation for this region. The North Eastern Development Financial Corporation (NEDFI) launched in 1997. In 2001 Development of North Eastern Region (DONER) was established for formulating and implementing and co-ordinating the programmes of development for this region. It is a sad story that though the functioning of the council for more than three decades the development in N.E. India remain by and large unaddressed. The Shukla Commission's recommendation relating to infrastructure development in the region can not give importance it deserves.

MR. Samir Gosh the general secretary of all India Reserve bank employees association had told to the press meet in Guwahati (7th May, 2011, Dainik Asom) that the RBI and other schedule commercial banks had been cheating the North Eastern Region.

As because the corporate houses and other businessmen collected the money from the bank of these region and invest those money in other states. As per rule 73 percent of the deposited money in banks of a particular state must be spent in the respective state. But in North Eastern States it is not happened. He said it is one of the reasons of backwardness of the region. According to him the C.M. and M.L.A.s are responsible for that. They should take the matter seriously. He also told that other developed states Tamilnadu, Maharashtra and Andhra Pradesh for example spend their bank deposit 90 percent to 95 percent in their own states. Moreover except Assam not a single branch of RBI is in the other North Eastern States. But when the new states Jarkhand, Chattishgarh and Uttaranchal came in to being new branch of RBI were opened immediately. The existing rule of banking sector of India that one bank must be situated among fourteen thousands people but the rule is not followed in this region. People will not be benefited if they could not get access bank service within 5-10 km.

Social goal and development strategies will have to be examined fully before going for a reorganization of states. It is seen that most of the state demand movement in NER started with a demand for socio-economic upliftment but long years of indifference to their grievances led them to demand for a separate state.

According to P.T.I., on Monday, 20 December 2010 the former president, scientist A.P.J. Abdul Kalam asked the other states to emulate the path of Gujrat whose growth rate of agriculture over 9 percent per annum, more than three times the national average. He said the Center for Management in Agriculture experts attributed Gujrat success story to rural electrification reforms, as exemplified by the establishment of a dedicated grid for agricultural applications, which has also helped reducing losses due to pilferage of power. In addition, the state has embarked on an integrated water management scheme for irrigation purposes, which involves the creation of more than 2.4 lakh farm ponds and ensuring their sustainability through desilting and recharging. Furthermore the Gujarat government has started an Annual Krishi Rath Yatra, which aims at educating farmers on seeds, irrigation, crop patterns and technology. In 2010, the month long yatra traveled through 26 districts of the state. "Of course, at all stages with an increase in agricultural produce, stability of the price was been managed by opening export of agricultural produce." Kalam said.

On 27th February 2011 Assam Governor released Unicef data on adolescents. The facts which had been highlighted there were

- i) More than 35 percent of girls in Assam marry before they are 18.
- ii) 25 percent adolescents in the age group of 13-14 years and about 33 percent in the age group of 15-28 years have been subject to physical abuse.
- iii) Only 19.6 percent of adolescents (15-19 years) have comprehensive knowledge about transmission and prevention of HIV/AIDS. Adolescents in urban areas are more informed (34.9 percent) than in rural areas (17.4 percent).
- iv) Significantly higher proportion of girls (67.8 percent) is anemic as compared to boys.
- v) An estimated 6.5 million adolescents (10-19 years) reside in the state, comprising 21.3 percent of its population. While 3.3 million are boys 3.2 millions are girls. So state government should focused on human development, opened up local economies and improved social services faster in the state.

Some positive results have been seen in the provisional census report of 2011. The population growth rate decreased from 18.82 percent (1991-2001) to 16.93 percent in the decade (2001-11). With regard to sex ratio Assam surpass average sex ratio of India. India's average gender ratio increased to 940 from the past figure 933. As of 2011, Assam's sex ratio stands out at 954, which were 932 in 2001 census. Decadal growth rate of female population has been recorded as 18.14 percent against male percentage 15.81. Total literacy rate 73.18 percent where as it was 63.25 percent in 2001. Male literacy rate is 78.81 percent and female literacy rate 67.27 percent. The gap between Male literacy rate and female literacy rate decreases, it becomes 11.54. But it is observed that the literacy rate of Assam lower than all India (74.04 percent) level.

According to Economic Survey, Assam, in the year 2007-08 District Development Plan has been implemented first time in Assam. Through the scheme Rs. 100 crores are allotted and 96.50 crores was spent in construction of various infrastructure development scheme. In 11 districts of Assam viz. Kokrajar, Bongaigaon, Goalpara, Lakhimpur, Dhemaji, Cachar, Hailakandi, Morigaon, Borpeta, Karbi Anglong and N.C.Hills are selected by Government of India for implementation of Backward

Region Grant Fund. Social Welfare minister of Assam (The Telegraph 9 July 2011) announced several welfare schemes for women and children. The India's Planning commission deputy chairman Montek Singh Ahluwalia said, after the regional- level consultation meeting of the states of the region on the approach paper to the twelfth five year plan (2012-2017), that "the eleventh five year plan had laid special emphasis on development of infrastructure and connectivity in the North East . What started in the eleventh plan will be continued at the twelfth plan for future development of infrastructure and connectivity of the region." In a presentation the Planning commission said given the limited connectivity of the region with other parts of the country (through Siliguri corridor) access through Bangladesh needs to be explored. Ahluwalia said since the aim of the look east policy with greater integration of India with countries lying in the East, the Northeast, because of its geographical proximity with the South East Asian nations, should benefit from it. He said apart from infrastructure and connectivity the twelfth plan also focuses on agriculture, education and health. Assam chief Minister Tarun Gogoi asked the plan panel to lay special emphasis on removing regional disparities, improving connectivity and education in the state. He stressed on the proper utilization of water resources. One of the important factors which accelerate the pace of industrial development is electricity. The biggest hurdle in the way of industrialization is stagnation in power generation in Assam. The energy requirement in the state has worked out at 5280.000 million units. But the availability of energy during the periods was 4015.000 million units.

9.2 Conclusion

The following conclusions can be drawn from the study

1. The low developed districts Hailakandi and N.C. Hills shows bright prospect in production of rice, Dhubri is high developed in agriculture sector, Dhemaji is found to be high developed in sericulture industry, Karbi Anglong has come out as high developed in production of pulse, cereal crop and oil seeds. If emphasis is given on these particular sectors then development would be taken place for these districts.

2. The variation of different sectors among the districts are not same. The highest variation is observed in Fertility and Literacy sector and lowest variation is observed in Agriculture sector.
3. The variation among the sectors in a district is larger for high developed districts than for low developed districts.
4. Except Agriculture sector all other sectors have significant correlation with other sectors. Agriculture sector has significant correlation with Basic infrastructure Service sector only.
5. From the computed regression equation it is observed that all the sectors have significant effect on overall economic development but Agriculture, Health, Education, BIS, Industry and Status of Women are exercising highly significant influence on it.
6. Computing Spearman rank Correlation coefficient among the ranks are obtained from the four methods i.e. the method is used by Narain et al., Principal Component Analysis, Deprivation method and Equal Weighted Index method it is found that there are highly significant correlation among them.

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Appendix A: A BRIEF PROFILE OF ASSAM

Assam, located in the tropical latitudes (24.3° N and 28° N) and eastern longitudes (89.5° E and 96.1° E), is the most populous state in N.E. India. It is surrounded on three sides by hills and mountains bordering seven Indian States and two foreign countries. The state has an area of 78,438 sq km, i.e., about 2.4 percent of the country's total geographical area. The broad physiographic division of Assam can be delineated as (a) the Brahmaputra Valley (b) the Barak Valley (c) the Karbi Plateau (d) the Barail and Southern Hills. The Brahmaputra Valley is the major physiographic unit of Assam. It is a narrow valley with an approximate east-west extension of about 720 km and average width of 80 km. The Barak Valley also forms one of the major important physiographic units of Assam. The river is moving west ward for a distance of 225 km in Assam through Cachar district and along the northern border of Hailakandi and Karimganj districts. For administrative purpose there are at present 27 districts in Assam including Kamrup (Metro) district and four districts under the Bodoland territorial council areas viz. Kokrajar, Baska, Chirang and Udalguri. The state of Assam lies in the regime of monsoon climate of the subtropical belt. It enjoys heavy summer rainfall, winter draught, high humidity and relatively low temperature during a year. Assam normally experiences four climate seasons viz. (i) Pre Monsoon (ii) Monsoon (iii) Retreating Monsoon (iv) Dry winter. There are different varieties of flora and fauna in the forests of the state. Assam is very rich in biodiversity e.g. temperate region possesses 10-15 varieties of species in a hectare of land, but some area of tropical and subtropical land possesses about 200 varieties of species. In spite of having rich natural and agricultural resource potential, the state of Assam still occupies a low position in respect of urban development. The process of industrialization in the state has been altogether very slow. The economy of Assam predominantly agrarian, dependence of rural labour force on agriculture and allied activities was nearly 53 percent. In general, the soils of Assam are rich in contents of Nitrogen and organic matter. The alluvial soils of Brahmaputra and Barak valley are highly fertile for raising cereals, oilseeds, pulses and plantation crops. These soils are responsive to manuring and irrigation. Acidic alluvial soils of upper Brahmaputra valley

with a good proportion of Phosphoric content are most suitable for tea plantation. The sectoral contribution of GSDP reveals that the contribution of agriculture sector over a period of time remain depressing than that of the non agricultural sector. It is due to steady growth in the tertiary sector. The sectoral composition of the broad groups of the Net State Domestic Product at current prices in 2007-08 (Q) reveals that the share of Primary, Secondary Tertiary sector was 35.65 percent, 16.92 percent and 47.42 percent respectively. At current prices per capita state income is worked out at Rs.21464 during 2007-08 as against Rs. 19857 in 2006-07.

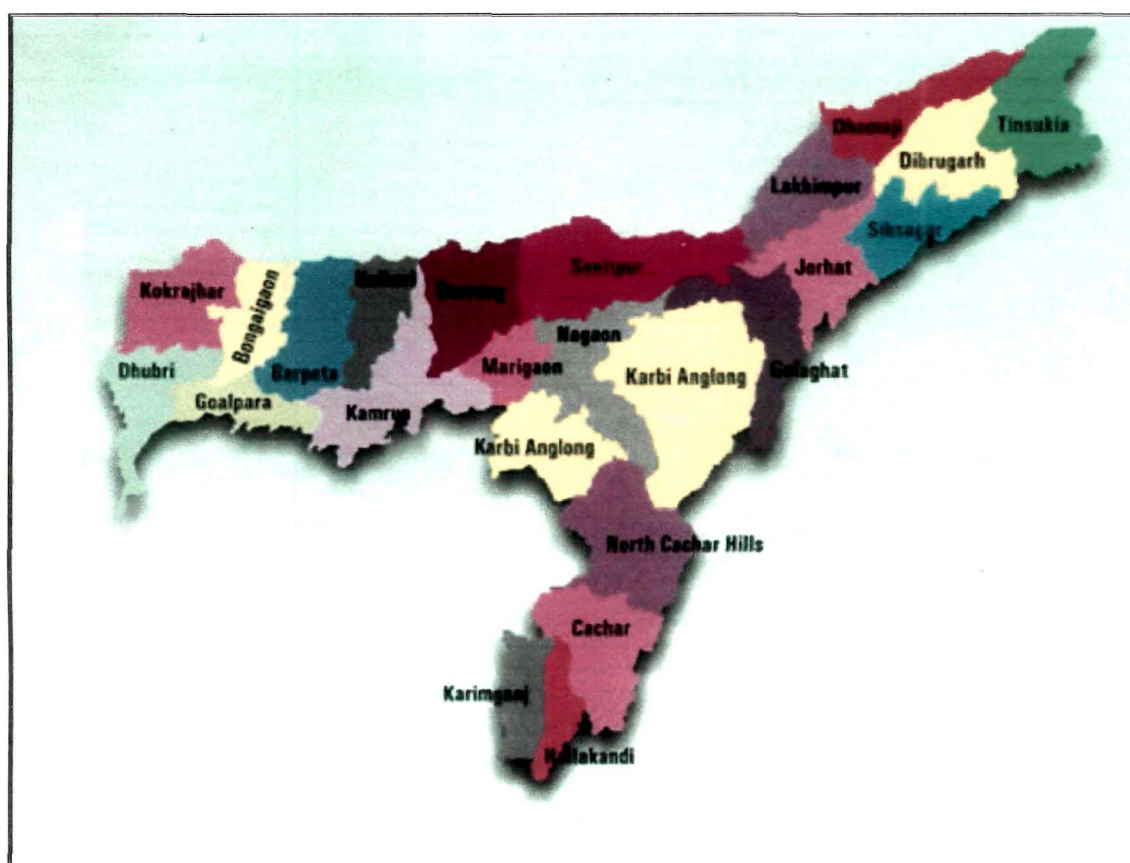


Fig A.1: Map of Assam

Historical Evolution

It is said, the word 'Assam' derived from 'Asom', which means 'not uniform' or 'unparalleled'. It is also known that the word 'Assam' came from the word 'Ahom'. The Ahom kingdom who ruled Assam for long 600 years till the British had come through Yandaboo treaty in 1826. In the epics and the puranas Assam is known as Pragjyotish and by the name Kamrupa in some later date. It is found in purans, tantras and some Sanskrit literatures and inscriptions that Assam was a much bigger region than the present day Assam. At first the name Kamrupa was mentioned in the Allahabad stone pillar inscription (375 AD). Assam had never been a part of the great Indian empire like Asoka's, Gupta's and Mughal Empire of Aurangzeb but the people of the state shared the same or similar religion with the people of the rest of India and culturally belongs to India since the days of the Satapatha Brahmana.

In seventh century Varman dynasty had ruled in Assam. In the time of King Bhaskaravarman the name and fame of Kamrupa had increased. Bhaskaravarman was a close friend and ally of Emperor Harshavardhana who ruled the whole of eastern India. Hiuen Tsang, the famous Chinese traveller had given a broad description about political and socio-economic condition of the people of Kamrup. After The Varmans the Salastambha dynasty ruled Assam till the end of the 10th century AD. Sri Harsa was the famous king of this dynasty who even assumed the title of Maharajadhiraja Parameswara Paramabhattacharaka. Another most powerful king of this dynasty, however, was Vanamala Varmadeva. Pala dynasty came after it was set up by Brahmapala, which flourished till the beginning of the 12th century. Prithu was the famous king of Pala dynasty who had successfully resisted the first Muslim invasion of Kamarupa, led by Mohammed Ibn Bakhtiyar. But the second Muslim onslaught was successful and Prithu was overthrown in 1228. In the same time, a Tai-Mongoloid group migrated to Assam from China. The first Ahom king in Assam was Siu-ka-pha. At that time the Kacharis who dominated eastern Assam They tried to resist Ahom to enter Assam. But the Ahom slowly controlled them and expanded their power in the Brahmaputra valley. In the 16th century, the Koch

kingdom attained great heights in western Assam. Naranarayan was the greatest among the Koch kings reigned from 1533-1587 AD. His brother, General Chilarai, was a great warrior. They not only got victory over Kacharis, Khasis, Garos, Jayantias, Syhlet, Manipur, Tripura etc. but also in 1563 AD they entered Gargaon, capital city of the Ahoms, after a military victory. But a treaty was took place with the Ahoms and returned to Coochbehar. After Naranarayan and Chilarai, the Koch territory divided in to parts and later kings became weak. So slowly they came under the control of the Mughals. The Mughals made repeated attempts to conquer Assam but had failed. In 1661, Mughal king Aurangzeb sent army under Mirjumla to attack Assam. In December 1661, Mirjumla conquered Coochbehar. In March 1662, Mirjumla entered the Ahom capital Gargaon. The Ahom king Jayadhwaj Singha fled away from the capital. But Mirjumla had to face many problems and so he compelled to sign a peace treaty (the Treaty of Ghilajharighat, January, 1663) with the Ahom king. On his way back to Dhaka, Mirjumla died in March 1663. According to the treaty the Ahom had to pay heavy indemnity annually to the Mughal king. It became an insult to the later king Chakradhwaj Singh. He raised a new army and placed Lachit Barphukan as the head of the new army to attack Mughal. Then Lachit Barphukan attacked and owned Guwahati in 1667. The Commander of the Mughal garrison in Guwahti, Syed Feroze Khan, was taken as prisoner. The last but decisive battle took place between the Mughal army led by Raja Ram Singh of Amber and the Ahoms were led by Lachit Barphukan at Saraighat near Guwahati in 1671. Lachit Barphukan fought a hard naval battle and defeated Mughal. Ram Singh's second-in-command Rashid Khan and many Mughal soldiers died in the battle. Thereafter, no Mughals came to Assam as invader. But Ahom king Rudra Singha (1696-1714) prepared to invade the Mughal empire in 1714 before his premature death.

After Rudra Singha the Ahom power also started declining in the second half of the 18th century due to internal strife and civil war. Most important among them was the Moamoria rebellion during the 1770s and 1780s. Taking the advantage of internal strife in 1818 and 1821 the Burmese invaded Assam and forced the Ahom king to leave the country. Burmese invasion was a hair-raising episode for the people of Assam. Their atrocities on Assamese society beyond description. Finally, in 1826 the British intervened and drove out the Burmese from Assam. The state came under British domination after

the treaty of Yandaboo between the Burmese and the British company in 1826. Assam remains independently except for the brief period from 1663 to 1667, and from 1818 to 1826. So rebellion started soon against British Raj. Piyoli Phukan was hanged in 1830 for charges of sedition. Assam was not escaped from the impact of The Sepoy Mutiny of 1857. Maniram Dewan and Piyoli Barua, two Assamese nobles, were hanged for doing work against British. From about 1857 till 1947 though Assamese people fought against British under the banner of Indian National Congress, Assam had a period of peace and economic regeneration under the British regime. Tea, oil and timber-based industries were set up in Assam during this period. The railway infrastructure was also laid by the British. But the Assamese people under the leadership of Gopinath Bordoloi, Tarun Ram Phukan, Nabin Chandra Bordoloi, Ambikagiri Roychoudhury, Kuladhar Chaliha and many other prominent freedom fighters joined actively in the freedom struggle.

The later part of the Second World War, an indelible stamp had been created on social economic and political life of Assam. Netaji Subhas Chandra Bose tried to liberate India from British rule. So he formed Indian National Army. Japanese Army marched to Nagaland and Manipur but after that they have to halt. At that time Assam became a main supply corridor of the Allied Forces. The Stillwell road (named after General Joseph W. Stillwell) connecting Ledo, with Kunming in China (Yunan province), completed in record time. The length of Stillwell road was 1079 miles. This road became a vital supply link for the allied forces in China, bypassing mainland Burma (Myanmar), which was, then under Japanese occupation. The most significant change that came with independence and had a far reaching consequence on the entire eastern region. Assam lost entire Syhlet district, went to East Pakistan. The immigration to Assam, which was going on for many decades. The 1951 census gave the number of refugees in Assam as 2, 74, 455; by December 1957 it reached 4, 87, 000 (GOI, 1959).

The great earthquake came on 1950. India's war with China took place in 1962. Assam and the Northeast faced the brunt of the war. Assamese people were getting a big shock. In 1965 Indo-Pak war broke out. The riverine route from Assam to the outside world through the then East Pakistan were sealed as a result of the war. In 1971 the Bangladesh liberation war coming up Assam had to give shelter to millions of refugees from erstwhile East Pakistan for more than a year.

In 1971, Assam was fragmented once again and balkanization of the Northeast was taken one step further. Assam had to shift its capital in 1974 from Shillong to Guwahati. Before the administration could settle down in its new environment in a makeshift temporary capital, the Assam agitation began in the year 1979 followed by unrest in Bodo areas. The state filled with militancy, insurgency, terrorism, and associated killings, extortions. The developmental works had been stopped. Investor from outside could not gather courage to invest here. Not only did the flow of fresh investment stop, there began a process of capital flight from the state. The situation has been further deteriorated due to involvement of some external forces inimical to India. They supplied arms to the insurgent outfits of the Northeast and gave shelter them in their own country. During the last five years, from 1996 to 2000, 1889 persons were killed in terrorist-related violence of which 413 were security personnel. In fact, during the last 20 years, the state government has hardly got any respite to take any strong development initiative.

Population

The demographic fabric in the state is very complex. About 6.85 percent of the population belongs to SC; plain schedule tribe consists of about 9.2 percent, about 57.7 percent of the population in the hill districts belongs to ST. Other backward classes including tea garden labour constitute 28.4 percent of the population. According to the Census of India, 2001 the population of Assam stands at 2,66,55,528, of which 1,37,77,037 are males and 1,28,78,491 females. The decadal growth of state's population works out to 18.92 percent during the decade 1991-2001.

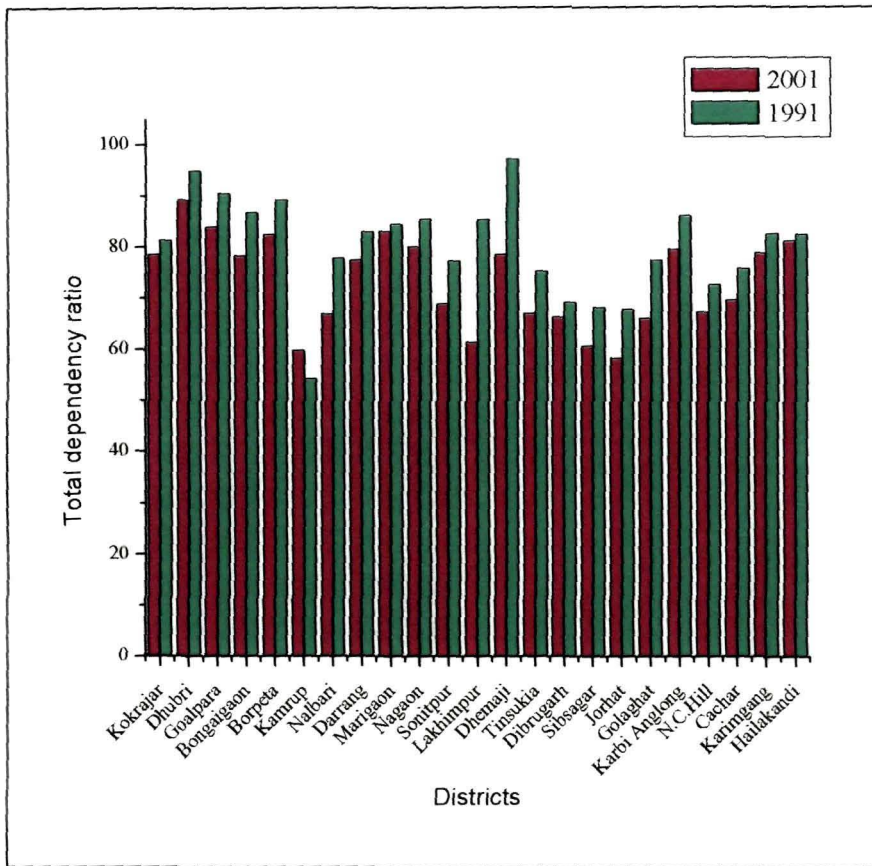


Fig A.2. Total Dependency Ratio for the year 1991 and 2001

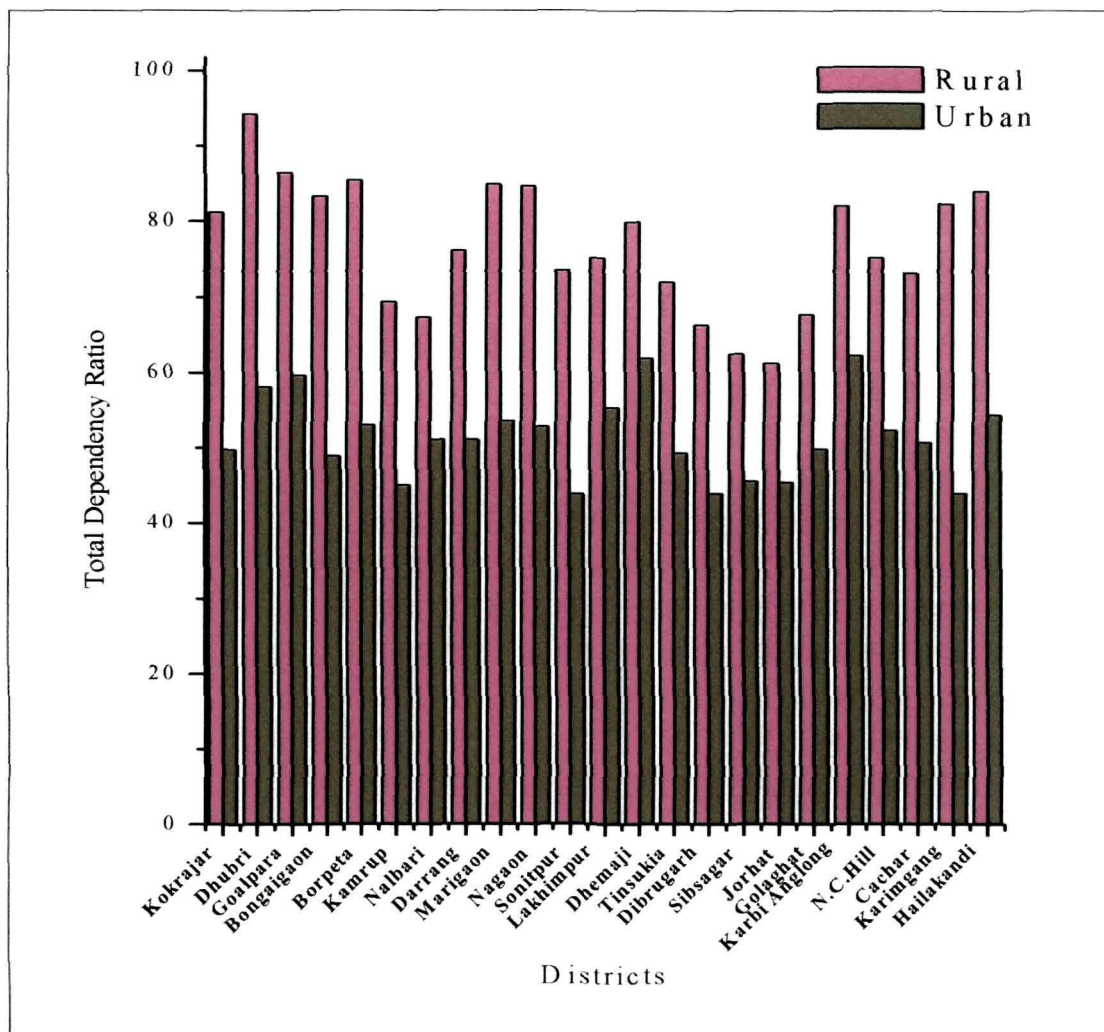


Fig A.3: Total Dependency Ratio of Rural and Urban of Assam for the year 2001

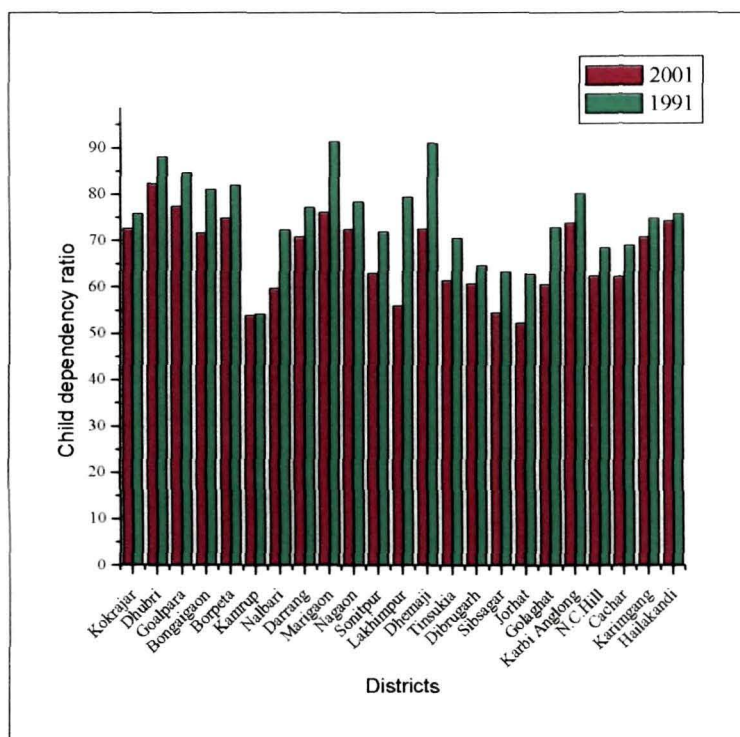


Fig A.4: Child Dependency Ratio for the year 1991 and 2001

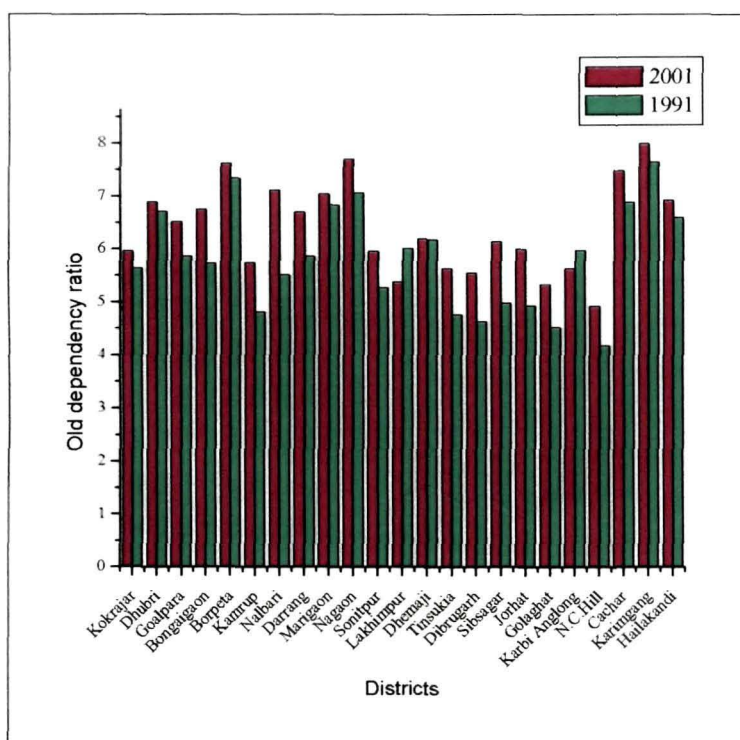


Fig A.5: Old Dependency Ratio for the year 1991 and 2001

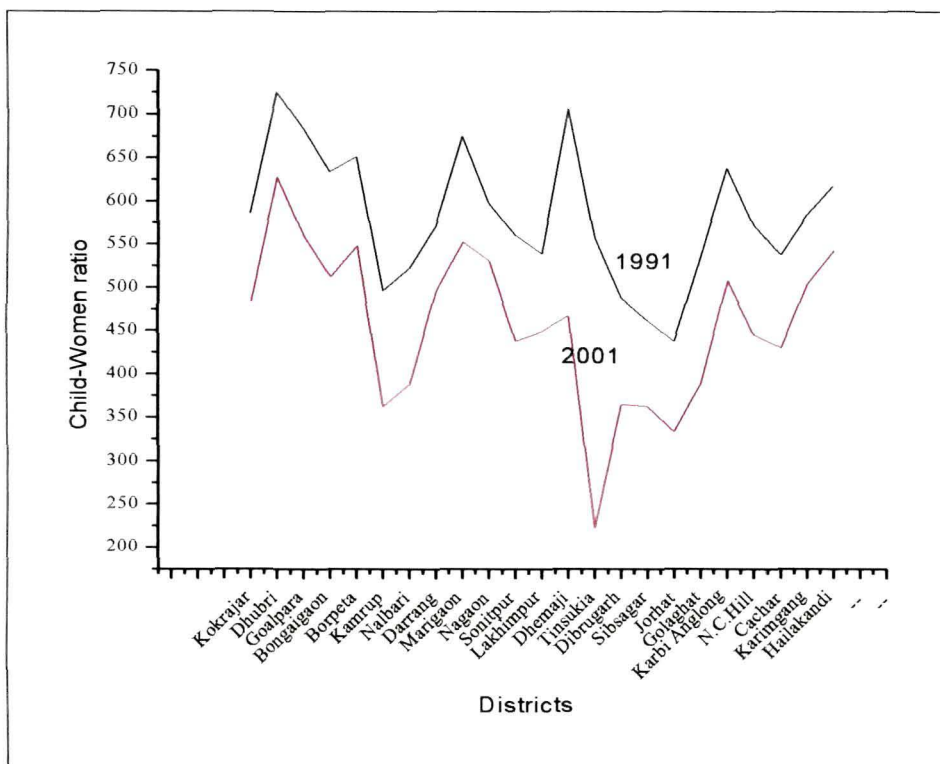


Fig A.6: Child Women Ratio for the year 1991 and 2001

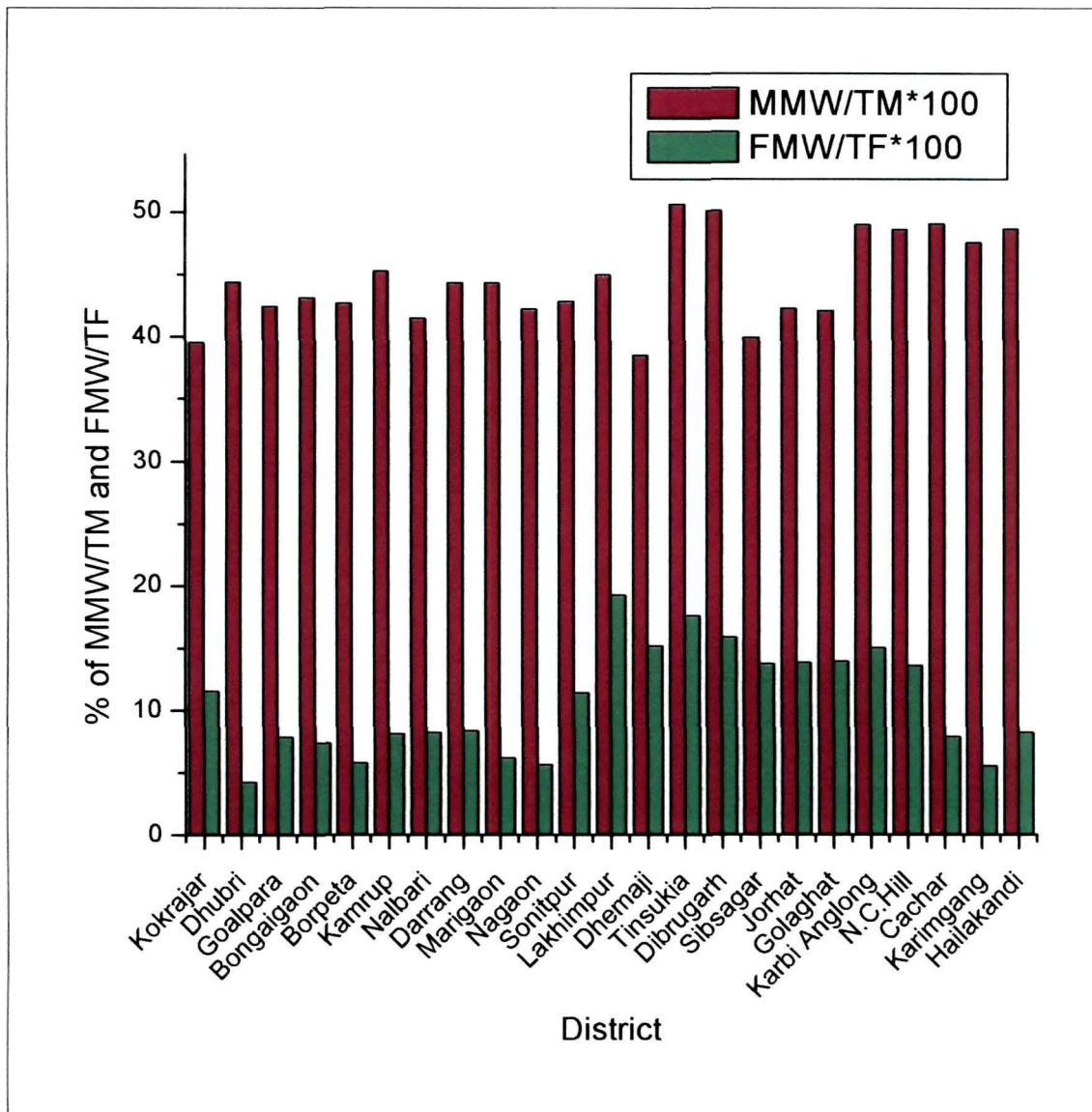


Fig A.7: Percentage of main man workers to total men and Percentage of main female workers to total female

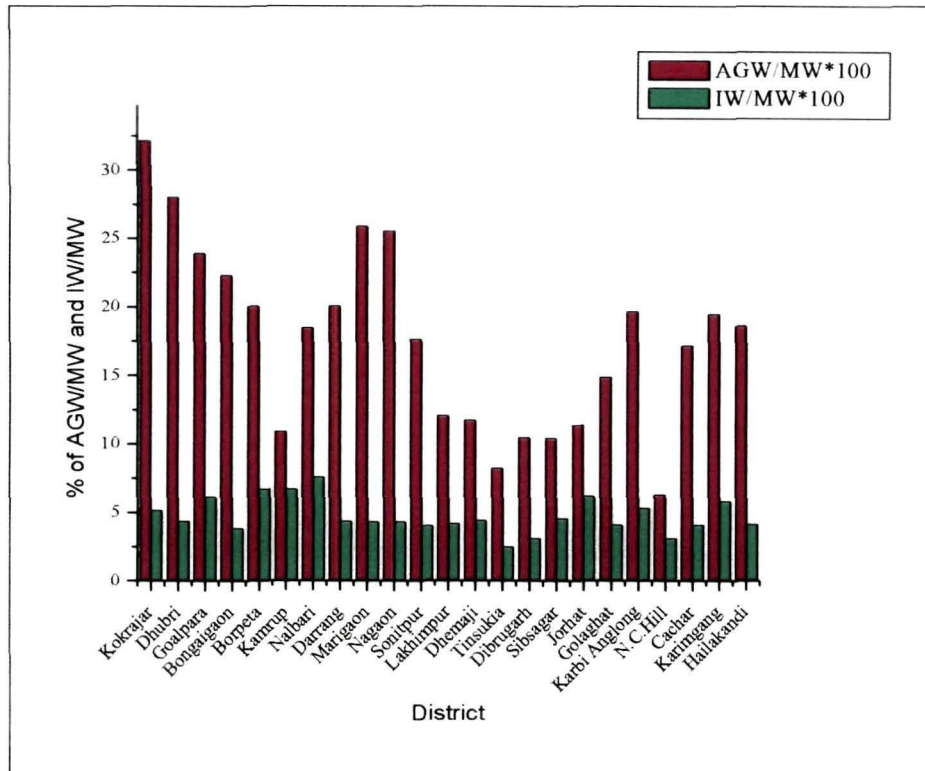


Fig A.8: Percentage of agriculture workers to main worker and Percentage of industry workers to main worker

A Brief Profile of ASSAM

Main Features

Establishment	15 th of August 1947
Legislature seats	126
Blocks	219 (2001 census)
Panchayats	2489 (2001 census)
Villages	26312 (2001 census)
Area(sq km)	78,438
State Capital	Dispur
Boarding countries/States	North: Arunachal Pradesh, Bhutan South: Nagaland, Manipur, Mizoram, Meghalaya, Tripura East: Arunachal Pradesh, Nagaland, Manipur and Myanmar West: West Bengal, Meghalaya, Bangladesh
Longitude	89.42 ^o E to 96.0 ^o E
Latitude	24.5 ^o N to 28.0 ^o N
Major Towns	Guwahati, Dhubri, Goalpara, Barpeta, Dibrugarh, Lakhimpur, Golaghat, Diphu, Tinsukia, Jorhat, Tezpur, Nagaon, Sivasagar, Silchar
Population(million)	26.6 (2001 census)
Sex Ratio	932 (2001 census)
Literacy(percent)	63.25 (2001 census)
Net area sown	2752979 Hectare (2004-05)
Total cropped area	3896351 Hectare (2004-05)
Area shown more than once	1143372 Hectare (2004-05)
Area under high yielding varieties of paddy	1345077 Hectare (2006-07)
Fertilizer consumption in Kharif crops	88799 Tonnes (2006-07)
Fertilizer consumption in Rabi crops	114878 Tonnes (2006-07)
Net area irrigated	104378.76 Hectare (2006)
Crops	Rice, Maize, Wheat, Jute, Cotton, Sugar cane, Areca nut, Coconut
Plantations	Tea, Rubber and Coffee
Fruits, Vegetables and Spices	Banana, Pineapple, Orange, Potato, Sweet Potato, Papaya, Cabbage, Onion, Tapioca.
Minerals	Coal, Limestone, Petroleum, granite, sillimanite, iron ore, quartzite, feldspar, clay
National parks	Kaziranga, Manas, Dibru, Saikhowa, Nameri, Orang
Wildlife Sanctuaries	Sonai Rupai, Burachapori, Laokhowa, Pobha, Chakrashilla, Bornadi, Garampani, Gibbon, Numbor, Karbi Anglong, Pani Dihing, Deeporbeel, Bordoibum, Beelmukh, Podumoni, Moratlongri, Amchang
Refineries	Digboi, Noonmati, Bongaigaon, Numaligarh.
Universities	Dibrugarh University at Dibrugarh Gauhati University at Guwahati Assam University at Silchar Tezpur University at Tezpur Assam Agricultural University at Jorhat

Appendix B: DISTRICTS PROFILE OF ASSAM

[1] Kokrajhar District

Kokrajhar is located on the north bank of the Brahmaputra shares the international boundary with Bhutan in the north and interstate boundary with West Bengal in the west and Dhubri district in the south Bongaigaon district in the east. The district is gateway to Assam and other North- Eastern states by road as well as railways. The nomenclature of the Kokrajhar district is very simple, according to the local people Kokrajhar is originated from the word “Khungkhrajahar” which is the Bodo term, means a kind of bushes found in vast (Khungkra means a kind of bushes and jahar means existence in vast). The district Kokrajhar was formed 1st July 1983. It is a plain district. Nadargiri and Rajshula are the only two hillocks in the district. Transportation system of the district is not so developed. A branch of National Highway no. 31 coming from West-Bengal enters the district through Shreerampur and passes to Bongaigaon. There is a broad-gauge rail-line between Shreerampur to Bongaigaon via Fakiragram and Kokrajhar and a meter-gauge line between Fakiragram to Bongaigaon. Paddy, greengram, various fruits are the main agricultural products of the district.

KOKRAJAR DISTRICT AT A GLANCE

Date of formation	1st of July, 1983
Area	3,169.22 sq. km
Latitude	26°19 N to 26°54 N
Longitude	89°46' E to 90°38' E
Population (2001)	9, 30,404
Male	478242
Female	452162
Population Density	256 per sq. km
Sex Ratio	943
Decadal Growth Rate(1991-2001)	12.0
Percent Urban Population	7.1
Percent SC Population	3.4

Percent STPopulation	33.7
Percent Muslim Population	20.36
Female Literacy Rate(7 years and above)	42.7
Male Literacy Rate(7 years and above)	61.9
No. Of Sub-Division	2
Postal Code	783370
STD Code	03661

[2] Dhubri District

The name Dhubri comes from the name of 'Chand Sadagar' where the main character of the story Netai Dhubni used to wash her clothes on the surface of a big stone at the bank of the river Brahmaputra. The district occupies an area of 2838 sq km and has a population of 1,637,344 as of 2001. The district is located in extreme west of Assam. This district is bound on the north by Kokrajar district, on the east by Bongaigaon and Goalpara districts, on the south by Meghalaya state and on the west by West Bengal and Bangladesh. Most of the regions of Dhubri districts are plains. Dhubri is the Headquarter of the district. Valuable timbers such as Sal, Segun, Gomari are found in the forests. Paddy, jute, wheat, gram, mustard are the main agricultural products of the district. National Highway no. 31 coming from West-Bengal passes through Gauripur, Bilasipara and Chapar and enters Bongaigaon. There is meter-gauge rail-road from Dhubri to Fakiragram. A marine route also exists between Dhubri and Fakiraganj.

DHUBRI DISTRICT AT A GLANCE

Area	2,838 sq. km
Latitude	26° 22 to 25°28 N
Longitude	89°42 to 90°12 E
Population (2001)	16, 37, 344
Male	8, 41,044

Female	7,96,300
Population density	585per sq. km
Sex Ratio	947
Decadal Growth Rate(1991-2001)	23.7
Percent Urban Population	11.8
Percent SC Population	3.9
Percent ST Population	2.0
Percent Muslim Population	74.29
Female Literacy Rate(7 years and above)	42.6
Male Literacy Rate(7 years and above)	56.6
No. Of Sub-Division	3
No. Of Tehsil	7
No. of Sub-Tehsil	2
No. Of Blocks	14
No. of Towns	4
No. Of Villages	1360
Postal Code	783301
STD Code	03662

[3] Goalpara District

This district originally created by British in 1876. Goalpara district was created in the year 1983 with two sub divisions Goalpara (sadar) sub division and North Salmara civil. In 1989 Goalpara Sadar sub-division was upgraded to a district and North Salmara subdivision was merged with newly created Bongaigaon district. So present Goalpara district consists of only one sub-division. The district is a combination of plains, hills, beels and submerged area. In the foothills of Garro Hills valuable timbers Sal, Segun, Gomari etc. are available. Paddy, jute, mustard and gram are the agricultural products of the district. National Highway no. 37 enters Kamrup district via Agia, Dudnoi and

Dhupdhara of Goalpara district. National Highway no. 37 comes to Pancharatna from Goalpara. National Highway no. 51 goes to Tura of Garo Hills from Agia.

GOALPARA DISTRICT AT A GLANCE

Year of formation	1983
Area	1911 sq. km
Latitude	25°53 and 26°30 N
Longitude	90°07 and 91° 05 E
Population (2001)	8, 22,306
Male	4, 20,707
Female	4, 01,599
Population density	451 per sq. km
Sex Ratio	955
Decadal Growth Rate(1991-2001)	23.1
Percent Urban Population	8.1
Percent SC Population	4.8
Percent ST Population	16.0
Percent Muslim Population	53.71
Female Literacy Rate(7 years and above)	51.4
Male Literacy Rate(7 years and above)	65.4
No. Of Sub-Division	1
No. of Tehsil	5
No. Of Blocks	8
No. of Towns	2
No. Of Villages	834
Average rainfall	2424.01 mm
Temperature	Max.: 33°C; Min.: 7°C
Postal Code	783101
STD Code	03663

[4] Bongaigaon District

The district Bongaigaon was created in 1989 from parts of the erstwhile Goalpara and Kokrajar district with district head quarter being at Bongaigaon for better administration. Bongaigaon district surrounded by Barpeta in the east, the Brahmaputra in the south and Kokrajar in the north and west corner. According to hearsay in the long past there were plenty of wild (Bon) cows (Gai) in the surrounding hilly forest area. So the villagers' assembled there time to time to drive away the wild cows for protecting their crops. Thus the area is popularly known as Bongaigaon. Another hearsay is in the big village area there dwelt one nature-poet named 'Bong' (Bong Roy) who could induce laughers to all his bystanders with the cryptic but harmless oral composition describing the situation on the spot and in returns he could collect grains or coins voluntarily offered by his audience. Thus the area roughly identified as the village of Bong (Roy); i.e. Bong-er-Gaon = Bongaigaon i.e. in course of time. The district is situated in lower Assam on the northern bank of Brahmaputra. The northern part of the district is almost plain and the southern part is composed of small hills and char areas. Sal, Titasopa, Segun are the important timbers of the district. Paddy, greengram, tea are the important agricultural products of the district. A branch of National Highway no. 31 coming from Dhubri passes to Borpeta. Another branch of the same highway coming from Kokrajar district passes to Borpeta via Bijni.

BONGAIGAON DISTRICT AT A GLANCE

Date of formation	29th September, 1989
Area	2510 sq. km
Latitude	26°28' to 26° 54' North
Longitude	89° to 90°96' East
Population (2001)	9, 06,315
Male	4, 65,970
Female	4, 40,345
Population density	420 per sq. km

Sex Ratio	945
Decadal Growth Rate(1991-2001)	12.1
Percent Urban Population	12.1
Percent SC Population	10.3
Percent ST Population	12.2
Percent Muslim Population	38.52
Female Literacy Rate(7 years and above)	51.2
Male Literacy Rate(7 years and above)	68.8
No. Of Sub-Division	3
No. Of Tehsil	5
No. Of Blocks	7
No. of Towns	3
No. Of Villages	250 cm to 350 cm
Temperature	Min: 130 C, Max: 32 0C
STD Code	03664
Postal code	783380

[5] Borpheta District

Borpheta district carved out of erstwhile Kamrup district of Assam in July 1983. The district gets its name from the head quarter town of Borpheta. This is lower district of Assam and its boundary by Bhutan. In the north Nalbari district in the west Kamrup and Goalpara district in the south and Bongaigaon district in the west. It occupies 3245 sq km area. Borpheta and Bajali are the two subdivision of the district. There are low lying plains to elevated land having a small hillock in the south-west corner of the district. Paddy, jute, mustard and vegetables are the main agricultural products of the district. Borpheta town is famous for cottage industry of gold, silver and ivory works. Sal, Gomari, Titasopa and some valuable medicinal plants are available in the forests of Borpheta district. National Highway no. 31 is coming from Bongaigaon district enters Nalbari district. There is railway line coming from Bijni and entering Nalbari district.

BORPETA DISTRICT AT A GLANCE

Year of formation	1983
Area	3245 Sq. Km
Latitude	26°5'- 26°49' North
Longitude	90°39'- 91°17' East
Population (2001)	1642420
Male	846106
Female	796314
Population density	508 Per Sq. Km
Sex Ratio	941
Decadal Growth Rate(1991-2001)	18.9
Percent Urban Population	7.7
Percent SC Population	5.7
Percent ST Population	7.5
Percent Muslim Population	59.37
Female Literacy Rate(7 years and above)	48.2
Male Literacy Rate(7 years and above)	66.0
No. Of Sub-Division	2
No. Of Tehsil	9
No. Of Blocks	12
No. Of Villages	1086
Postal Code	781301
STD Code	03665

[6] Kamrup District

The present Assam was referred to as Kamrup in many ancient literatures. It was also known as Pragjotishpur due to astrology practices that prevail in this part during that time. However Kamrup became a predominant name in the later part of the history. The name Kamrup comes from the God of love Kamdeva. Kamdeva was burnt by the

third eye of Siva but he regained his life with his original form (Rupa) in Assam and the land where this took place become known as Kamrup. The present Assam was referred to as Kamrup in many ancient literatures. It was also known as Pragjotishpur due to astrology practices that prevail in this part during that time. This district is in the western part of Brahmaputra valley. It is rich in forest wealth. Sal, Segun, Sonaru are found in the forests of Kamrup district. The main agriculture products of the district are Paddy, mustard and jute. There are some big and small industries in the district. National Highway no. 37 passes through it. Guwahati is connected by rails-links from various places of Assam. The Airport named Gopinath Bordoloi Airport is connected with various important places of India and the state.

KAMRUP DISTRICT AT A GLANCE

Area	4345 sq. km
Forest Land	1, 16,694 Hectare
Latitude	25°46 and 26°49 North
Longitude	90°48 & 91°50 East
Population (2001)	25, 15,030
Male	13, 27,717
Female	11, 87,313
Population density	581Per Sq. Km
Sex Ratio	894
Decadal Growth Rate(1991-2001)	26.11
Percent Urban Population	36.0
Percent SC Population	6.8
Percent ST Population	9.9
Percent Muslim Population	24.78
Female Literacy Rate(7 years and above)	67.3
Male Literacy Rate(7 years and above)	81.2
No. Of Sub-Division	2
No. of Tehsil	11
No. of Blocks	15
No. Of Villages	991
Average rainfall	1500 to 2600 mm

Temperature	Max.: 38.5°C; Min.: 7°C
Postal Code (Guwahati HO)	781001
STD Code	0361 (Guwahati)

[7] Nalbari District

Nalbari district situated between Kamrup and Borpheta district. For better administration old Kamrup is divided in to three districts. Nalbari was declared a subdivision of undivided Kamrup district in the year 1967. Nalbari district was formed in 14 August 1985. It is the western part of Brahmaputra valley. Brahmaputra river flows through the district. It is a flood prone district. It is a plain district. Main agricultural products of the district are Paddy, jute, mustard and potato. Vegetables are largely produced in Char areas. There are only Small Scale industries in the district. National Highway no. 31 passes through the district along with rail lines. The length of Highway is 48 km. There are four rail stations in the district.

NALBARI DISTRICT AT A GLANCE

Date of formation	14th August, 1985
Area	2257 sq. km
Latitude	26°N and 27° N
Longitude	91° E and 97°E
Population (2001)	1138184
Male	592375
Female	545809
Population density	509 Per Sq. Km
Sex Ratio	937
Decadal Growth Rate(1991-2001)	13.0
Percent Urban Population	2.4
Percent SC Population	7.5
Percent STPopulation	17.6
Percent Muslim Population	22.10
Female Literacy Rate(7 years and above)	58.4

Male Literacy Rate(7 years and above)	77.1
No. Of Sub-Division	1
No. of Tehsil	11
No. of Blocks	12
No. of Towns	2
No. of Villages	827
Average rainfall	1500 mm
Postal Code	781335
STD Code	03624

[8] Darrang District

The district of Darrang (undivided) had been created with effect from July 1983 converting the erstwhile subdivision of Mongoldoi. The name Darrang was derived from the Bodo word Dourang, which means 'Lilabhumi' (playground) of Gods. According to some scholar Darrang came from Dawrang which means gate, as there was strip of plain lying between Himalayas and Brahmaputra river in the North West part of Assam. Its antiquity dates back to the beginning of the 16th century when Koch king Nara Narayan incorporated this district in his kingdom. In 1637, the Ahom kingdom was established in this land after the death of Koch king Balinarayan. In 1792, Darrang Raja was defeated by an expeditionary force under the command of captain Wales. In 1826 Darrang with rest of Assam passed under British rule. It is situated in the middle part of the state. It is rich in forest wealth. Sam, Segun, Sonaru and Gomari are found here. Rhinos and tigers are found in the Orang sanctuary. Sugarcane, paddy, jute are important agricultural products of the district. National Highway no. 52 passes through the district. The railway line comes from Rangia and enters Rangapara.

DARRANG DISTRICT AT A GLANCE

Area	3481 sq. km
Latitude	20° 9'N to 26° 95'N
Longitude	91°45' E to 92°22' E

Population (2001)	1504320
Male	773861
Female	730459
Population density	581 per sq. km
Sex Ratio	943
Decadal Growth Rate(1991-2001)	15.8
Percent Urban Population	5.0
Percent SC Population	4.6
Percent ST Population	16.6
Percent Muslim Population	35.54
Female Literacy Rate(7 years and above)	47.0
Male Literacy Rate(7 years and above)	64.3
No. Of Sub-Division	2
No. Of Tehsil	9
No. Of Blocks	11
No. Of Villages	1325
Average rainfall	2120 mm
Temperature	Max.: 30°C; Min.: 10°C
Postal Code(Mangaldai)	784125
STD Code	03621

[9] Morigaon District

The history of Morigaon is obscure. One famous traditional ruler of the region was Arimatta, whose history was shrouded in mystery. After Arimatta's death 'Jongalbalahu, his son ruled over the region. Jongalbalahu was untimely killed by Kacharies with a bamboo spear near Kajolimukh. The legend further goes to say that Jongalbalahu to escape his pursuers submerged himself in Kollong river and emerge at Raha to quence his thirst and again dived here to emerge Jagi. The writing of Bhimsing throws some light on the history of present Morigaon town and its adjoining areas. The region was ruled independently by six rulers. During this time two princes from Darrang,

Supradhaj and Makardhaj fled from their home due to internal clash by crossing mighty Brahmaputra and they settled at Batakajori . Later on, Supradhaj married the daughter of Mongalsing, the king of Baghara. Supradhaj was made the seventh king of the region, having an independent kingdom of his own. During the days of Lachit Barphukan, another two princes of Darrang Ramsingh and Bhimsingh crossed the Brahmaputra in search of plain land. After Bhimsing settled down, meanwhile, Ramsing left for his home. Bhimsing was not liked by local people; hence he left Brahmaputra and settled down near Moribeel. This place came to known as Morigaon. The district is situated in middle part of Brahmaputra valley. On the hills of southern part many valuable timbers are found. In Pabitora sanctuary rhinos, deers and tigers are found. Paddy and jute are the main crops. Main industry of the district is Hindustan Paper Mill situated at Jagiroad. National Highway no. 37 passes through it. Dimapur broad-gauge rail-line passes through the district.

MORIGAON DISTRICT AT A GLANCE

Date of formation	14-10-1989
Area	1450.02 sq. km
Latitude	26.15 and 26.5 N
Longitude	92 to 95.5 E
Population (2001)	775874
Male	398930
Female	376944
Population Density	500 per sq. km
Sex Ratio	945
Decadal Growth Rate(1991-2001)	21.3
Percent Urban Population	4.9
Percent SC Population	12.9
Percent STPopulation	15.6
Percent Muslim Population	47.59
Female Literacy Rate(7 years and above)	52.4
Male Literacy Rate(7 years and above)	66.1
No. Of Sub-Division	1
No. of Tehsil	5

No. of Blocks	5
No. of Villages	790
Average rainfall	1597.48 mm
Postal Code	782105
STD Code	03678

[10] Nagaon District

The thickly populated parts of the present day Nagaon earlier spelt as Nowgong, were among the chosen target of violence during the subsequent Burmese rule in the late 1810's. There was no leadership to organize resistance movement against the Burmese. These people heaved a sigh of relief when the British came down heavily on the Burmese and compelled them to withdraw from Assam. Following the treaty of Yandaboo in 1826, this area of the province passed off silently in to the hands of the British. Nagaon was carved out as a separate district administrative unit in 1832. The district Head quarter called Nagong and before British finally settled on the present site on the bank of the Kollong river as the gradually emerged in to a town . The eastern, western and southern segments of newly organize district once ruled by different small time feudal kings or their agents. A newly organized village system hence called Nagaon. Na meaning new. At one time a large chunk of the Naga Hills, Mikir Hills and N.C. Hills were part of the district, with the passage of time they were sliced away to form separate district. The district is situated in the central part of Brahmaputra valley and is on the south bank of the river. It is rich in forest products. In Laokhowa and Burachapri wildlife sanctuaries rhino, tiger, elephant and various types of birds are found. Paddy, mustard, jute and sugarcane are the main crops. The National Highway no. 36 and 37 passes through the district. The main rail route is coming from Guwahati.

NAGAON DISTRICT AT A GLANCE

Area	3,831 Sq Km
Forest Land	90,342 hectare
Latitude	25°45' to 26°45' North

Longitude	92° 33 -92° 36 East
Population (2001)	2314629
Male	981379
Female	911792
Population Density	582 per sq. km
Sex Ratio	939
Decadal Growth Rate(1991-2001)	22.3
Percent Urban Population	12.0
Percent SC Population	9.3
Percent ST Population	3.9
Percent Muslim Population	51.00
Female Literacy Rate(7 years and above)	55.6
Male Literacy Rate(7 years and above)	68.5
No. Of Sub-Division	2
No. of Tehsil	10
No. of Blocks	18
No. of Villages	1375
Average rainfall	1745.1 mm
Temperature	Max.: 35 0C; Min.: 10 0C
STD Code	03672

[11] Sonitpur District

Sonitpur district spread over an area 5324 sq km on north bank of Brahmaputra river. In terms of area Sonitpur is the second largest district of Assam after Karbi Anglong district. Both the name Sonitpur and Tezpur referred to as “city of blood.” This district is situated in the middle part of the Brahmaputra valley. It is bounded on the north by Arunachal Pradesh, on the east by Lakhimpur district, on the south by Golaghat and Nagaon district and on the west Darrang district. It is rich in forest wealth. Sal, Segun, Gomari and Simalu are the timbers found in the reserved forests of the district. In the Nameri sactuary tigers and rare species of birds are found here. This is an advanced

district in agriculture. Paddy, mustard, sugarcane, jute are the main crops of the district. It is rich in tea production. There are no major industries in the district. National Highway no. 52 passes through the district. Meter-gauge rail also passes through the district. The Airport named Salani connects Guwahati and other places.

SONITPUR DISTRICT AT A GLANCE

Year of formation	1983
Area	5324 sq. km
Forest Land	1420 sq. km
Latitude	26° 30 N and 27° 01 N
Longitude	92° 16 E and 93° 43 E
Population (2001)	16, 77,874
Male	8, 64,125
Female	8, 13,749
Population density	316 per sq. km
Sex Ratio	942
Decadal Growth Rate(1991-2001)	18.1
Percent Urban Population	10.5
Percent SC Population	5.2
Percent STPopulation	11.6
Percent Muslim Population	15.94
Female Literacy Rate(7 years and above)	52.4
Male Literacy Rate(7 years and above)	67.6
No. Of Sub-Division	3
No. of Tehsil	7
No. of Blocks	14
No. of Towns	5
No. of Villages	1615
Temperature	Max.: 29 °C; Min.: 16 °C
Postal Code	784001
STD Code	03712

[12] Lakhimpur District

The name Lakhimpur is believed to be originated from the word “Lakshmi” the Goddess of property. The district is mainly dependent on paddy or the place where paddies are grown abundantly. The word pur means full. Others say the word originated from Lakshmi Devi mother of Bhuyan Raja, who was the descendent of king Arimatta as per Lakhimpur district Gezette (1976;4), the district was notified as Lakhimpur district through a proclamation issued by the Governor General on July 1839. On the second October 1971 the district was recognized with two subdivisions viz. Dhemaji and North Lakhimpur. Later it was again recognized in the year 1980 with two subdivisions Dhakuakhana and North Lakhimpur leaving Dhemaji as a separate district. The district was earlier regarded as Kaliapani because practically there was no road communication to this district. In the year 1954 a temporary aerodrome was started. From 1957 the ASTC bus started. From 1963 N.E. Frontier Railway started. The district is situated on the north-eastern part of Assam. It is rich in forest wealth. Valuable timbers and animals are found in the forest. The district is developed in sericulture industry. National highway no. 52 passes through the district.

LAKHIMPUR DISTRICT AT A GLANCE

Area	2977 sq. km
Latitude	26°48' and 27°53' N
Longitude	93°42' and 94°20' E
Population (2001)	889,325
Male	455,689
Female	433,636
Population Density	391 per sq. km
Sex Ratio	952
Decadal Growth Rate(1991-2001)	18.3
Percent Urban Population	7.3

Percent SC Population	7.9
Percent ST Population	23.5
Percent Muslim Population	16.14
Female Literacy Rate(7 years and above)	60.5
Male Literacy Rate(7 years and above)	78.3
No. Of Sub-Division	2
No. of Tehsil	7
No. of Blocks	9
No. of Towns	3
No. of Villages	1185
Postal Code (North Lakhimpur)	787001
STD Code	03752

[13] Dhemaji District

Dhemaji is one of the youngest district of Assam. It came in to being on one October, 1989. It is one of the remotest district of India, at the eastern most part of Assam situated in the foothills of lower Himalayas. It is relatively a small town. The town's name "Dhemaji" is belived to be derived from combination of two Assamese word "dhall" meaning flood and "Dhemali" meaning play. Being in a confluence of rivers with the mighty Brahmaputra river flanking the district and its numerous tributaries running through the district, the region is perennially affected by flood. The district is situated north-east part of Assam. Many varieties of softwood and rare birds are found in the forests of this district. In agriculture sector it is underdeveloped. No major industries are there in this district. Transportation system is not at all good. It is developed in sericulture sector.

DHEMAJI DISTRICT AT A GLANCE

Date of formation	01.10.1989
Area	3237 Sq. Km
Latitude	27°05' 27" N and 27°57' 16" N

Longitude	94°12' 18" E and 95°41' 32" E
Altitude	104 Meter above sea level
Population (2001)	571944
Male	294643
Female	277301
Population density	177 per sq. km
Sex Ratio	936
Decadal Growth Rate(1991-2001)	19.45
Percent Urban Population	6.8
Percent SC Population	5.3
Percent STPopulation	47.3
Percent Muslim Population	1.84
Female Literacy Rate(7 years and above)	56.1
Male Literacy Rate(7 years and above)	75.2
No. Of Sub-Division	2
No. Of Tehsil	4
No. Of Blocks	5
No. Of Villages	1315
Average rainfall	2600 to 3200 mm
Temperature	Max.: 39.9 0C; Min.: 5 0C
Postal Code(Dhemaji)	787057
STD Code	03753

[14] Tinsukia District

The ancient name of Tinsukia was Bangamara. It was the capital of Muttak kingdom. Sarbananda Singh established his capital at Rangagarh situated in the bank of river Guijan in 1791 AD. He transferred his capital to the city of Bangamara. The city was built in the middle of present city of Tinsukia. It was declared as the 23 rd district of Assam on 1 October 1989 with three subdivisions - Tinsukia, Margherita and Sadia. The district Head Quarter located at Tinsukia. The district is situated in extreme north-east

corner of Assam. It is famous for tea industry. There are coal mines and oil-refinery also. Many animals are found in the forests. National Highway no. 37 passes through the district. National High Way no. 38 goes towards Arunachal Pradesh. Tinsukia is also a rail junction.

TINSUKIA DISTRICT AT A GLANCE

Date of formation	1st October'1989
Area	3790 sq. km
Latitude	27°23' to 27°48' N
Longitude	95°22' to 95°38' E
Altitude	147.83 to 148.30 Meters
Population (2001)	11, 50,146
Male	602515
Female	547631
Population density	303 per sq. km
Sex Ratio	909
Decadal Growth Rate(1991-2001)	19.5
Percent Urban Population	19.5
Percent SC Population	2.7
Percent STPopulation	5.9
Percent Muslim Population	3.48
Female Literacy Rate(7 years and above)	53.4
Male Literacy Rate(7 years and above)	72.2
No. Of Sub-Division	3
No. of Tehsil	4
No. of Blocks	7
No. of Villages	1162 (1991)
Postal Code	786125
STD Code	0374

[15] Dibrugarh District

Dibrugarh which is the Head Quarter of the district derive its name from Dibrumukh. The name derived from mouth of the river Dibru (Bodo word Dibru , a blister). Dibrumukh was a renowned encampment of Ahom, during Ahom Chutia war. Earlier Dibrugarh was the Head Quarter of undivided Lakhimpur district. Now it is a separate district. The district Head Quarter still in Dibrugarh itself. The district is situated in the north-east part of Assam. This is totally a plain district. The district is developed in industry comparatively other districts. Crude oil and coals are found here. It is rich in tea production. The first rail line in Assam-the Dibru-Sadia rail line was constructed here. National Highway no. 37 passes towards Tinsukia from here. There is an Airport near Chabua which connects the district with Guwahati and other parts of the country.

DIBRUGARH DISTRICT AT A GLANCE

Area	3381 sq. km
Forest Land	217941.648 Hectares
Latitude	27°5' 38" N to 27° 42' 30" N
Longitude	94° 33' 46" E to 95° 29'8" E
Population (2001)	1185072
Male	613555
Female	571517
Population density	351 per sq. km
Sex Ratio	923
Decadal Growth Rate(1991-2001)	13.7
Percent Urban Population	19.3
Percent SC Population	4.1
Percent ST Population	7.5
Percent Muslim Population	4.50
Female Literacy Rate(7 years and above)	62.1
Male Literacy Rate(7 years and above)	79.6
No. Of Sub-Division	1

No. Of Blocks	7
No. of Towns	3
No. Of Villages	1362
Average rainfall	2500 mm
Temperature	Max.: 29°C; Min.: 10°C
Postal Code	786001
STD Code	0373

[16] Sibsagar District

In ancient time when Ahom kings used to dig any tank or pond they used to name it with suffix of 'Sagar' (sea). Though the sizes of these tanks were like small lakes, these meant more than a sea not only for the king but also for the people. Such a sagar is Sibsagar or Sivasagar. The specialty of the sagar is that a town. In Ahom days it was known as Rangpur. It's the British who started using the name Sivasagar to represent the place. It is situated on eastern part of Assam on the south-east part of Brahmaputra. It is a plain district. It is rich in tea production. Crude oil and natural gases are found here. There are some reserved forests in the district where valuable timbers are found. Transport and communication system is comparatively good. National Highway no. 37 enters the district from Jorhat side and passes to Dibrugarh via Sibsagar. Broadgauge rail line passes through the southern part of the district.

SIBSAGAR DISTRICT AT A GLANCE

Area	2668 sq. km
Latitude	21°45 and 27°15 N
Longitude	94°25 and 95°25 E
Altitude	86.6 meters
Population (2001)	1051736
Male	545476
Female	506260
Population density	394 per sq. km

Sex Ratio	928
Decadal Growth Rate(1991-2001)	16.0
Percent Urban Population	9.2
Percent SC Population	3.4
Percent ST Population	4.0
Percent Muslim Population	8.15
Female Literacy Rate(7 years and above)	68.0
Male Literacy Rate(7 years and above)	82.1
No. Of Sub-Division	3
No. of Tehsil	6
No. of Blocks	9
No. of Villages	881
Postal Code	785640
STD Code	03772

[17] Jorhat District

Jorhat or Jorehat means two hats or mandis “Macharhat” and “Chowkihat”, who existed in the two different banks of the river Bhogdoi during 18th century. Jorhat was the last capital of Ahom kingdom. In the year 1794 the Ahom king Gaurinath Singha shifted the capital from Sibsagar to Jorhat. But it was completely destroyed in a series of Burmese invasion since 1817 till arrival of the British force in the year 1824 under the stewardship of David Scott and Captain Richard. Though the civil subdivision under Sibsagar district at Jorhat was formed in 1869, the great place is declared as administration Head quarter of the undivided Sibsagar district in 1911 which comprised the present Sibsagar , Jorhat, Golaghat and parts of Karbi Anglong district. The district is situated in the eastern part of Assam. This is mainly a plain district. A large number of tea gardens are in the district. Crude oil is produced in the district. In the reserved forests of the districts valuable trees and animals are found. National Highway no.37 passes towards east. Broad-gauge rail line passes through the southern part of the district.

JORHAT DISTRICT AT A GLANCE

Area	2851 sq. km
Latitude	26 degree 46 N
Longitude	96 degree 16 E
Population (2001)	1,009,197
Male	530,240
Female	478,957
Population density	350 per sq. km
Sex Ratio	913
Decadal Growth Rate(1991-2001)	14.69
Percent Urban Population	17.2
Percent SC Population	7.9
Percent STPopulation	12.3
Percent Muslim Population	4.77
Female Literacy Rate(7 years and above)	72.5
Male Literacy Rate(7 years and above)	82.8
No. Of Sub-Division	3
No. of Tehsil	6
No. of Blocks	8
No. of Towns	1
No. Of Villages	815
Average rainfall	2029 mm
Postal Code	785001
STD Code	0376

[18] Golaghat District

The name “Golaghat” originated from the markets established by a business class of people called ‘Marwari’ (from Rajasthan) during the middle of the 19th century at the bank of the river Dhansiri in the vicinity of district Head Quarter. “Gola” means market

and ghat means port of river transport. Earlier this port was ruled by Kachari known as Herombial. The Kacharies were pushed back towards west of the Karbi Hills. The Ahom king appointed a ruler entitled "Morongi- Khowa- Gohain". Later when British took control of Assam the Deyang Dhansiri valley was incorporated under the newly formed Golaghat sub-division of Sibsagar district in 1846. Golaghat was raised to the position of a matured district of Assam on 15th August 1987. This district is situated on the eastern part of Assam. The district is rich in natural wealth. The wildlife sanctuary Kaziranga is in Golaghat district. One horned rhinos are found here. Tea industry and oil refinery are main industries in the district. National Highway no. 37 passes towards east from west. National Highway no. 39 runs from Numaligarh to Nagaland. Broad gauge rail way line passes towards north east.

GOLAGHAT DISTRICT AT A GLANCE

Date of formation	15th of August 1987
Area	3,502 sq. km
Forest Land	1,036.27 sq. km
Latitude	25° 50' North to 26°47' North
Longitude	93°16' East to 94°10' East
Population (2001)	945781
Male	490370
Female	455411
Population density	270 per sq. km
Sex Ratio	929
Decadal Growth Rate(1991-2001)	14.3
Percent Urban Population	8.6
Percent SC Population	5.4
Percent STPopulation	9.9
Percent Muslim Population	7.91
Female Literacy Rate(7 years and above)	62.1
Male Literacy Rate(7 years and above)	78.0
No. Of Sub-Division	3
No. of Tehsil	6
No. Of Blocks	8

No. of Towns	5
No. Of Villages	1081
Average rainfall	1300 mm
Temperature	Max.: 38 0C; Min.: 10 0C
Postal Code	785621
STD Code	03774

[19] Karbi Anglong District

The people of Assam got a new district named United Mikir North Cachar Hills district on 17th November 1951. This was followed by bifurcation of the erstwhile district of United Mikir Hills and N.C. Hills district in to two separate districts under banner as 'Mikir hills" and N.C. Hills district in the year 1970. The Mikir hills again rechristened as Karbi Anglong district w.e.f. 14th October 1976. Thus Karbi Anglong came in to being as a full-fledged separate district. The district enjoys autonomy under the provision of sixth schedule of the Indian constitution. It is the largest district of Assam. The district is situated between Karbi and Meghalaya hills. The district is a hill district. These hills are 300 meters to 1300 meters high. Coal and limestone are found here. Bokajan cement factory is in the district. National Highway no. 36 and 39 pass through the district. From Luming of Nagaon district to Dimapur there is a broad-gauge rail line which passes via Diphu.

KARBI ANGLONG DISTRICT AT A GLANCE

Date of formation	14th October, 1976
Area	10,434 sq. km
Forest Land	4,922.019 sq. km
Latitude	25°33' to 26°35' N
Longitude	92°10' to 93°50' E
Population (2001)	8, 13,311
Male	4, 22,250
Female	3, 91,061

Population density	78 per sq. km
Sex Ratio	922
Decadal Growth Rate(1991-2001)	22.7
Percent Urban Population	11.3
Percent SC Population	3.6
Percent ST Population	55.7
Percent Muslim Population	2.22
Female Literacy Rate(7 years and above)	48.7
Male Literacy Rate(7 years and above)	68.1
No. Of Sub-Division	3
No. of Tehsil	4
No. of Blocks	11
No. Of Villages	2633
Average rainfall	2416 mm
Temperature	Max.: 32°C; Min.: 6°C
Postal Code	782460
STD Code	03671 (Diphu)

[20] N.C. Hills District

N.C. Hills was a part of Kachari kingdom before 1832. In 1830 the Dimacha king Gobindra chandra was assassinated his own general Gambhir Singh. After that the British annexed the southern part of the kingdom on 14th August 1832 under the doctrine of Lapsi. The rest was ruled by the Dimasha general Tularam. In 1837 a portion of Tularam kingdom was annexed to the British Empire and added the Asalu subdivision. In 1867 the subdivision was abolished divided in to three parts among the districts Cachar, Khasi and the Jaintia Hills and Nagaon. The present N.C. Hills was included in the old Cachar district. In 1951 N.C. Hills was specified under paragraph 20 of sixth schedule to the constitution, ceased to be a part of Cachar district. In 17th November 1951 this part along with “Mikir Hills” constituted a new civil district namely “United districts North Cachar

and Mikir Hills''. In the 2nd February 1970 Government declared an independent administrative district viz. N.C. Hills district with geographical boundary of autonomous N.C. Hills district council. The district is situated in middle part of Assam. It is full of hills. It is a rich district in forest wealth. Valuable timbers animals are found in the forests. Here limestone is found. Transportation system is not at all good. There is a road from Lanka to Haflong. There is a meter-gauge rail line through the district.

N.C. HILLS DISTRICT AT A GLANCE

Date of formation	02-02-1970
Area	4890 Sq. km
Forest Land	63777.410 Hectare
Latitude	25° 3 and 25° 47 N
Longitude	92°37 and 93°17 E
Population (2001)	1, 86,189
Male	98899
Female	87290
Population density	38 per sq. km
Sex Ratio	883
Decadal Growth Rate(1991-2001)	24.72
Percent Urban Population	31.6
Percent SC Population	1.8
Percent STPopulation	68.3
Percent Muslim Population	2.48
Female Literacy Rate(7 years and above)	59.4
Male Literacy Rate(7 years and above)	76.6
No. Of Sub-Division	2
No. of Blocks	5
No. of Towns	4
No. of Villages	552
Average rainfall	1572.2 mm
Temperature	Max.: 30 OC; Min.: 10 OC
Postal Code(Haflong)	788819
STD Code	03673

[21] Cachar District

The district of Cachar is located in the southern most part of Assam, is one of the oldest district of the state. The name Cachar traces its origin to the Kachari kingdom. Cachar was a part of greater Kachari kingdom, which also included the adjoining Hailakandi and Karimganj district. This district was formed in 1830 after the seizure of Kachari kingdom by the British rulers. Further in the year, 1854 northern partition of Cachar was seized and tagged to the district. The former North Cachar subdivision was transformed in to a separate district in 1951. The district is situated in the Barak valley on the southern part of Assam. It is bounded on the north by N.C. Hills district, on the east by Manipur, on the south by Mizoram and on the west by Hailakandi, Karimganj district and Meghalaya. In the reserved forests of the districts many valuable trees are found. Paddy, jute, sugarcane and cotton are the main agricultural products of the district. There is large number of tea gardens in the district. There is a natural reservoir of crude oil and natural gas in Mashimpur. There are many bamboo and cane-work based industries. National Highway 44, 53 and 54 pass through the district. Meter-gauge rail-line coming from Haflong passes to Jiribum of Manipur through the district. Silchar is connected by Tripura by rail-lines. There is an airport named Kumbhirgram in the district.

CACHAR DISTRICT AT A GLANCE

Area	3,786 Sq. Km
Latitude	24° 22' N and 25° 8' N
Longitude	92° 24' E and 93° 15' E
Population (2001)	14, 42,141
Male	7, 41,580
Female	7, 00,561
Population density	382 per sq. km
Sex Ratio	945
Decadal Growth Rate(1991-2001)	18.9
Percent Urban Population	13.9

Percent SC Population	14.4
Percent ST Population	1.3
Percent Muslim Population	36.13
Female Literacy Rate(7 years and above)	59.9
Male Literacy Rate(7 years and above)	76.5
No. Of Sub-Division	2
No. Of Tehsil	5
No. Of Blocks	15
No. of Towns	2
No. Of Villages	895
Average rainfall	3139 mm
Postal Code(Silchar HO)	788001
STD Code	03842

[22] Karimganj District

In 1765, the diwani and Bangla Suba was taken over by the British East India Company and the district Sylhet, of which Karimganj was a part, passed on to the British. However up to 1876, the British could not establish their hegemony over the entire region. The subdivision of Karimganj under the Sylhet district was created in 1878 with Karimganj town as Head quarter. At the time of Partition of the country, in 1947, the district of Sylhet was transferred to East Pakistan barring three-and- half thana areas of the Karimganj sub-division. This truncated Karimganj sub-division was incorporated in the Cachar district of Assam as a full- fledged sub- division. This sub-division upgraded to a district on the first of July 1983. The date of formation of Karimganj district is 1st July 1983. The district is situated in Barak valley in the southern part of Assam. It is a rich district in terms of forest wealth. Sonaru, Nahar, Segun, Champa are the timbers found in the forests of the district. Paddy, mustard, gram and tea are the main agricultural products. National Highway no. 44 passes to Tripura from Badarpur. The main rail line passes to Tripura from Badarpur via Patharkandi.

KARIMGANG DISTRICT AT A GLANCE

Date of formation	1st of July, 1983
Area	1,809 sq. km
Forest Land	54,504 Ha
Latitude	24°15' - 25°55' North
Longitude	92°15' - 92°35' East
Population (2001)	10, 07,976
Male	517,680
Female	490,296
Population density	557 per sq. km
Sex Ratio	947
Decadal Growth Rate(1991-2001)	21.9
Percent Urban Population	7.3
Percent SC Population	13.0
Percent STPopulation	0.29
Percent Muslim Population	52.30
Female Literacy Rate(7 years and above)	60.1
Male Literacy Rate(7 years and above)	73.9
No. Of Sub-Division	1
No. of Tehsil	5
No. of Blocks	7
No. of Towns	3
No. Of Villages	1130
Postal Code (Karimganj Bazaar)	788711
STD Code	03843

[23]Hailakandi District

Hailakandi was one of the oldest sub-division of the state which was constituted as civil subdivision on 1st June 1869. On the 1st October 1989 it emerged as civil district

with some territorial jurisdiction of the earlier subdivision. The Hailakandi district is bounded by river Barak and Cachar district in the North and East, Mizoram state in the south and East and Karimganj district in the West. The district get its name from Kuki word 'Halam' which means a small state and 'Kundia' a Bodo Cachari word which means a plot of land for temporary ploughing. This district is situated on the middle part of the Barak valley and southern part of Assam. The southern part of the district is full of hills. There are Azar, Sonaru, Nahar and bamboo in the forests of Hailakandi. The economy of the district is mainly agrarian. Paddy, mustard, maize and gram are the main crops. Except some Small Scale industries no major industries are there. There is no National Highway in the district. The main road is coming from Silchar.

HAILAKANDI DISTRICT AT A GLANCE

Date of formation	1st October 1989
Area	1326.10 sq. km
Forest Land	74115 Hact
Latitude	24°40'53" N
Longitude	92°33'38" E
Population (2001)	542978
Male	280513
Female	262359
Population density	409 per sq. km
Sex Ratio	933
Decadal Growth Rate(1991-2001)	20.9
Percent Urban Population	8.1
Percent SC Population	10.9
Percent STPopulation	0.15
Percent Muslim Population	57.63
Female Literacy Rate(7 years and above)	50.7
Male Literacy Rate(7 years and above)	68.5
No. Of Sub-Division	1
No. of Tehsil	4
No. of Towns	2
No. Of Villages	388

Appendix B

Average rainfall	2873.078 mm
Temperature	Max.: 34 0C; Min.: 6 0C
Postal Code	788151
STD Code	03844

Appendix C: Outline of the Thesis

The thesis consists of nine chapters. **Chapter 1** is the introductory one. It provides the brief description about the reason of development disparities which is observed in various regions and the measures are taken by the government in different times for uniform development in the states. The objective of the study and detailed background of the study on development disparities are mentioned here. It provides the details about the study area and availability of the data for the study and provides the outline of the thesis. Methodologies are given which are used in the computation of composite index.

Chapter 2 is based on agriculture sector of Assam. 102 indicators, which are directly related to the agriculture, have been considered. Composite indices of development are computed by the methods used by Narain et al. and PCA. Here four districts are found to be highly developed and four districts are low developed. For the low developed districts model districts have been identified and the best values of different indicators among the model districts have been taken as potential target of the low developed districts. It is observed that a number of indicators of low developed districts show better prospect than their potential target.

Chapter 3 is related to the health sector of Assam. 35 relevant indicators have been selected for this investigation. Composite indices of development are computed by the methods of Narain et al. and PCA. Three districts are found to be highly developed and four districts are low developed. It is observed from the study that actual achievement of at least two indicators of each low developed district is better than their potential target.

In **Chapter 4** forty-three indicators are considered to study the status of women in Assam on the basis of 43 indicators through the methods of Narain et al. and PCA. Three districts are found to be highly developed and three districts are low developed. Disparities of status of women among sixteen major Indian states on the basis of 25 indicators are computed. Completed Fertility Rate of women for the birth cohort of women (1951-1955) by using Parity Progression Ratio for each district of Assam and for the state is computed. Using these computed fertility rate and literacy rate composite index is computed and ranking of the districts have been made.

Chapter 5 related to the study of the development of education sector of Assam Composite indices are computed for 48 indicators by the methods of Narain et al. and PCA. Three districts are coming out as highly developed and two districts are low developed districts. Only three indicators of one of the low developed district Morigaon shows better prospect than best value of model districts.

In **Chapter 6** the development disparities of Basic Infrastructure facilities are computed on the basis of 40 indicators by using four methods viz. Method used by Narain et al., Equal weighted index method, Deprivation method and PCA. Four districts are coming out as highly developed and two districts are low developed districts. From the study it is found that five indicators of one low developed district and two indicators of another show better prospect than their potential target.

In **Chapter 7** development disparities in industrial sector of Assam are obtained on the basis of 65 indicators using the methods Narain et al., Equal weighted index method, Deprivation method and PCA. Two districts are coming out as highly developed and three districts are low developed. It is observed from the study actual achievement of at least two indicators of each low developed district is better than their potential target.

In **Chapter 8** development disparities in socio-economic sector in the districts of Assam are obtained on the basis 54 indicators and computed by the methods of Narain et al. and PCA. From the computed indices it is found that three districts are highly developed and five districts are low developed. From the study it is observed that actual achievement of at least two indicators of each low developed district is better than their potential target.

Position of Assam in socio-economic sector among seventeen major states of India and among North East States for selected indicators are computed by using the methods of Narain et al. and PCA.

Chapter 9 is related to overall results, discussion and conclusion of the study. Here districts of Assam are ranked on the basis of nine sectors of economy. Correlation coefficient between different sectors is computed. Taking composite index of overall development as dependent variable composite index of the sectors which are considered in the study as independent variable a regression line is obtained. Suggestions are tried to

be given with some examples how a region can be developed and reduced disparities, which arise as a threat before us. At last conclusions are drawn from the study.