सत्यमेव जयते
GOVERNMENT OF ASSAM

सत्यमेव जयते
नीति आयोग
National Institution for Transforming India

UNDP
Empowered lives.
Resilient nations.

Assam 2014

HUMAN DEVELOPMENT REPORT

Managing Diversities, Achieving Human Development

Assam HDR 2014

Photo Courtesy:
Biju Boro/UNDP India
UNICEF (page 29, 67, 74, 79, 182 and 190)
GRASSHOPPER (page 48)
Raj D Mushahary (page 164)

Designed by:
Roots Advertising Services Pvt. Ltd, New Delhi

Assam 2014

HUMAN DEVELOPMENT REPORT

Managing Diversities, Achieving Human Development

Prepared by
OKD Institute of Social Change and Development, Guwahati
Institute for Human Development, New Delhi

On behalf of
Planning and Development Department
Government of Assam

Sarbananda Sonowal

सत्यमेव जयते

Chief Minister, Assam
Guwahati

Message

Since the publication of the first Human Development Report (HDR) in 1990 by UNDP, discussions and policies on development have undergone a major change globally. The focus of development has shifted from 'wealth' and 'income' to 'people' and their 'capabilities'. Enhancing people's capabilities through public policies, thus, tends to occupy a central place in development discussions. The shift has not only brought about a fundamental change in the approach to development, but also generated a broad political consensus about the priorities of development, shaped public policies and improved the matrix for evaluating development outcomes. The HDRs, therefore, are considered not merely as an academic exercise, but more as a document to highlight the issues, lay out the development agenda and guide public policies at relevant levels – local, national and international. The publication of an HDR is, therefore, a significant exercise in itself.

Following the publication of the global HDR, several regional, national and sub-national HDRs have been published. India published its first national HDR in 2001 and Assam had its first HDR in 2003. These reports discuss issues related to key dimensions of human development, that is, health, education and standard of living of people of the country and the state. Since 2003, Assam has seen many changes – political, economic and social – and several interventions have been made in bringing about these changes. It is, therefore, both important and worthwhile to make an objective assessment of the status of human development in the state at this moment to move ahead with a clear focus, priorities and policies. The present report is envisaged to fulfil this objective in general.

The report is titled *Managing Diversities, Achieving Human Development.* The central message of the report entails the understanding that differences in human development achievements observed across the districts, regions, sectors and communities are conditioned by and contingent on myriad geographic, social and economic diversities of the state. The report, therefore, stresses upon 'managing' these diversities in order to enhance the capabilities of people and achieve higher human development in the state. The report, accordingly, bring to the fore several key issues and concerns related to unemployment, inequality, multidimensional poverty, child survival and undernutrition, maternal health, early marriage and pregnancy amongst teenage girls, quality of education and healthcare with the objective of informing policy decisions at various levels.

The most unique feature of the report is related to its findings and observations on the 'subjective well-being' of the people of the state, which essentially means, the perception and satisfaction of people about the processes which have implications on achieving human development outcomes. The overarching concern of the report, in this context, emanates from the issues related to governance and the quality of delivery of public services. The report clearly highlights the significance of strengthening and improving the system and structure of governance in achieving better and higher human development outcomes. There is no doubt that without making a qualitative and distinctive difference in the system and structure of governance, the indicators of human development cannot be improved in the state.

The report is being published at a time when a newly elected Government has assumed office in Assam with a decisive mandate to bring about a 'change' in the state taking everybody onboard. The people of Assam have shown enormous trust in this newly formed Government and have high hopes, aspirations and expectations from it. The Government of Assam is committed to fulfil the hopes and expectations of the people of the state. I am sure that the report will facilitate informed debate about many vital issues related to the development of the state and help the Government to chart out policies, which will impact the lives of people in the most desired way.

(Sarbananda Sonowal)

DR. HIMANTA BISWA SARMA, MA, LLB Ph.D
Minister, Government of Assam
Finance, P&D, Health & F.W., Education, Guwahati Development Department, Tourism, Cooperation, Handloom & Textile (Khadi & Village Industry), Pension & Public Grievance

सत्यमेव जयते

Assam Secretariat (Block-E)
Dispur, Guwahati-781 006
Telephone No. : (0361) 2237315
Fax : 0361-2237012
email : himantab@hotmail.com

Message

This is the second Human Development Report of Assam; the first one was published in 2003. It is about the people of Assam and their lives– how they are and how they are doing. The report has been prepared by the OKD Institute of Social Change and Development, Guwahati in collaboration with the Institute for Human Development, New Delhi under the aegis of the Planning and Development Department, Government of Assam. The report is an outcome of three years of research which involved the largest development survey conducted in the state till date covering 40,000 households and 1,90,000 individuals. The report is innovative in perspective; human development is attempted to be explained in terms of a range of diversities characterising the state. It is also inventive in analyses when it incorporates an index of 'subjective well-being' reflecting the perception and satisfaction of people about the critical processes affecting their lives.

The report shows, in terms of the desired goal, that the average level of achievement in human development in the state remains about halfway. More importantly, the achievements have been almost the same in all three dimensions – health, education and living standards. However, the report observes that there have been improvements in achievements since the publication of the first HDR for the state. The halfway level of achievements in human development, on average, is suggestive of an underlying inequality which needs to be addressed urgently. In fact, the report observes that about one-third of the potential human development achievement in the state is lost due to inequalities in income, health and education among people. Besides, about 37 per cent potential achievement gets reduced due to inequalities in gender. Such disparities in achievement are also evident across the districts. The report ranks Kamrup Metro at the top followed by Jorhat in district-level achievements, while Hailakandi remains at the bottom of the list. The report, therefore, identifies addressing inequality as one of the critical policy options in achieving human development in the state.

The Report comes with an interesting perspective on these differences in terms of geographical, social and economic diversities of the state. These diversities are recognised as critical contingent factors and economic drivers of these differences. The report, therefore, emphasises the 'management' of these diversities through appropriate public policies and interventions in order to achieve enhanced human development outcomes for the people of the state. The broad, overarching message that the report intends to offer entails the need for a focused, differentiated and decentralised development approach in the state instead of a homogeneous one.

The report is informative, and policy oriented and, in general, should serve as a guide for development planning in the state.

10-8

Dr. Himanta Biswa Sarma

V. K. Pipersenia, IAS
Chief Secretary

सत्यमेव जयते

GOVERNMENT OF ASSAM
Block-'C', 3rd Floor,
Assam Sachivalaya,
Dispur, Guwahati-781006
Tel.: 0361-2261120 (O)
2261403 (O)
2237200 (Fax)
E-mail: cs-assam@nic.in

Message

I take immense pleasure in presenting the second Human Development Report of Assam. The first Human Development Report of the state was published about a decade back. Based on careful analyses of data collected through a special household survey conducted for the purpose, the present report throws light on the development scenario of the state during the last decade. While on several fronts, including health as well as education, the state has been able to achieve significant progresses, there are areas where much needs to be done. The report, therefore, highlights both successes as well as areas of concern. Most importantly, it offers a clear message that not only going to school is important but also staying in schools and receiving quality education indeed matter. It also emphasises that decent and secure employment is central to a decent life; better health and nutrition to children hold a better future for all of us. Besides, it also highlights that processes are equally important for outcome, and the consequence of all types of inequalities is particularly a matter of serious concern. These messages also lay out possible policy directions and marks priority areas for concrete actions and public policies.

The nature of the Human Development Report, in general, has always been suggestive – it suggests what the situation is and what can be done to make an improvement therein. It is envisaged that this improvement must relate to the lives of people, which the present report is also primarily concerned about.

It is also important to note that Human Development Reports are not only meant for the Government alone but, in fact, for people in general. That is why these reports are written in a simple and accessible manner. The present report is also prepared in that fashion – it is nontechnical, lucid and easy to understand. Yet, the report is also full of first hand information, rich in insights, rigorous in analyses and focused on the way forward. Therefore, besides to the Government, the report will be of immense use to all those engaged with the development concerns of the state. It will be extremely useful for policy makers in particular and academics and public alike more generally. The report offers ample scope for investigating further, engaging in dialogue, questioning accepted norms and ideas. Apart from providing policy inputs to the Government, it is expected that the report will facilitate in generating an informed public debate regarding the pressing concerns of the development in the state.

(V.K. Pipersenia)

Date: 17/8/2016

अमिताभ कांत
Amitabh Kant
मुख्य कार्यकारी अधिकारी
Chief Executive Officer

सत्यमेव जयते

भारत सरकार
नीति आयोग, संसद मार्ग
नई दिल्ली–110 001

Government of India
NATIONAL INSTITUTION FOR TRANSFORMING INDIA
NITI Aayog, Parliament Street,
New Delhi-110 001

Tel.: 23096576, 23096574 Fax : 23096575
Email : ceo-niti@gov.in, amitabh.kant@nic.in

Message

The Assam Human Development Report provides a comprehensive status of the state on a number of socio-economic parameters.

There are two unique features of this report. The first is that it not only compares districts in the state on these parameters, but also compares them through a lens of various diversities – spatial, demographic and socio-economic. The second is that the report takes into consideration various processes involved in the enhancement of capabilities of individuals. It pioneers a well-being framework that combines eight domains related to aspects of personal, social, political, cultural and ecological lives of individuals.

The report highlights that in order for economic growth to translate into greater human development outcomes, it is important to understand and manage various diversities in the state. It emphasizes the need to focus on providing gainful employment, quality and universal education and quality and universal healthcare. It underlines that sustainability of human development needs to be ensured by negotiating the environmental externalities as well as by redressing all types and forms of deprivations and inequalities.

We commend the Government of Assam on the release of the Assam Human Development Report and hope that it is used by the planners for developing an inclusive and sustainable development strategy harnessing the state's tremendous growth potential.

(Amitabh Kant)

UNITED NATIONS RESIDENT COORDINATOR INDIA

Message

We congratulate the Government of Assam on the release of the Assam Human Development Report. UNDP is privileged to have collaborated with the state government in preparing this Report through our partnership with NITI Aayog.

The Assam Human Development Report is unique for two reasons. First, its analysis captures the spatial and socio-economic diversity that the state enjoys. It provides a greater insight into how people living in different terrains fare differently on a range of socio-economic indicators. Second, it marks the first time a state has attempted to measure well-being, a subjective aspect of the quality of life, through developing a dedicated index. It provides a useful and holistic picture of measurable human development outcomes and importantly, people's assessment of these outcomes.

The Report calls for the formulation of long-term plans that take into account the State's growth aspirations and sustainability. It advocates for gainful employment and education as key to overcoming the poverty trap. The Report makes a powerful case for inclusive institutions that ensure peoples' participation. Recognizing the complexities and diversities within the state, the Report calls for moving away from a generic set of policies, towards focused, specific and targeted policies that can address human development challenges in the state.

We look forward to continuing our collaboration with the state government as it prepares the Vision 2030 document, towards a sustainable development agenda for Assam. We hope the Report's findings will be integrated in planning and budgeting for sustainable growth, and for ensuring that no one is left behind.

We value our strong partnership with the Government of Assam and look forward to supporting the priorities outlined in this Report.

Yuri Afanasiev
United Nations Resident Coordinator and
Resident Representative, United Nations Development Programme

55, Lodhi Estate, New Delhi 110 003, India
Tel: +91 11 46532333 | Fax: +91 11 24627612 | Email: unrco.in@one.unorg | www.in.one.un.org

Acknowledgement

The Assam State Human Development Report, 2014, indeed, is a product of collective labour. This is truly a collaborative work and the sheer number of persons involved in its preparation is in itself indicative of the magnitude and intensity of the exercise. To name them all, therefore, would be simply impossible. I however, wish to acknowledge particularly those without whose relentless support, guidance, cooperation, inspiration and motivation this report perhaps, would not have been possible. Needless to say, I take both privilege and pleasure in earnestly and gratefully acknowledging their contributions in accomplishing this exercise.

The report has been titled as *Managing Diversities, Achieving Human Development*. The theme of "diversity" underlying the report has been the intellectual contribution of Professor Atul Sarma, Chairperson of the Institute. He introduced the idea of looking at unique diversities of the state while preparing the framework document at the very beginning. He made all of us believe that we will be able to do a fair job and continued to be a source of constant guidance and confidence for about three years untiringly.

The report was initiated by the Planning and Development Department, Government of Assam, in 2012 under the stewardship of Sri Kumar Sanjay Krishna, IAS, the then Principal Secretary at the Department. Throughout the crucial period of conceptualisation and critical phase of field work, he was immensely supportive. Later, his successor Sri K. V. Eapen, IAS, Additional Chief Secretary at the Department, played an equally supportive and encouraging role, taking the charge of guiding the process to a logical end. All the official difficulties at the initial stage were skilfully smoothened by Sri Shyam Jagannathan, IAS, the then Secretary at the Department. His most cordial and enthusiastic support at the initial stage set the ball rolling in the right direction. Subsequently, Sri Manish Thakur, IAS, the then Secretary, and Sri Santanu Gotmare, the then Additional Secretary to the Planning and Development Department became an integral part of the process and contributed immensely. Sri Gotmare was particularly instrumental in the smooth and timely conduct of the massive training of over 200 field investigators and starting the process of field work well within the scheduled time. Later Sri Ashutosh Agnihotri, IAS, the then Commissioner and Secretary, Planning and Development Department, took keen interest in the report and offered his all-possible support towards its completion. Ms Aruna Rajoria, IAS, the present Secretary at the Department followed the report in the same spirit and facilitated the process of its publication.

The Steering Committee under the Chairmanship of Honourable Chief Secretary to the Government of Assam was most supportive of the entire process. The process started with Sri N. K. Das, IAS and followed by Sri Jitesh Khosla, IAS, who headed the Committee for most of the period – both of them now retired. Both helped with their constructive and insightful comments and feedback to improve the quality of report. Sri V. K. Pipersenia, the present Chief Secretary to Government of Assam also has been very generous and helpful. Comments, feedback and insights received from all other members of the Committee are most thankfully acknowledged.

The members of the Advisory Committee constituted for the purpose have been exceptionally constructive to the whole exercise from the very beginning. Sri H. N. Das, IAS, the former Chief Secretary to the Government of Assam, who headed the Committee, has been virtually a member of the core team participating in training to the field investigators as well as district-level sensitisation workshops, offering the benefit of his vast experience and thoughtful insights. All other members of the Committee were more than helpful and took keen interest in the report.

The report immensely benefited from very critical and incisive comments received from a large number of renowned academicians and experts either on particular chapters or on the draft of the report as a whole. They include Professor S. R. Hashim, Professor Amitabh Kundu, Professor R. Radhakrishna, Dr A. K. Shiva Kumar, Professor K. S. James, Professor Indrani Gupta, Dr Preet Rustagi, Dr Sandip Sarkar, Dr Tanuka Endow, Dr Gerry Rodgers, Dr Janine Rodgers, Professor Sudhangshu Bhushan, Dr Arabinda Mishra, Dr Amrita Datta and Dr Rakesh Tiwary – all are known for their contributions in concerned fields. Dr Suman Seth of the Oxford Poverty and Human Development Initiative (OPHI) at the University of Oxford has read the draft of the Subjective Well-being chapter and offered useful comments. Sri Bhaskar Mishra, ISS, and his colleagues at UNICEF Delhi office helped revalidate nutritional measurements and firm up undernutrition estimates used in the report. Professor M. P. Bezbaruah and Dr Amit Choudhury, who were also members of the Advisory Committee, reviewed the sample estimation methods used in the report at a couple of workshops organised by the Institute. Karma Wangdi, Tshering Phuntosho and Tshoki Zangmo of Centre for Bhutan Studies, Thimphu, contributed to the report by sharing their experiences of preparing the Gross National Happiness Report of Bhutan both in Thimphu and Guwahati. We acknowledge all of them and wish to thank them for their intellectual contributions.

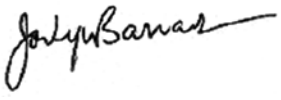
We are also grateful to Dr Atul Kalita, Parag Barman, Dr Sushmita Priyadarshini, Dr Ratul Mahanta, Dr Gopal Sarma, Dr Manjit Das, Dr Devashis Bose, Sri Rajumani Bhuyan, Sri Manash Roy, Dr Arup Kumar Deka and Bipul Kumar Rabha for helping us as local resource persons in conducting more than 50 sensitisation workshops in all districts and sub-divisions in the state. We also wish to put on record our gratitude to all Deputy Commissioners and Sub- Divisional Officers for organising these workshops in respective districts and sub-divisions. We are equally indebted to all those numerous participants in these workshops for giving us their valuable time and providing useful local insights on issues critical to human development in general.

During the last two- and-a-half years, Ms Ritu Mathur from UNDP and Sri Tuhin Pandey, IAS, the then Joint Secretary at the Planning Commission, Ms Swayamprabha Das from the erstwhile Planning Commission were instrumental in keeping things rolling from their end. The report not only has benefitted from their inputs at various stages but also gained enormously from the inputs received from numerous participants of various workshops organised by them both in Delhi and outside. Interaction with Milorad Kovacevic, Chief Statistician of UNDP's Human Development Report Office, facilitated by them has been most useful in preparing the report.

Although very much part of the team, I intend to thank Sri Hitesh Ch. Sarmah (now retired), Sri Dilip Sarma, Sri N. C. Rajkhowa (now retired), Ms Kamala Goswami, Ms Banti Devi and Ms Panchami Dowera of the Planning and Development Department, Government of Assam, for all the administrative supports provided to the Institute and to me personally.

It is not enough to thank the Directorate of Economics and Statistics, Government of Assam, for the extremely professional and splendidly superlative partnership without which the massive HDR survey simply couldn't have been possible. Special mentions are due to late Sri P. K. Bhattacharyya, the then Director and his esteemed colleague Sri Bimal Kumar Phookan (now retired), Ms Nirupama Talukdar and Sri Ranjan Kumar Dutta for their relentless cooperation. The Deputy Directors of the Directorate in all 27 districts, over 200 field staff, dozens of data entry operators were all into the work with utmost sincerity. I take the privilege of thanking them all.

Last, but not the least, I sincerely and humbly thank all those 40,000 households for responding to quite a longish and probing interview schedule. In fact, the report is for them, by them. I also formally acknowledge and thank the core team members, chapter writers, working group members and research support staff named at appropriate places. I conclude by thanking all those individuals who have contributed valuably in making of the report either directly and indirectly.



(Joydeep Baruah)
Principal Coordinator and Lead Author
OKDISCD, Guwahati

ASHDR 2014 Team

Team Leaders
Professor Bhupen Sarmah, Director, OKDISCD, Guwahati
Professor Alakh N. Sharma, Director, IHD, New Delhi

Principal Coordinator and Lead Author
Joydeep Baruah

Core Researchers and Authors
Sumit Mazumdar (Health)
Indranee Dutta, Rajshree Bedamatta (Education)
Rajarshi Majumder (Income and Livelihood)
Saswati Choudhury, Vandana Upadhyay (Gender)
Kalyan Das (Environment and Sustainability)

Core Researchers and Authors: Subjective Well-being Working Group
Udoy Saikia, James Chalmers, Gournaga Dasverma, Joydeep Baruah, Rajshree Bedamatta, Anamika Baruah

Field Survey Administration and Coordination
Pranjal Kumar Bhattacharyya, Director, Economics & Statistics, Government of Assam
Bimal Kumar Phookan, Joint Director, Economics & Statistics, Government of Assam

Coordinator: Operation and Administration
Hitesh Ch. Sarmah, Former Additional Director, Planning and Development Department

Computer and Technical Support
Biswa Ranjan Sarma

Research Assistance
Sapon Baruah, Mausumi Sarma, Swabana Mumtaz, Ila Deka, Banhi Sikha Deb, Mirza Hasan, Jahid Islam, Nabanita Deka, Hirokjeet Roy, Abdur Rashid Ahmed

Table of Contents

List of Tables

List of Figures

List of Maps

List of Abbreviations

AHDS	Assam Human Development Survey
AHS	Annual Health Survey
ANC	Ante-Natal Care
API	Annual Parasite Incidence
ARI	Acute Respiratory Infection
ASDMA	Assam State Disaster Management Authority
ASHA	Accredited Social Health Activist
AWC	Anganwadi Centre
BPHC	Block Primary Health Centre
BTAD	Bodoland Territorial Autonomous Districts
BTC	Bodoland Territorial Council
CAGR	Compounded Annual Growth Rate
CHC	Community Health Centre
cumec	cubic metre per second
DH	District Hospital
DLHS	District Level Household Survey
DISE	District Information System for Education
EB	Enumeration Block
ELQI	Employment and Livelihood Quality Index
EYS	Expected Years of Schooling
FSS	First Stage Strata
GATS	Global Adult Tobacco Survey
GDI	Gender Development Index
GDP	Gross Domestic Product
GER	Gross Enrolment Ratio
GII	Gender Inequality Index
GIS	Geographic Information System
GNI	Gross National Income
GPI	Gender Parity Index
GPS	Global Positioning System
GSDP	Gross State Domestic Product
ha	hectare
HAZ	height-for-age
HCR	Head Count Ratio
HDI	Human Development Index
HDR	Human Development Report
HH	household
HPI	Human Poverty Index
ICDS	Integrated Child Development Services
IHD	Institute for Human Development
IHDS	India Human Development Survey
IMR	Infant Mortality Rate
IT	Information Technology
JSY	Janani Suraksha Yojana
km	kilometre
km^2	square kilometre
l	litre
LFPR	Labour Force Participation Rate
MCH	Maternal and Child Health
MCTS	Mother and Child Tracking System
MDF	Moderately Dense Forest
MDG	Millennium Development Goal
mg	milligram
MMR	Maternal Mortality Ratio
MPCE	Monthly Per Capita Consumption Expenditure
MPI	Multi-dimensional Poverty Index
MT	mega tonne
MW	megawatt
MYS	Mean Years of Schooling
NCAER	National Council of Applied Economics and Research
NCD	Non-Communicable Disease
NCO	National Occupational Classification
NDDP	Net District Domestic Product
NFHS	National Family Health Survey
NHA	National Health Accounts
NHM	National Health Mission
NNMR	Neonatal Mortality Rate
NRHM	National Rural Health Mission
NRSC	National Remote Sensing Centre

NSSO	National Sample Survey Organisation
NTFP	Non-Timber Forest Product
NVDCP	National Vector-Borne Disease Control Programme
OBC	Other Backward Class
OF	Open Forest
OKDISCD	Omeo Kumar Das Institute of Social Change and Development
PAP	Proportion of Ailing Persons
PCAI	Per Capita Annual Income
PCB	Pollution Control Board
PHC	Primary Health Centre
PIP	Programme Implementation Plan
ppb	parts per billion
PPP	Purchasing Power Parity
PSU	Primary Sampling Unit
PTA	Parents-Teachers Association
RBI	Reserve Bank of India
RCH	Reproductive and Child Health
RR	Response Rate
RSBY	Rashtriya Swasthya Bima Yojana
SAGE	Survey on Ageing and Adult Health
SAH	Self-Assessed Health
SAPov	Self-Assessed Poverty
SC	Scheduled Caste
SRS	Sample Registration System
SSA	Sarva Sikhsa Abhiyan
ST	Scheduled Tribe
TET	Teacher Eligibility Test
TFR	Total Fertility Rate
TSS	Third Stage Stratum
U5MR	Under 5 Mortality Rate
UHC	Universal Health Coverage
UNER	Unemployment Rate
UNDP	United Nations Development Programme
VDF	Very Dense Forest
WAZ	weight-for-age
WHO	World Health Organization
WHZ	weight-for-height
WPR	Work Participation Rate

Executive Summary

Distinguishing Features of the Report

- The Assam Human Development Report (HRD) 2014 presents a detail scenario of the overall human development in the state. The most distinguishing feature of the report is that it goes beyond the usual way of looking at district-level aggregate scenarios of human development and brings the myriad diversities of the state, even within districts, into perspective while analysing varying degrees of human development outcomes.

- The report specifically highlights geographical, social, economic and institutional diversities of the state and their implications on aggregate human development outcomes. The report emphasises geo-spatial diversities which are not only unique but indeed enormous. The state shares large international as well as inter-state boundaries, accommodates both plains and hills, suffers from recurring floods and erosion, and has substantial riverine areas known as the 'Chars' and large tea gardens. More often than not, these geo-spatial diversities overlap with one another. Besides, the state is a unique storehouse of demographic diversities with uniquely rich and diverse social norms and customs. There are interesting institutional diversities in the state as well – ranging from autonomous councils to development councils. These wide varieties of institutional arrangements have resulted from political processes of fulfilling various demands for autonomy and self-governance by different communities. The report, therefore, highlights the fact that relative advantages of people differ greatly in the state and, as such, differential achievements of people need to be understood in terms of these diversities. The report, therefore, has been titled as *Managing Diversities, Achieving Human Development*.

- Another salient aspect of the report is that it is based on primary data. This is, in fact, the largest survey ever conducted in the state for development evaluation. The sample size of the survey is about 10 times that of the typical National Sample Survey Organisation (NSSO) rounds and about eight times that of the National Family Health Survey (NFHS) in the state. As such, the report provides some estimates related to child nutrition, health and educational attainment at state and sub-state levels for the first time. Secondly, this allows the report to adopt the United Nations Development Programme's (UNDP's) new (2010) method of assessing human development. This is the first time that a human development report has been prepared with new UNDP method in the country.

- Another distinguishing feature of the report comes from its analytical innovation. The report provides three supplementary indices related to employment-livelihood, vulnerability and subjective well-being. While the first two offer additional information regarding opportunities of making choices, the third is concerned about the processes involved in realising the

opportunities. Having an index of subjective well-being in the HDR, therefore, adds value to the analyses. This kind of juxtaposition of 'objective' and 'subjective' aspects of well-being within the capability approach is an important innovation attempted in this report. Besides, the collaborative and participative approach involved in the preparation of the report itself is a milestone.

Key Findings

- The report puts the Human Development Index (HDI) in Assam at 0.557 indicating that the level of overall human development in the state is just about half of the desired level. However, it has been observed that the overall level of human development in the state has shown a steady and continuous improvement over the last 15 years.

- It may, further, be observed that achievements in all three key dimensions of human development, that is, education, health and income are about halfway with education being at about two-thirds followed by health and income which are just at the half mark of the desired level. Besides, district-wise and various diversities wise, both overall and dimensional achievements have shown wide variations. The district ranking based on the values of overall HDI puts Kamrup Metro at the top (with a value of HDI 0.703) followed by Jorhat (HDI 0.655). The lowest value is obtained in the district of Hailakandi (HDI 0.437).

- Most importantly, drivers of the human development achievements have been found to differ greatly across districts. While the overall level of human development achievement in some districts such as Kamrup Metro is primarily driven by achievements in the income dimension; in case of others, it has been found to be either education (say, in Sibsagar) or health (say, in Kamrup). This clearly points to policy focuses for district planning and favours a decentralised, differentiated and need-based development planning in the state.

- The report categorically underlines redressal of various inequalities to improve human development outcomes in the state. It is estimated that about one-third (30 per cent) of the potential aggregate human development is lost due to the prevailing inequalities underlying achievements in education, health and income dimensions. The loss due to inequality is the highest in the income dimension (about 44 per cent) followed by health (32 per cent) and then education (9 per cent). Moreover, it was found that, district wise, dimensional inequalities vary distinctly.

- The report also highlights the significance of removing gender inequalities in improving overall human development achievements in the state. The report estimates that overall human development of women, in general, is lower than that of men by some 14 per cent. Besides, the report reveals that the observed gender inequality in key dimensions of human development, that is, education, health and income, results in the loss of about 37 per cent of potential human development achievement in the state in general.

- The report discloses that about one-third of the population in the state is 'multi-dimensionally poor', that is, poor in more than one dimension of human development. It, therefore, emphasises that poverty beyond income poverty be addressed within a much wider framework and approach.

- The report highlights an index of subjective well-being of people which represents how people value the various critical processes of human development. It is found that 56.4 per cent of people is 'satisfied' – either moderately or intensely – with the most critical processes of well-being. However, many variations exist in the proportions of 'satisfied' people across districts. The highest percentage of people 'satisfied' is obtained in Jorhat (82.4 per cent) while the lowest is found in Marigaon (18.1 per cent). The main drivers of 'satisfaction' have been aspects related to ecology and environment, cultural and psychological domains whereas the three main drivers of 'dissatisfaction' have been governance, education and health domains.

Major Issues and Concerns

- The report highlights some major issues and concerns in achieving overall human development in the state. It first underlines the concerns related to the unemployment scenario in the state. The total unemployment rate (percentage of people within the age of 15-59 years finding no employment) is estimated at 13.4 per cent. The female unemployment rate is found to be 33.9 per cent compared to 8.0 percent in the case of males. The youth unemployment rate (15-24 per cent) is again found to be as high as 37.7 per cent. Geographical diversity-wise unemployment is found to be the highest in the tea gardens (15.3 per cent) and flood affected areas (15.2 per cent).

- The report brings in issues and concerns regarding myriad forms of inequalities. It finds that inequalities in human development outcomes emanate from inequalities in access to productive resources and basic amenities. The extent of inequality in land holding, for example, is evident from the fact that the top 20 per cent of the people holds about 70 per cent of the total cultivable land while 80 per cent share 30 per cent of the remaining land. Consequently, the top 20 per cent shares 45 per cent of the total consumption expenditure while the bottom 20 per cent shares only 8 per cent. The report, thus, highlights that redressal of fundamental inequalities in access to resources is essential for improving human development achievements.

- The report emphasises the multi-dimensional nature of poverty and deprivations. It, therefore, advocates for ending all types and forms of deprivations in order to improve human development outcomes.

- In this context, the report underscores the criticality of education for overall human development in the state. It clearly emphasises the benefits of making children stay longer in school along with a qualitative improvement in education. The report observes that reducing dropout rates at all levels is extremely important.

- On the health front, the report highlights, inter alia, four issues and concerns. It reiterates the need to accelerate progress in improving the infant and maternal mortality scenario. However, in this connection, the report observes that, in the context of infant mortality, social determinants and behavioural aspects are to be brought within the policy focus. Similarly, the report observes that maternal mortality, perhaps, cannot be addressed only by focusing on institutional factors and policy must accommodate a range of non-institutional factors. It very clearly raises concerns on the child nutrition scenario in the state. The report estimates that 37.4 per cent children below the age of five years is under weight. Most of the underweight children are in the age group less than two years and live in rural areas. Very importantly, the report does not find a clear gradient with respect to consumption expenditure classes. This indicates that child undernutrition in the state is not the result of poverty alone and thus needs a much wider policy framework for it to be addressed. The report also highlights health vulnerabilities in terms of high out-of-pocket expenses with very limited risk coverage.

- The report also points out to the issues regarding early motherhood and early pregnancy and adolescent girls. It finds that about 15 per cent of girls in the age group of 15-19 are already married. The report observes that this is a serious concern affecting a host of cross-cutting issues related to reproductive and child health, education and employment, and gender inequality.

Broad Messages

- The report indicates that economic growth needs to be translated into greater human development outcomes and achievements for improving the lives of people. In doing so, it is extremely critical to understand and manage various diversities in the state. Three aspects – as the report argues – are significant in achieving better human development outcomes and in making economic growth inclusive and broad-based: gainful employment, quality and universal education and quality and universal healthcare. Sustainability of human development, again, needs to be ensured not only by negotiating the environmental externalities but also by redressing all types and forms of deprivations and inequalities. In fact, the report underlines that redressal of inequalities is fundamental in achieving human development and making it inclusive as well as sustainable. The report makes an important value addition by considering 'processes' along with 'outcomes' and emphasises the point that processes are critical to outcome. The report, therefore, makes a very strong case for getting the processes right by underlining the principles of transparency, accountability and democratisation in the state. The report, in this connection, makes a strong case for inclusive institutions to ensure people's participation in different processes involved.

- The overarching broad message of the report is that, given the multi-layered and multi-faceted complexities emanating out of unique diversities of the state, no generic set of policies would be able to bring about overall human development; rather there is a need for a focussed and specific set of policies to deal with the issues and concerns raised in the report and for achieving a higher level of human development in the state.

1 Introduction

Managing Diversities, Achieving Human Development

1.1 Assam: Geography, Economy and People

Assam is one of the 35 states and union territories of India. The total geographical area of the state is 78,438 square kilometre (km^2) with a total population of 3.12 crore. Assam is primarily a rural state with more than 98 percent of its area falling under rural areas and a rural population of 86 percent. The state accounts for about 2.4 percent of the total geographical area and 2.6 percent of the total population of the country (Census, 2011).

The state is a unique showcase of diversities of myriad forms. As a "land locked"state, it is enormously diverse in terms of its geographical features. Given these features, the state in general faces some distinctive challenges.

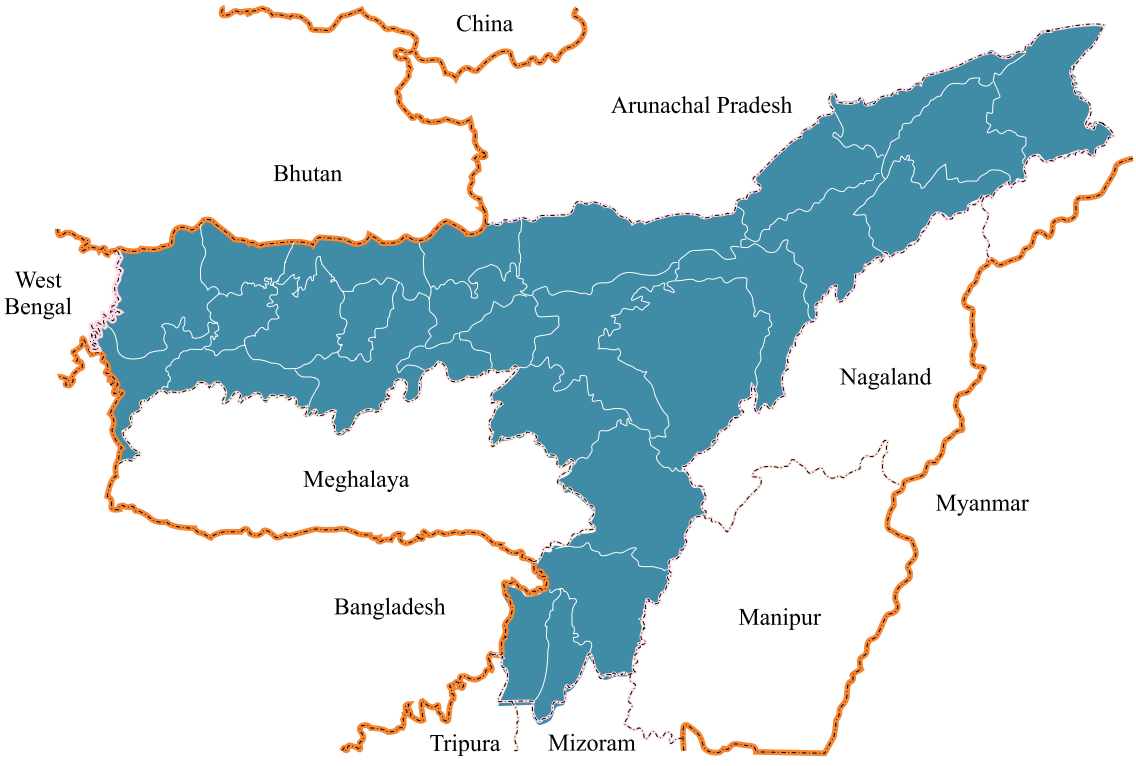
The geographical location of the state itself is quite unique. The state shares borders with seven states and two countries, that is, Bhutan and Bangladesh, having 2,276.3 kilometre (km) inter-state and 529 km of international borders[1]. Evidently, the physical remoteness of these border areas limits the connectivity and economic opportunities of the people living in these areas. The lack of adequate infrastructure in these areas has been acknowledged long back in 1986 and, consequently, the Border Area Development Programme under the Ministry of Home Affairs, Government of India, was formulated to meet the special need of these areas in the country as a whole. Specific provisions were made in subsequent Five Year Plans for the development of these areas in the country, in general, as well as in the state, in particular, since the Eighth Five Year Plan onwards. Besides physical remoteness, limited economic opportunities and lack of infrastructure, these areas also commonly witness numerous conflicts related to border disputes, often violent in nature, directly affecting life and livelihood of people. Such conflicts only reinforce the development challenges. Over the years, such conflicts have been a familiar feature of the Assam-Meghalaya, Assam-Nagaland and Assam-Arunachal borders. The genesis of these disputes related to borders, however, dates back to colonial history of the region and subsequent post-colonial nation building processes. The distinctive challenge in these areas, thus, emanates from both security and development perspectives.

The geographical terrain of the state has a mix of hills and plains –of 27 districts two, that is, Karbi Anglong and Dima Hasao, are hills districts. These two districts comprise about 20 percent of the total geographical area and about 4 percent of the total population of the state. Like the border areas, the hill areas also offer unique challenges given their difficult terrain, forest cover, peculiar agro-climatic conditions, distinct socio-cultural features and typical institutional arrangements. These again impede the scope and opportunities of various choices its people can make.

The plains of the remaining 25 districts are divided into two valleys – the Brahmaputra and the Barak valleys – each having unique historical legacies. The Brahmaputra valley is further divided into two banks – southern and northern. Also, the valley is divided as "upper" and "lower" with respect to the course of the river Brahmaputra. The history of the divisions is different in terms of population settlement and agricultural practices, giving rise to unique social and economic formations in the districts. When the British brought the state into the fold of the colonial empire in the early 19th century, a typical and uniform revenue system emerged

[1] *Working Group Report on Border Area Development,* 10th Five Year Plan, Planning Commission, Government of India (2001).

Map1.1: International and interstate borders shared by the state



and the state economy grew in a particular fashion, serving mostly, colonial interests. The economic resources of the state including oil and coal attracted colonial interests followed by the possibilities of tea plantation. These continued to be the state's economic backbone subsequently. The economy of the state, therefore, remained primarily 'extractive' with very limited domestic vibrancy. It may be noted that the infrastructure built in the state due to the economic interests of the colonial powers remained mostly lopsided, contributing little to domestic development.

In the valleys, there are areas surrounded by the courses of the river Brahmaputra and its tributaries, known as the *chars*. These *chars* are, in fact, mid-channel bars, which are an integral part of the fluvial process of the river Brahmaputra and its tributaries in Assam. The extremely braided channels of the river along with its suspended particles and bed load combine together during floods to give rise to "almond" shaped alluvial formations known as *chars*. Since these formations are built under a flood environment, the height of the char is never greater than the height of the highest flood[2]. They are extremely unstable and can be wiped out by erosion during recurrent floods. Above all, the *chars* follow a peculiar pattern of migration that started during the colonial period. Besides, the *chars* are subject to erosion on their upstream and deposition on the downstream, due to which *char* dwellers migrate downstream. This affects the geometry and location of the chars during floods almost every year.[3] The *chars* account for about 5 percent of the total area of the state spreading across 14 districts, 55 blocks and around 2,300 villages.[4]

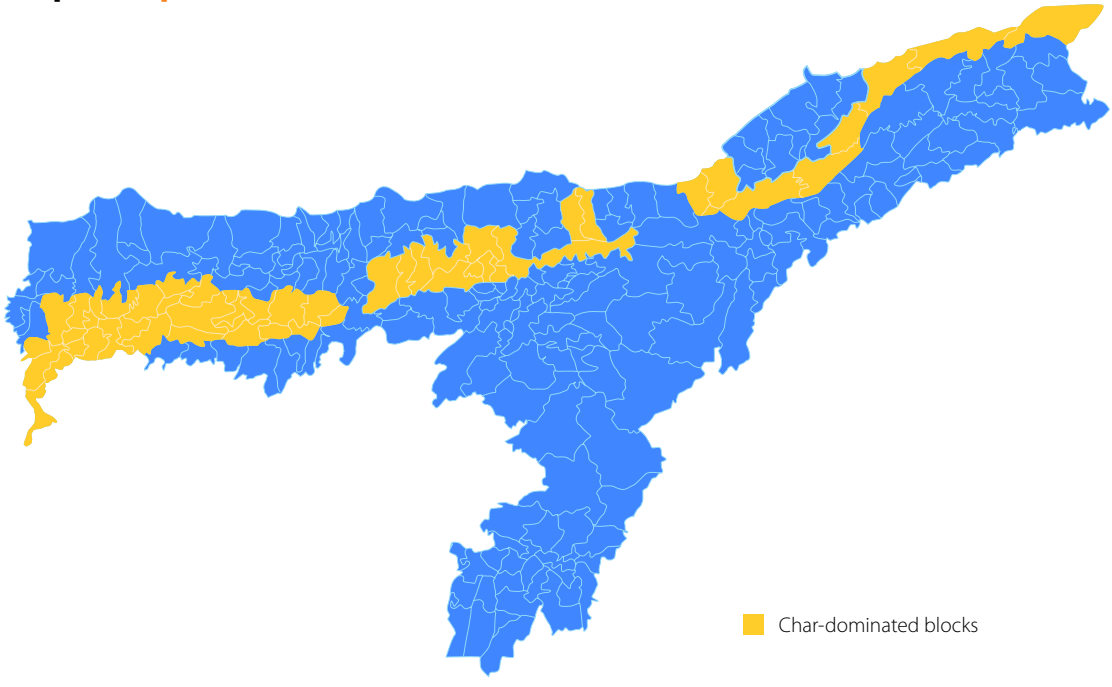
[2] See Bhagabati (2001).
[3] See Chakraborty (2013).
[4] Directory of Char Areas (2007-08), Government of Assam.

The life and livelihood of people living in the char areas are challenged by several uncertainties besides the problems of accessibility and connectivity. Although the land of the chars is favourable for agricultural production, uncertainties related to land relations are worth noting. Moreover, recurrent floods and erosion as mentioned above are perennial features of the chars, giving rise to considerable uncertainties for the char dwellers.

Floods, however, are a major challenge in themselves. The state faces recurring floods each year affecting land, life and livelihood. The hazard maps prepared by the National Remote Sensing Centre (NRSC) reveal that there are areas in the state with recurring floods five to seven times in a year. Based on satellite data, for instance, it has been estimated that during the flood that occurred in June-July 2012, 27 districts in Assam had more than 5 percent of the total geographical area submerged, about 3,829 villages marooned and 23.08 lakh people were affected[5]. Floods also naturally accompany large-scale erosion. As per government records, the average annual damage since 1954 has been over INR124 crore and the estimated average annual erosion rate has been 8,000 hectares, which have affected lakhs of families spread over 2,534 villages[6].

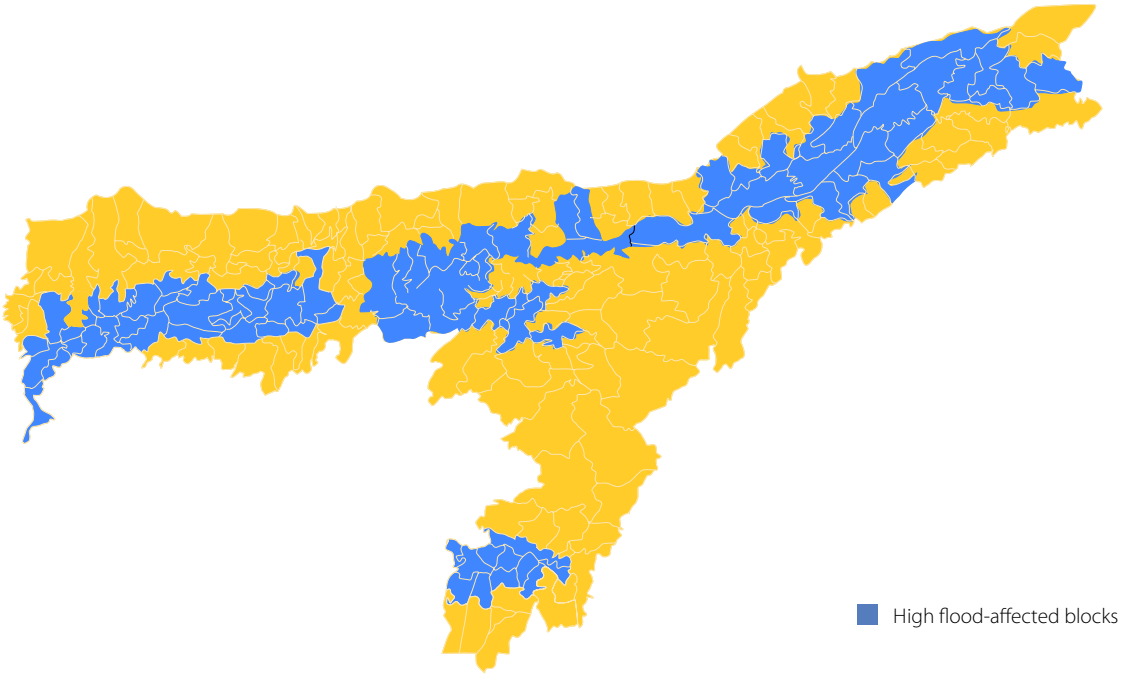
The state also has a large number of tea gardens. There are some 765 large tea gardens with 2.33 lakh hectare of area under their possession[7]. The tea gardens represent a typical diversity with distinct population streams that migrated into the state during the colonial period. Life and livelihood at the tea garden are characterised by the typical features of plantation economy and the people in the tea gardens are considered as one of the most marginalised communities. Employment security, fare wages, provisioning of basic services and amenities and improving the overall living standard of the tea garden people have been major challenges all along. Due to their relative backwardness, they have

Map1.2: Spread of char-dominated blocks in the state

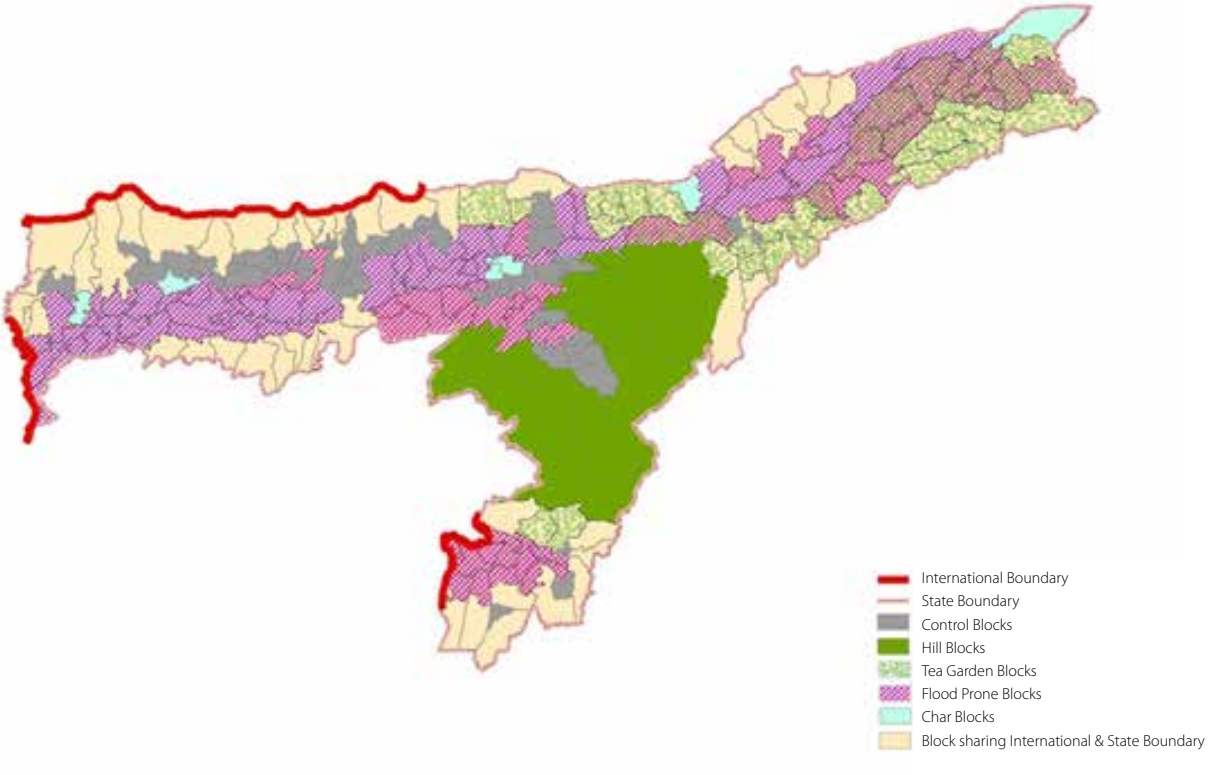


[5] See Bhatt et. al. (2013).
[6] See Chakraborty (2013).
[7] Statistical Hand Book of Assam (2013).

Map1.3: High flood-affected blocks in the state



Map1.4: Overlapping diversities in the state



been identified as "backward classes" by the Government, even though collectively they are called *tea tribes*.

It is interesting to note that, more often than not, these unique geographical diversities overlap with each other generating cascading effects on lives of people –their routine functioning. The complexity is presented in the Map 1.4.

The economy of the state is primarily agricultural. In the hills, people have been practicing shifting cultivations since time immemorial. Wet rice cultivation started during the Ahom rule in the early 13th century is mostly practiced in the valleys. British occupation of the region resulted in cultivation of cash crops during the early 19th century together with a sizable plantation economy. Even though the state is rich in terms of oil, gas and other natural resources, industrialisation remained limited. Urbanisation has also been limited and confined only to administrative rather than economic processes, and, consequently, most urban centres grew either as administrative headquarters or as army cantonments. Notwithstanding, the service sector has become important in the state's economy in the recent past.

The growth rate of the state's economy – one of the primary macroeconomic indicators – measured by the rate of growth of the Gross Domestic Product (GDP) for the year 2013-14 at the constant (2004-05) prices has been estimated to be 5.87 percent against the national level of 4.74 percent. However, during 2004-09, the growth rate of the state's economy remained lower than the national average. The observed turn-around, that is, growth rate of the state's economy being higher than the national level, has existed since 2009-10 consecutively. Notably, during the last decade, that is, 2004-14, the state's growth rate has increased from 3.74 to 5.87 percent whereas that of the country has declined from 8.52 to 4.74 percent. The data show that recovery in agricultural growth and a pronounced improvement in industrial growth together with steady service sector growth have contributed to this turn-around. The agricultural growth rate, which was a mere

1.92 percent in the beginning of 2005, has risen to 4.45 in 2013-14, whereas that of the country has declined from 5.60 to 4.93 percent during the same period. The industrial growth rate in the state which was -3.53 percent in 2005 has improved to 4.28 percent in 2013-14 while that of the country has fallen from 9.40 to 0.35 percent during the period. The growth rate of services in the state in 2013-14 has been given as 6.95 percent which was 7.93 percent in 2005. The growth rate of services in the country as a whole has been 6.78 percent in 2013-14 which was 10.91 percent in 2005.

Notwithstanding the share of agriculture in the Gross State Domestic Product (GSDP) at constant (2004-05) prices has declined from 21.70 percent in 2004-05 to 17.77 in 2013-14. The share of industry in the total GSDP has also declined from 27.54 percent to 21.27 percent during the same period. The share of the service sector, on the other hand, has increased from 46.89 percent to 57.47 percent.

The per capita net domestic product – the other important macroeconomic indicator– shows that the state's per capita net domestic product at constant (2004-05) prices was 40 percent lower than the national level in 2013-14. In 2004-05, the gap was 30 percent. The gap is widening despite the higher rate of growth in per capita net domestic product in the state compared to the national level in 2012-13 and 2013-14. It is, therefore, necessary to have a substantially higher growth in per capita for the long term to

reduce the per capita gap between the state and national levels.

Census 2011 data makes it clear that about 50 percent of the total workforce (main and marginal put together) still depend on agriculture. Data also reveal that, during 2001-11, the proportion of cultivators (main as well as marginal) to total workers has declined from about 40 percent to 34 percent. On the contrary, during the same period, the proportion of agricultural labourers has increased from 13 to 15 percent. Data also reveal that the proportion of marginal cultivators and agricultural workers has also increased during 2001-11.

Data shows that the total gross cropped area in the state is about 53 percent of the total geographical area. However, the state's cropping intensity is rather low at 149. The major challenge comes from not having adequate irrigation facilities as the state's irrigated area is less than 10 percent of the total cultivated area. Thirty-eight percent of the gross cropped area is under high yielding variety seed cultivation. It is further observed that an overwhelming proportion, that is,86 percent of operational holdings in the state belongs to the small and marginal categories (less than 2 hectare in size) of which almost 68 percent belongs to the marginal category (less than 1 hectare in size). The index of food grain production in the state in 2013-14 was 156 (with respect to the base triennium ending 2007-08) and that of non-food grain is 124. The corresponding figure for the country has been 123 and 135, respectively. The index of industrial production in the state in 2013-14 (base taken as 2004-05) was 138 which remained almost stagnant for the subsequent five years. The index of production from total manufacturing happens to be 178 while that of total mineral production is found to be 103[8].

These trends depict an overall economic situation of the state. Increasing agricultural growth coupled with its falling share in GSDP, on one hand, indicates a lack of adequate value addition in the agricultural sector. Notwithstanding, half of the working population is engaged in agriculture which itself is witnessing a tendency towards proletarianisation and marginalisation, this, in general, is adversely impacting upon the level of per capita net domestic product. The criticality of the agricultural sector, therefore, becomes eminent.

The state is further uniquely diverse in terms of its demography. Census 2011 puts the total population in the state at 3.12 crore. The growth rate of population in the state during 2001-11 was 17.1 percent compared to 17.7 percent in the country. Growth rate of the population registered a decline from 18.9 during 1991-2001. The sex ratio in the state has improved from 935 (2001) to 958 (2011). There are about 26 Scheduled Tribes (STs) in the state accounting for 12.44 percent of the state's population. The state also has 22 Scheduled Castes (SCs) accounting for 7.15 percent of the state's total population[9]. The population is also diverse in terms of religious minorities and 118 blocks spreading across 17 of 27 districts in the state have been categorised as minority concentrated blocks[10]. Demographic diversities give rise to myriad socio-cultural conditions and contingencies offering development challenges of various forms.

Apart from uniqueness and diversities, the state is also characterised by assorted institutional arrangements of governance. The two hills districts of the state have autonomous district councils formed under the provisions of the

[8] Data from Statistical Hand Book of Assam 2014, Directorate of Economics and Statistics, Assam.
[9] See Census 2011, 2001.
[10] As per the Ministry of Minority Affairs, Government of India

Sixth Schedule to the Constitution. Further, fulfilling the aspirations for autonomy of the Bodos, four districts, that is, Kokrajhar, Baksa, Chirang and Udalguri, were characterised as Bodoland Territorial Autonomous Districts (BTAD) and brought under the Bodoland Territorial Council (BTC) created through an Amendment to the Sixth Schedule in 2003. The rest of the districts in the state are under part IX of the Constitution where Panchayats and Urban Local Bodies are functional. However, there are six autonomous councils related to six of the communities – Rabha-Hasong, Mising, Tiwa, Deori, Thengal Kachari and Sonowal Kachari– which have been formed through State Legislations. Besides, there are 18 community-specific development councils created by the state government which are primarily mandated to focus on development of specific communities.

Autonomous district councils, including the BTC, created under the Sixth Schedule to the Constitution have elaborate functions and powers in the legislature, executive, judicial and financial domains. These powers are expected to uplift the tribal communities especially in the domains of primary education, health, culture, social customs, social welfare, forest, land, agriculture, water management, village administration, and economic and rural development. However, in practice, the performance of the autonomous councils has not come up to the expectations. For instance, the autonomous district councils in the hills failed to set up courts at the village level. The autonomous councils have also been constrained by a lack of adequate coordination with the state government. They have not been able to play a significant role in the planning process at the micro level. Though the Constitution of India envisaged the autonomous district councils as effective instruments of democratic decentralisation, especially among the tribal societies, they have largely failed to create the institutions envisaged below the level of the district. Further, questions of gender justice have largely been ignored and, consequently, the district councils have failed to ensure a political space for women. In addition, though planning at the district level to ensure overall development of the autonomous district has been one of the fundamental concerns of the district councils, they have failed to create the required institutional mechanism of district planning. The other autonomous councils created by the state legislature have remained substantially weak in terms of ushering in the process of democratic decentralisation. The community-centric autonomous councils witness a tendency of the state to fulfil the political aspirations of the respective communities but they have never been strengthened as institutions of democratic decentralisation ensuring peoples' participation at the grassroots. The other development councils which are again community-centric have also never been operationalised with the ethos of democratic decentralisation and remain dependent on the mercy of the state government. These institutions have also failed to involve the community at large.

Similar failure is also eminent in the Panchayats. The actual devolution of funds, functionaries and functions is still wanting in the Panchayats. The District Planning Committees lack effectiveness in district planning exercises. These shortcomings have clear implications for the overall governance structure and outcome in the state.

Undoubtedly, the diversities – spatial, demographic and institutional – have significant implications for determining 'advantages' and 'achievements' of people in making diverse choices in life. Therefore, in understanding and evaluating differential development outcomes, sufficient attention is to be paid to them.

1.2 Evaluating Development – Focusing on Human Development

Everybody in society desires development. However, every single person differs on the *kind* of development she or he desires. There exists, therefore, limited consensus with regard to the idea of 'development', even though development is universally desirable.

For long, the idea of development has typically been identified with people's relative affluence in terms of material wealth. Within this *idea* of development, income essentially serves as an 'index' or metric of the level of development; for more income fetches more wealth. Clearly, any specific level of income is indicative of the *choice options* of people and any increase in income simply implies enlarging people's *choices* over commodities. An evaluation of development, in this approach, naturally takes the form of a comparison of levels of income across societies, and such comparison typically requires an evaluation of the levels of per capita income, that is, average income of individuals, across societies.

This approach to evaluating development, however, comes with some serious problems. The most obvious is that associated with the very idea of averages. Statistically, the average is heavily biased towards extreme values – presence of any high or low value readily influences the average in its favour. This brings in the other issue: the distributional aspect of income to which the approach remains mostly indifferent. Even in a highly income unequal society, the per capita approach ascribes higher weight to high per capita income while evaluating development. Further, income as an index of wealth serves well given the prices. The prices of commodities, however, are not always reflective of their real worth in contributing to personal well-being. Besides these problems, there is a more fundamental and philosophical problem involved in this approach which relates to the 'ends' and 'means' of development.

The most significant shortcoming of the income approach to evaluating development is that it tends to obscure people from the focus of the development agenda by overwhelmingly emphasising commodities or income. While wealth or income is a necessary 'means' to better lives, neither wealth nor income is an 'end' in itself. Admittedly, the 'end' of a better human life is not limited to amassing commodities or income only; rather, it is about becoming engaged in and performing those activities that are considered worthwhile. In performing such activities, commodities become *instrumental* no doubt, but it is, indeed, the ability to perform valuable activities that is of *intrinsic* importance in evaluating the quality of human life. The goal of development, that is, the 'end' is, thus, distinguished from the 'means' by focusing on the possessed relevance; the 'ends' must necessarily possess some intrinsic relevance – all those with instrumental importance have to be classified as 'means'. If the quality of life is the 'end' of development, then an evaluation of development needs to focus on the quality of life and the human development approach essentially tries to achieve this.

In the human development approach, unlike in the income approach, the quality of life of people occupies the centre-stage. Notwithstanding, income, in the human development approach too, has a role to play but the role is *instrumental* rather than *intrinsic*. The theoretical underpinnings of the human development approach rest on the capability framework pioneered and developed over a long period of time by Amartya Sen and profoundly enriched and extended by some

very distinguished thinkers[11]. Human life in the capability approach is viewed as a combination of various *doings* and beings that an individual considers worthwhile and her/his well-being depends on what she/he manages to do or be. The various doings and beings which an individual finds valuable to pursue in life are together called functionings which can range from very basic to quite complex ones. The ability to engage in functionings of diverse types is called *capability*. The focus of human development lies on expanding the capability of individuals so that their genuine choices over the range of functionings are enhanced. This marks the most fundamental shift from the income approach – while the income approach concerns itself with expanding choices over *commodities*, the capability approach attaches significance to the expansion of choices over *functionings*.

It may be noted that the distinction between 'functioning' and 'capability' is elementary in the capability approach. Typically, a 'functioning' is taken as an 'achievement' of an individual while 'capability' is considered to be the embodiment of her/his 'real freedom to achieve'. The idea of "freedom" is, thus, central to the capability approach. In this sense, differential 'achievements' and hence quality of life or well-being of individuals are results of differential capabilities of individuals which are indicative of differences in 'real freedoms to achieve' that individuals enjoy. The evaluation of development, in the human development approach, therefore, is conducted over the space of capabilities.

1.3 Assessing Human Development

It is, thus, clear that the fundamental motivation behind the assessment of human development lies in evaluating individuals" capability to achieve' when 'achievements' are defined in terms of an array of attainable functionings. The notion of capability, however, is abstract, directly unobservable, but derived from the notion of observable functionings. In a sense, the essence of evaluation of human life on the *space* of capability lies in critically examining the '*extent* of freedom' that it reflects. The extent of freedom connotes two constitutive aspects of the capability space, that is, 'diversity' and 'richness' of functionings contained in it. Diversity relates to the quantitative aspects of the capability space, that is, the number of alternatives available therein. However, the evaluation of diversity of functioning goes well beyond simple counting of the number of alternatives. Indeed, it is the nature or richness or worth of functionings which is more critical in evaluating capability. Recognisably, therefore, notwithstanding the significant distinction between capability and functioning, the evaluation of capability starts with an examination of the nature and value of functionings themselves[12].

How can 'richness' or 'worth' of the functionings be evaluated when individuals are allowed to pursue their own reasons and valuations within the normative framework of the capability approach? This, clearly, requires knowledge and understanding of the contexts and contingencies that shape the individual values and preferences. It is, therefore, essential that the capability assessment be based on a detail information base. The role of information in capability assessment is, indeed, enormous.

Although an examination of functionings and their underlying contexts has its unique significance in capability evaluation, the capability is also to be assessed in its own right.

[11] See Sen (1982, 1985, 1987, 1989, 1995, 2000) and Nussbaum (1995, 2000).
[12] For more on this see Robeyns (2000, 2005).

There needs to be a way to the capability space from functionings. This is achieved through the Human Development Index (HDI).

The HDI, devised by United Nations Development Programme (UNDP) way back in 1990 is a composite index which attempts to quantify capability. The index is composed of three dimensions – long and healthy life, knowledge, and a decent standard of living – denoting some 'basic' capabilities. These basic capabilities are minimally required capabilities for a human life, which effectively describe the deprivation threshold. Each dimension is measured through one or more indicators depicting certain levels of achievements in respective dimensions. Indicators are normalised to obtain dimensional indices which are then aggregated by way of averaging to arrive at the index of human development. The value of the index ranges from 0 to 1 indicating specific capability such that more the value more is the capability. The capability comparison, then, is carried out by comparing the value of HDIs across societies just as the income comparison is carried out by comparing per capita incomes[13].

It may be noted that over the years, the methodology of obtaining HDI has undergone several changes. This, in a way, goes on to exhibit the flexibility and dynamism of the approach to adapt itself to emerging changes and challenges.

1.4 Accounting for Diversities

As has been mentioned, in the human development approach, the evaluation of development is conducted over the capability space and, therefore, it is the equality in terms of capability that matters the most. However, equality over the capability space does not necessarily guarantee equality over other spaces. This is not because capability alone determines achievements and well-being, but various 'means' and their relations to capability are also important determinants of the level of achievements and well-being. Various means in the forms of commodities and services along with other social contexts including institutions, norms, practices, etc., affect the capability set of individuals as well as their choices, thereby implicating the achieved functionings. The relations between the means and capability

Figure 1.1: Ends and means interface: the capability framework

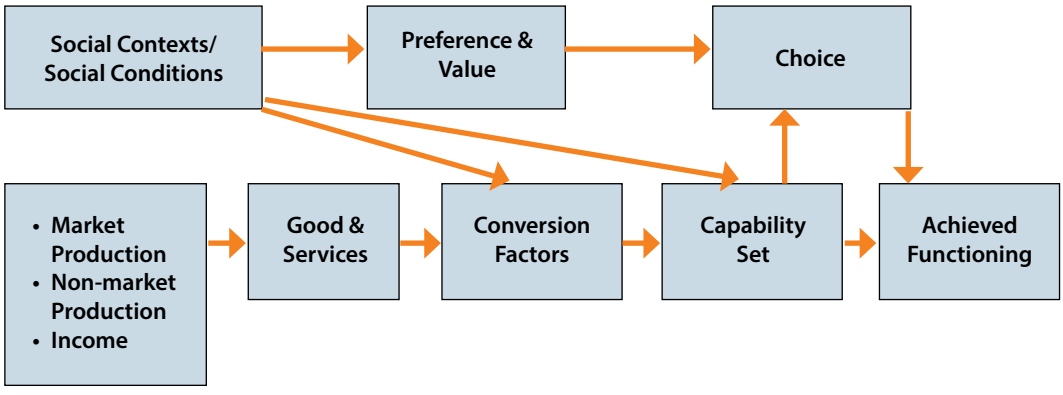


Figure adapted from Robeyns (2005).

[13] More on this can be found in Chapter 8.

are hugely diverse and the capability approach acknowledges and accommodates these inherent diversities – both individual and social. These are recognised as *conversion factors* which can be of three types – personal, social and environmental. Personal factors comprise bodily capacity of individuals, skills, intelligence, etc. Social factors include social structures and norms, culture and customs, public policies, institutions and environmental factors entail climate, geographical location, etc. Having means alone, thus, are not sufficient for functioning; differential functioning may still result due to diverse conversion factors affecting individuals. The wholesome interface is depicted in Figure 1.2.

It is, thus, clear from Figure 1.1 that various personal, social and environmental factors – together called "conversion factors" – mediate between means and ends resulting in differential achievements and well-being. In the capability framework, the notion of 'advantage' is used to refer to these diverse conditions and contingencies affecting choice options. The goals of the human development approach are, therefore, two-fold – understanding differential functionings, that is, achievements or well-being from the perspective of capability differentials and also to understand the differential well-being in terms of diversity of advantages. The present report takes this route in assessing the status of human development in Assam.

1.5 Scope and Approach of the Present HDR

Assam published its first Human Development Report (HDR) in 2003. The report highlighted several important aspects of human development in the state besides ranking its districts with regards to HDI, Gender Development Index (GDI) and Human Poverty Index (HPI). These indices offered insights with regard to the varying degrees of achievements in human development across districts in three basic dimensions of human development: health, education and income.

Since the publication of the first state HDR for Assam, a decade has elapsed and many interventions have on a massive scale have been undertaken with the objectives of making the lives of people better. It is therefore appropriate to come up with the second HDR for the State. While the purpose of the present report is to assess the status of human development and its related aspects in the state, with districts as units of analysis, the scope of the present exercise goes a little further than ranking the districts in terms of human development achievements. The present report attempts to understand the differential human development achievements in different districts in terms of the constituting diversities within the district. This invariably requires disaggregation of information by diversity categories. Since suitably disaggregated information is not readily available for such an analysis, the report is based on primary data.

To allow such an analysis, the sampling methodology has to be statistically robust and needs to accommodate an appropriate design. The districts, accordingly, have been stratified into two sectors: rural and urban. The rural sector is then further stratified into diversity blocks based on spatial features of border, char, flood, tea garden, hills and general. It may be noted that, in certain cases, there are overlaps of more than one diversity categories. Such blocks are stratified as multiple diversity blocks. The sample blocks within a district were then selected at random. In the second stage, villages were selected based on demographic diversities using the Census frame. From the sample villages, households were selected based on economics criteria of monthly per capita consumption expenditure following the

National Sample Survey Organisation (NSSO) thresholds. The survey was then conducted at the household level.

In the urban sector, based on the urban frame of Census 2011, urban areas were stratified based on size-class and civic status combinations. In the next stage, Census Enumeration Blocks were considered as equivalent to villages in rural areas for selection. In the third stage again, like in rural areas, the NSSO monthly per capita consumption expenditure thresholds were used for stratifying the households. Selections of households were based on complete house listing of the sample villages. Selections at all levels were random, based on a fixed random number table with proportional allocation of units to each stratum.

The present report is based on a survey of 39,998 households and 187,511 individuals from 27 districts, 97 blocks, 95 urban centres, 1,972 villages and 147 enumeration blocks (sampling details and field work[14] is given at Technical Appendix 1).

Table 1.1: Profile of sample households

District	Rural	Urban	Total
Baksa	1188	15	1203
Barpeta	1937	201	2138
Bongaigaon	783	161	944
Cachar	1926	397	2323
Chirang	547	48	595
Darrang	1105	80	1185
Dhemaji	751	66	817
Dhubri	2337	279	2616
Dibrugarh	1377	345	1722
Dima Hasao	211	58	269
Goalpara	1050	181	1231
Golaghat	1275	142	1417
Hailakandi	837	66	903
Jorhat	1188	325	1513
Kamrup	1672	184	1856
Kamrup (M)	265	1562	1827
Karbi Anglong	965	152	1117
Karimganj	1415	149	1564
Kokrajhar	1077	58	1135
Lakhimpur	1138	135	1273
Marigaon	1044	104	1148
Nagaon	2966	507	3473
Nalbari	868	112	980
Sibsagar	1392	165	1557
Sonitpur	2184	255	2439
Tinsukia	1323	369	1692
Udalguri	1008	53	1061
Total	33829	6169	39998

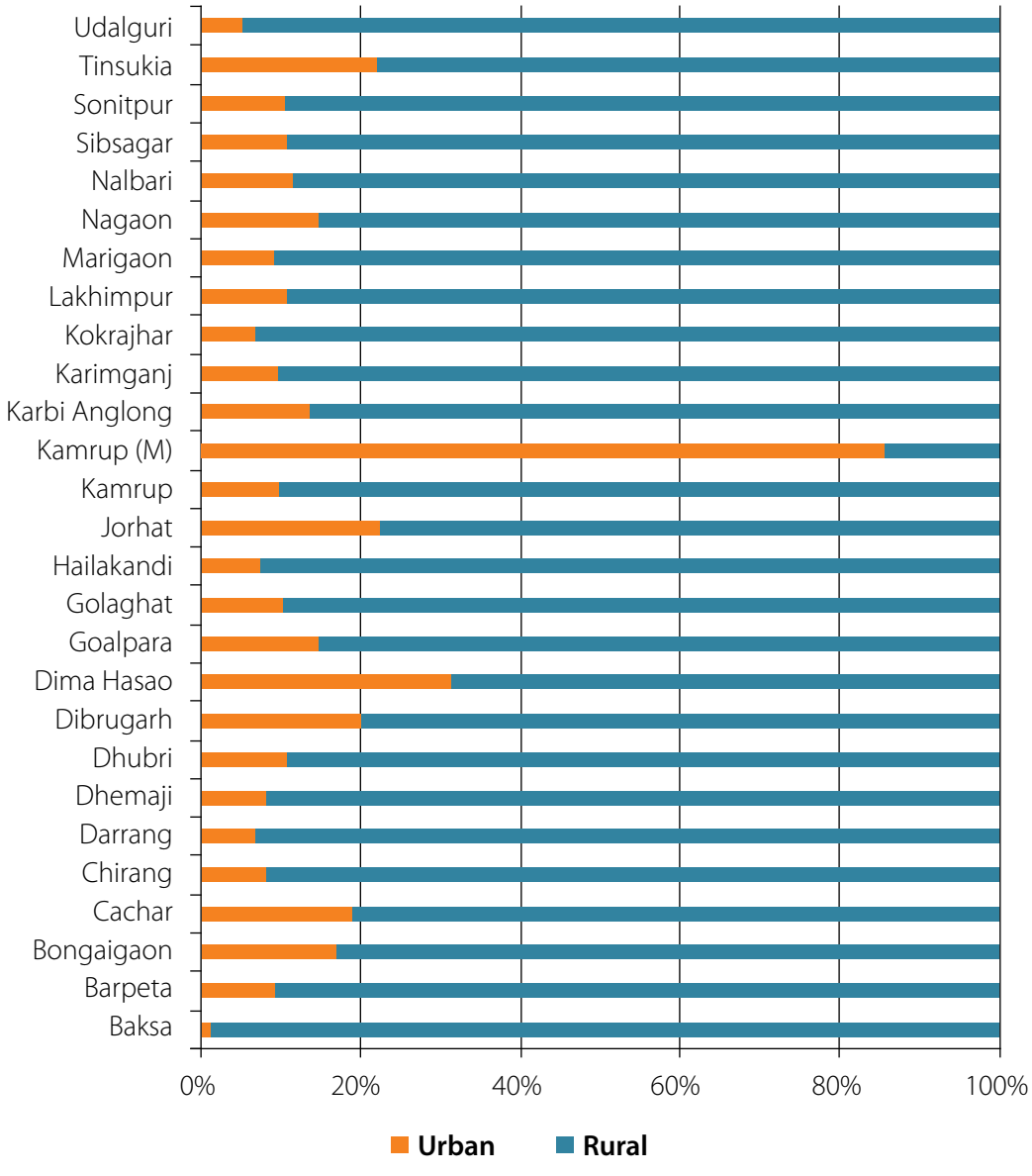
[14] The field work was carried out by officials of the Directorate of Economics and Statistics, Government of Assam, under the guidance and supervision of the Omeo Kumar Das Institute of Social Change and Development (OKDISCD), altogether 201 investigators were engaged with 27 district supervisors. Field training including piloting was conducted by OKDISCD. The process was independently monitored with 2 percent random revisits. The data entry process was fully automated using especially designed software. The entire field work has been standardised to meet the quality criteria.

The present report adopts a participatory approach. A large number of consultations have taken place at each stage. The process started with a state-level workshop. This was followed by district- and sub-division-level sensitisation workshops in all 27 districts and 31 sub-divisions involving all stakeholders. At the village level, issue based discussions were also held. Besides, several consultations with relevant functionaries were held at different stages.

1.6 Salient Aspects of the Report

The most salient aspect of the present report is that it is based on primary data. This is, in fact, the largest survey ever conducted in the state for development evaluation. The sample size of the survey is about 10 times larger than the size of the sample of typical NSSO rounds and about eight times more than that

Figure 1.2: Rural-urban profiles of districts



of the National Family Health Survey (NFHS) in the state. As such, the report provides some estimates related to child nutrition, health and educational attainment at state and sub-state levels for the first time. This allows the report to adopt UNDP's new (2010) method of assessing human development. This is also the first time that a HDR is prepared as per the new UNDP method in the country.

Another salient feature of the report is that it provides three supplementary indices related to employment-livelihood, vulnerability and subjective well-being. While the first two offer additional information regarding opportunity aspects of the capability space, the third is more concerned about the *processes* involved in realising the opportunities. Usually, the 'process aspect' of freedom is accorded only the

Figure 1.3: Profiles of districts by spatial diversity categories

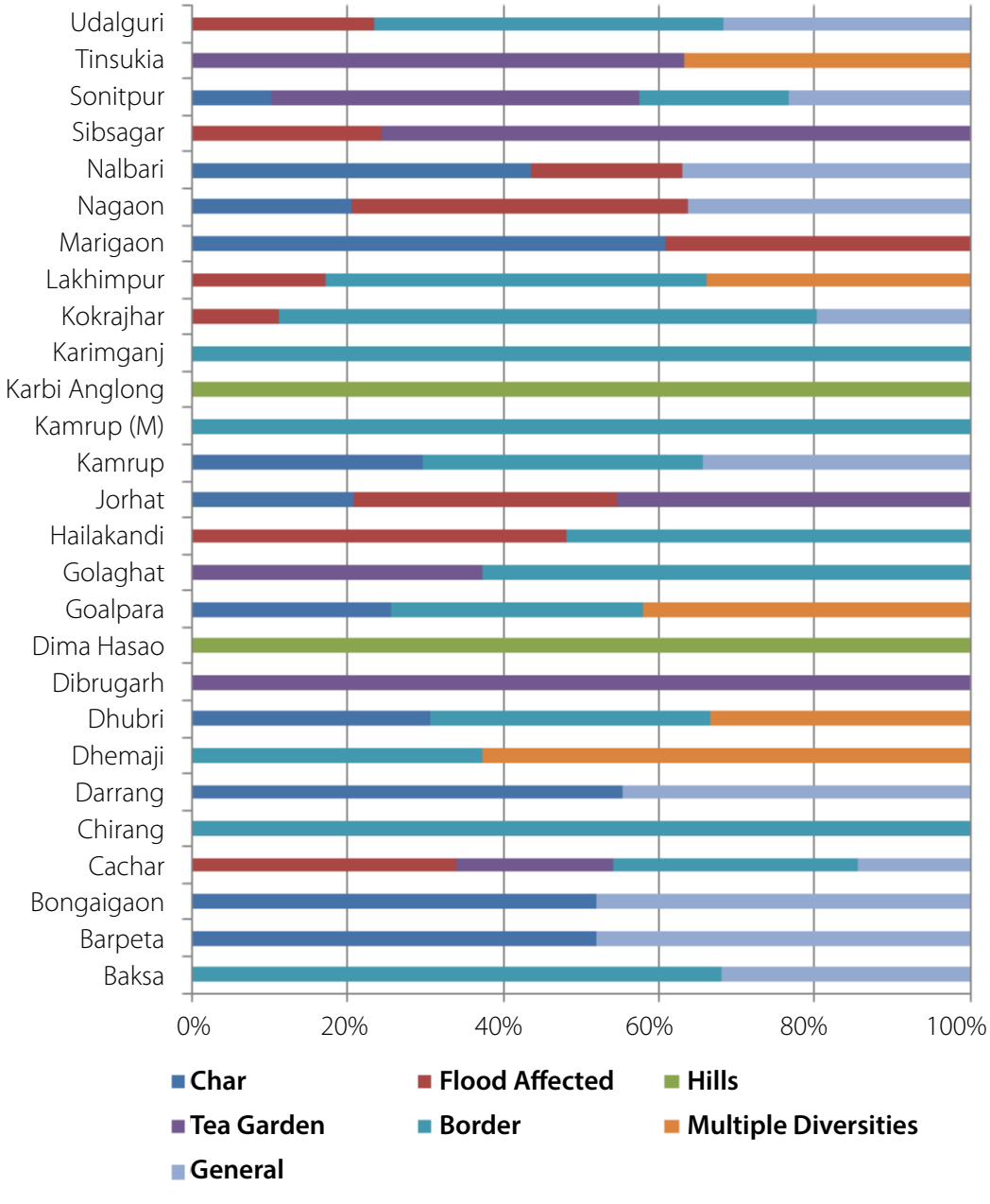
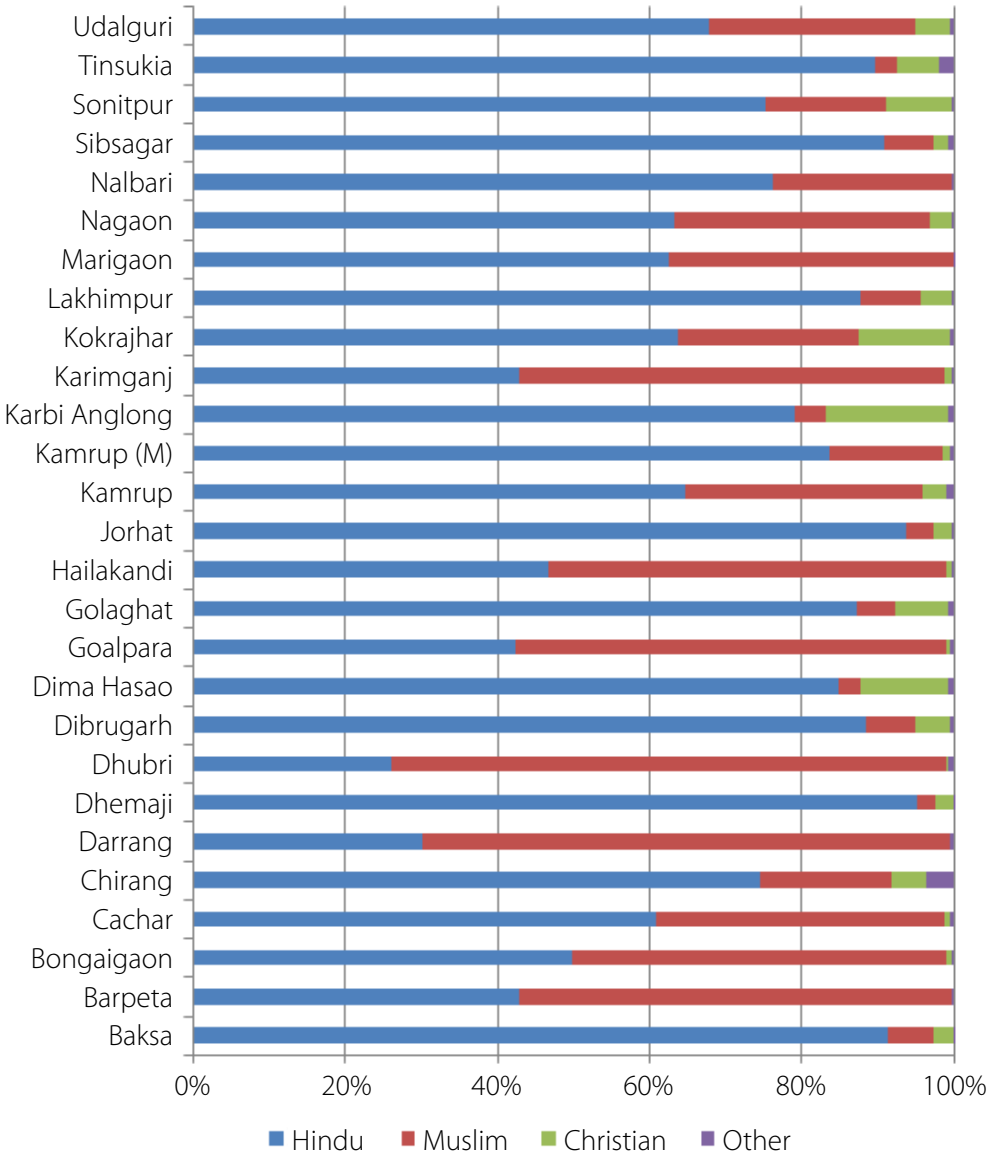


Figure 1.4: Profiles of districts by religious groups

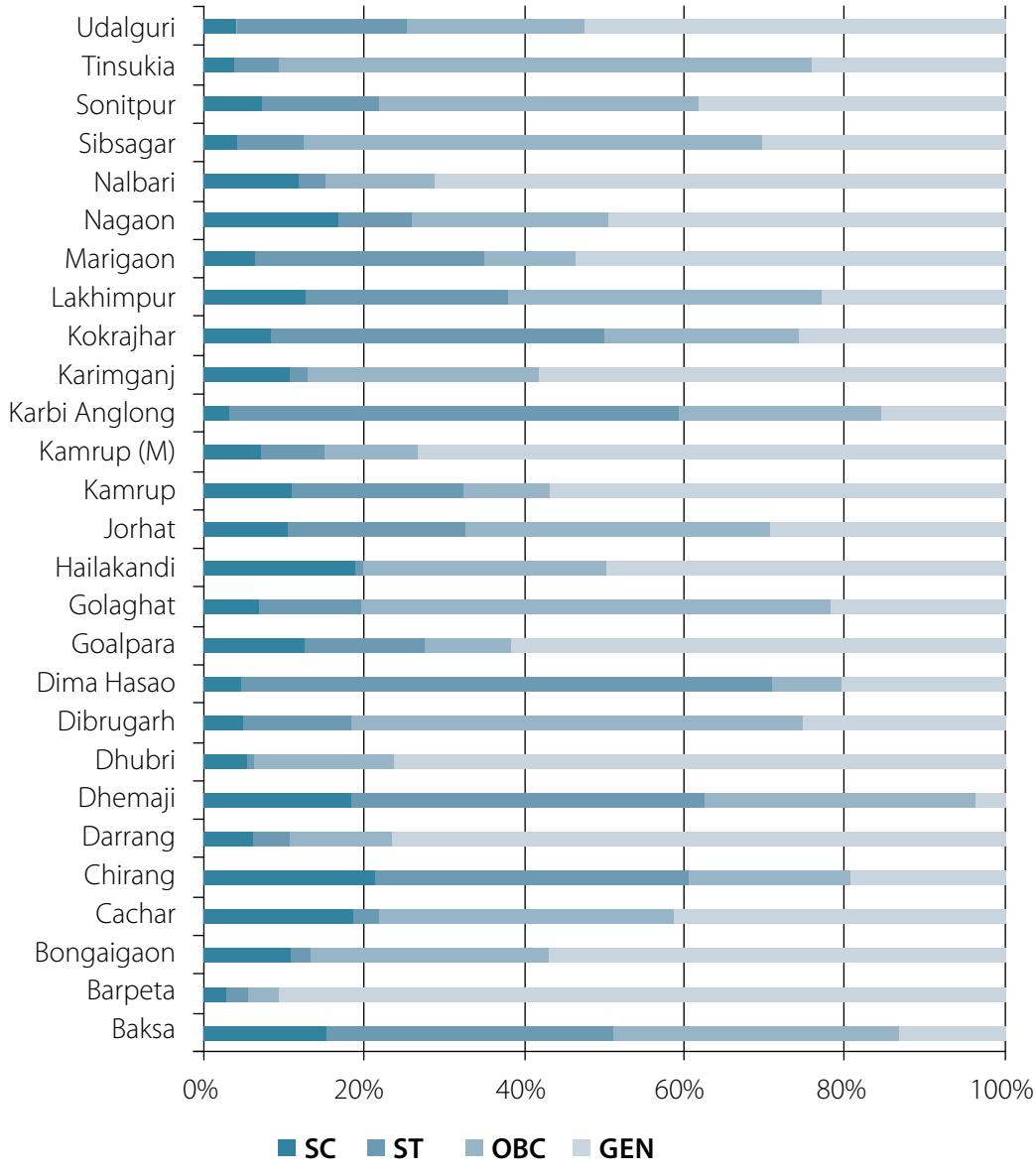


instrumental worth in the capability approach[15]. Well-being, thus, in the capability approach is considered in an objective sense, that is, what people *do* and manages to *be*. Subjective aspects of well-being, that is, 'satisfaction' or' happiness' that a person gets out of such *doings* and *being* are rather opposed to the capability approach. Having a subjective well-being index in a HDR, therefore, merits an explanation regarding its perspective.

Subjective aspects of well-being, that is,'satisfaction' or 'happiness', however, can be useful in public policy especially when such aspects are evaluated from the overall perspective of service delivery and governance. People sometime manage to do or be what they value but the ways in which these achievements come about may not be valuable to them. Therefore, getting processes right itself may be considered as

[15] See Sen (2003).

Figure 1.5: Profiles of districts by social categories



valuable achievement. In this perspective, 'being satisfied' with the processes happens to be a valuable and relevant functioning for individuals. When satisfaction is brought under the rubric of functionings then the opposition of objective and subjective can be overcome[16]. Hence, if it is considered that 'being satisfied' is a relevant functioning, that is, a valuable aspect of *being*, then it is quite sensible to include a measure of satisfaction in the vector of functionings. In this sense, just as being healthy is an important functioning over the capability space, so is being satisfied with the processes a relevant functioning over the same space. Having an index of subjective well-being in the HDR, therefore, simply adds value and does not create conflict. This kind of juxtaposition of 'objective' and 'subjective' aspects of freedom within the capability approach is an important innovation attempted in this report.

[16] For an exposition on this possibility, see Sen (1987).

1.7 Reading the Report

The report is organised in nine chapters. The first chapter introduces the theme and perspective of the report. The second chapter provides human development indicators and indices both at the aggregate and disaggregated levels. This chapter is followed by thee chapters related to three key dimensions of human development: income, education and health. These chapters highlights the various 'advantages' and 'achievements' of people with respect to the three key dimensions of human development. The sixth chapter highlights sex-biases in these 'advantages' and 'achievements' along with standard gender-related indicators and indices of human development while the seventh chapter identifies various environmental stressors and vulnerabilities imposing limits over the capability space. The eighth chapter discusses process aspects of freedom in greater detail along with the subjective well-being indices. The last chapter concludes the report with some suggestions regarding the way forward.

It may, thus, be noted that from the third to the fifth, the chapters essentially deal with various *functionings* and their contexts, that is, under what circumstances people manages to accomplish them. In other words, these chapters describe the 'richness' and 'range' of 'functionings' that people manage to engage in. The sixth and seventh chapters try to provide insights about the social and environmental conditioning influencing the choices over a set of functionings. However, based on the functionings, one has to discern the capability space over which the ultimate evaluation of human development is to be conducted. This has been done in the second chapter where all indices of human development are estimated and discussed. These indices, in a way, are an abstraction of the capability space, derived from realised functionings as given by a set of indicators. The status of human development in the state is, therefore, provided at various disaggregated levels in terms of the given set of human development indices (see Technical Appendix 2 and 3 for indices and their methods of estimation). The eighth chapter, by emphasising processes, tries to evaluate the *comprehensiveness* of the development outcomes.

While reading the report, however, two caveats are applicable. Firstly, although, the report comprehensively discusses various functionings across the chapters, they in no way represent the so-called 'prescribed list of relevant and valuable functionings'. Rather, they are descriptive of various *doings* and *beings* of people as observed. Therefore, these serve as a valuable 'informational base' for capability evaluation more than anything else. The role of the informational base in capability evaluation is, undeniably, huge[17]. This, indeed, aptly justifies the need for having a primary survey. The chapters present a range of information regarding realised levels of functionings, their social and economic contexts and conditions of choice and mechanics of people's valuation over them without, however, making any value statement in general.

Secondly, it may be noted that the present report stresses upon broad policy contours rather than specific policy prescriptions simply because the later would stretch the scope of the report too far. However, some broad policy take-away points have been highlighted the last chapter of the report. Although the report does not attempt to explore causalities underlying the observed trends in detail, it does offer indicative insights as to what could be the possible reasons underlying them. The

[17] See Sen (1987), Chapter XI in particular (p.26).

information and interpretation presented in the report, therefore, need to be viewed in that perspective only. That is if any indicator or index for a district is found to be relatively lower compared to other districts then this fact or information is to be seen together with other information related to it. For instance, if a certain education indicator in a district is found to be low then disaggregated values of that indicator across diversity groups, sex, rural-urban, socio-religious groups need to be examined. The intra-district representation of these disaggregated categories would then offer some insights regarding the low district value of the indicator. To facilitate such interpretation, a detail district profile in terms of the disaggregated categories is also provided. Given the robustness of the sampling adopted, most of the key indicators and indices have been provided at least for four levels of disaggregation. These four important levels of disaggregation provided in the report based on the survey are: a) sectoral disaggregation of rural-urban; b) disaggregation by spatial diversity categories of char, flood, tea garden, hills, border and multiple diversities; c) disaggregation by religious groups; and d) disaggregation with respect to social categories besides usual disaggregation by sexes. The intra-district diversities are represented by Figure 1.2, Figure 1.3, Figure 1.4 and Figure 1.5, respectively. These offer clues to differential advantages and achievements in human development in the districts which are highlighted in the report.

2 Human Development in Assam

Addressing Deprivations and Inequalities

2.1 Introduction

The idea of human development rests on the theoretical foundations of the capability approach. The capability approach is a broad, interdisciplinary and normative framework offering insights as to what constitutes a *better* human life, and how further *betterment* may possibly be achieved.

The framework brings about a fundamental shift in development thinking by focusing upon the freedom of individuals to make genuine choices over the kinds of life they consider worth living. It is, indeed, this emphasis on the notion of 'freedom to achieve', distinguished from 'achievement' itself, that underlines the paradigm shift brought in by the capability approach to the development discourse.

A human life is all about various *doings* and *beings* – together called *functionings* – which in certain ways denote specific levels of realised achievements or well-being. An evaluation of well-being, therefore, necessarily entails an appraisal of varied functionings that people undertake. This appraisal essentially relates to the 'nature' and 'extent' of functionings which people manage to choose and perform. As a normative approach, the capability approach allows people to pursue their own reasons to justify the choices made. As such, the 'nature' of the chosen set of functioning is to be examined by looking at their justifications. The 'extent' of functioning, on the other hand, depends on having a greater number of valued opportunities to choose from. These two aspects constitute the central themes of discussion in the subsequent chapters.

The concept of capability signifies the ability of people to engage in various functionings and the capability space of an individual, thus, is given by all relevant functionings (and their combinations) over which she/he has freedom to exercise choices. The idea of capability is, therefore, reflective of opportunity freedom; hence, expanding the capability, essentially, implies enhancing the freedom of people. Development, in the capability framework, thus, signifies capability expansion – offering people more choices over valuable functionings which, in turn, endow them with greater freedom to choose a life considered more valuable.

Evidently, capability is a derived concept – it is derived from the notion of functionings; only those capability-sets containing 'relevant' and 'valuable' functionings can be labelled, in turn, as 'relevant' and 'valuable'. Given the normative character of the capability approach, a valuation of functioning assumes central significance. Consequently, two stands emerge – one prefers having a prescriptive set of valuable capabilities while the other is completely averse to having such a predetermined list[1]. Notwithstanding the distinction, there is an agreement over certain 'basic' capabilities which are viewed as minimally required capabilities for a decent life. These capabilities are 'basic' because they set the threshold for deprivation.

The 'basic' capabilities refer to the ability to perform certain basic functionings, that is, to be educated, to live a long and healthy life and to enjoy a minimally decent standard of life. The realised level of these basic functionings define an achievement level and, hence, well-being. The level of well-being given by the levels of achievement in these three functionings is *reflective* of the capability. The capability, therefore, can be assessed by an index based on the realised levels of achievements in these three basic functionings.

[1] This, in fact, is the major point of departure between Nussbaum and Sen. While Nussbaum prefers a list, Sen does not.

2.2 Human Development Index

The UNDP's HDR is motivated by the idea of quantifying capability through a composite index of human development[2]. Just as the per capita income ranks countries and societies according to the average level of income, HDI ranks countries and societies according to the average level of capability enjoyed by their people.

HDI has three components denoting three basic capabilities related to health, education and living standard. The realised levels of achievement in the three components are measured by a set of indicators. Over the last two decades, these indicators have undergone several changes to reflect the responsive and evolving nature of the approach. For instance, in the education dimension, indicators of literacy rate and combined gross enrolment ratio have been replaced, in 2010, by mean years of schooling and expected years of schooling. These changes became imperative as countries progressed along literacy and enrolment over the last two decades, reducing the distinguishing power of these previous indicators.

Naturally, the indicators coming from three different domains involve different scales. They, therefore, needed to be normalised, that is, expressed in terms of a common scale before they could be aggregated. The normalisation typically requires a minimum and maximum defining the origin and goal and then putting the observed value in relation to the chosen minimum and maximum. The choice of minimum and maximum, therefore, presents a normative framework of assessing any level of realised achievement.

The aggregation of three dimensional achievements after normalisation provides a composite index. The method of aggregation is, however, extremely crucial. Initially, HDI was obtained by taking the simple arithmetic average along the three dimensions. Despite its elegance, the method faced severe criticism for it allowed 'perfect substitutions' among the dimensions. Any loss in one dimension, under a simple average, gets fully compensated by an equivalent gain in any of the other two dimensions. Also, higher achievement in one dimension tends to obscure failure in the remaining dimensions. The UNDP revised the method of aggregation by opting for geometric mean while aggregating the three dimensional values. The method has an implicit normative judgement that improvement in the lowest dimension contributes the most to the improvement in overall human development. This report is based on UNDP's new method (2010) with some modifications to contextualise the myriad forms of diversities in the state[3]. The results of the analyses are presented below.

2.3. Human Development Indicators and Indices in Assam

2.3.1 Life Expectancy at Birth

The indicator of life expectancy at birth is used to measure the realised achievement in the health dimension, that is, 'to be able to live a long life'. The life expectancy at birth denotes the number of years that a child can expect to live at the time of birth, given the age-specific mortality rates in the population. The life expectancy, however, is an indicator of very long-term improvement in health.

[2] The first ever HDR was published by UNDP in 1990.
[3] For detail discussion on methodology used in the report, see Technical Appendix 2.

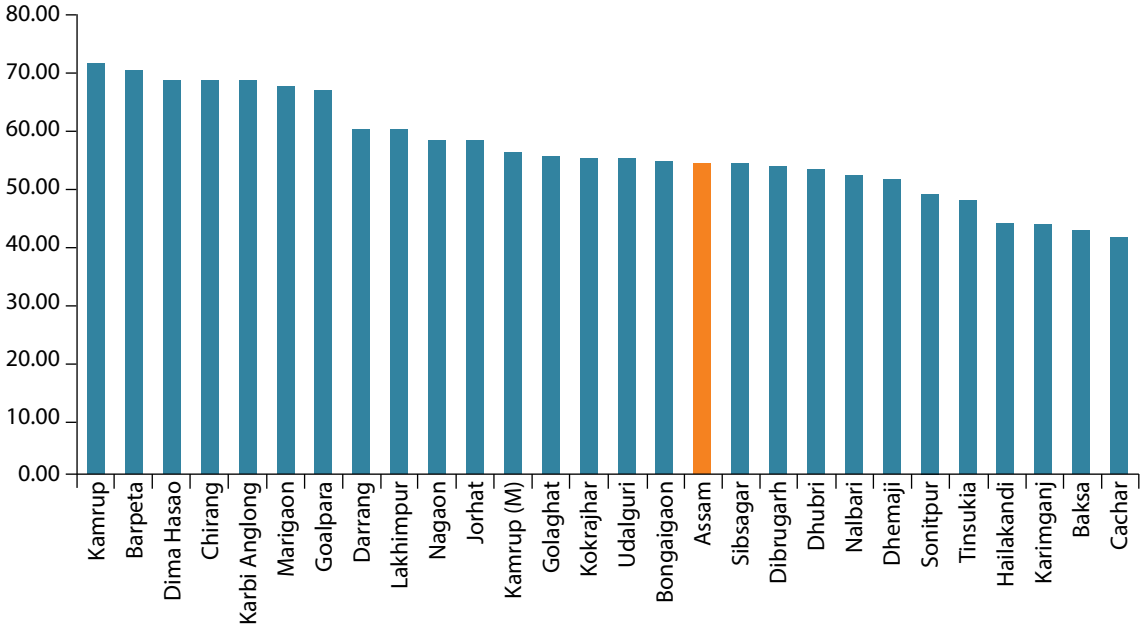
In India, data on life expectancy at birth are available through Sample Registration System (SRS) only up to the state level usually disaggregated at the levels of male-female and rural-urban. The latest available SRS data (2006-10) estimate life expectancy at birth in Assam at 62 years (male 61 years and female 63.2 years) putting the state in the bottom echelon[4]. This low achievement of the state in health functioning is consequent on high infant and child mortality together with high adult mortality in the state since life expectancy at birth depends on an age-specific mortality pattern. Low probability in child survival adversely affects the life expectancy at birth in the state.

Based on HDR survey data, the life expectancy at birth in the state is found to be 54 years[5]. District level estimates of life expectancy at birth reveal that life expectancy varies widely across districts. The highest life expectancy is estimated in Kamrup (71.88) while the lowest is found in Cachar (40.76). Relatively higher life expectancies are found to be in the districts of Barpeta, Chirang, Dima Hasao, Karbi Anglong, Goalpara and Marigaon[6]. Similarly, relatively lower life expectancies are found in districts of Baksa, Karimganj, Hailakandi, tinsukia and Sonitpur (Figure 2.1).

The life expectancy in rural areas is found to be lower (53.39) than in urban areas (57.97). Religion wise, it is found that Christians have higher life expectancy (58.37) compared to Hindus (54.62) and Muslims (52.98). Moreover, the life expectancy among Other Backward Classes (OBCs) is found to be much lower (51.75) than the state average (54.0) (Figure 8.2).

Across spatial diversity categories, life expectancy was found to be the highest in the hill blocks (67.42). On the other hand, border, flood-affected and tea garden blocks have been found to be disadvantaged in terms of life expectancies (Figure 2.3).

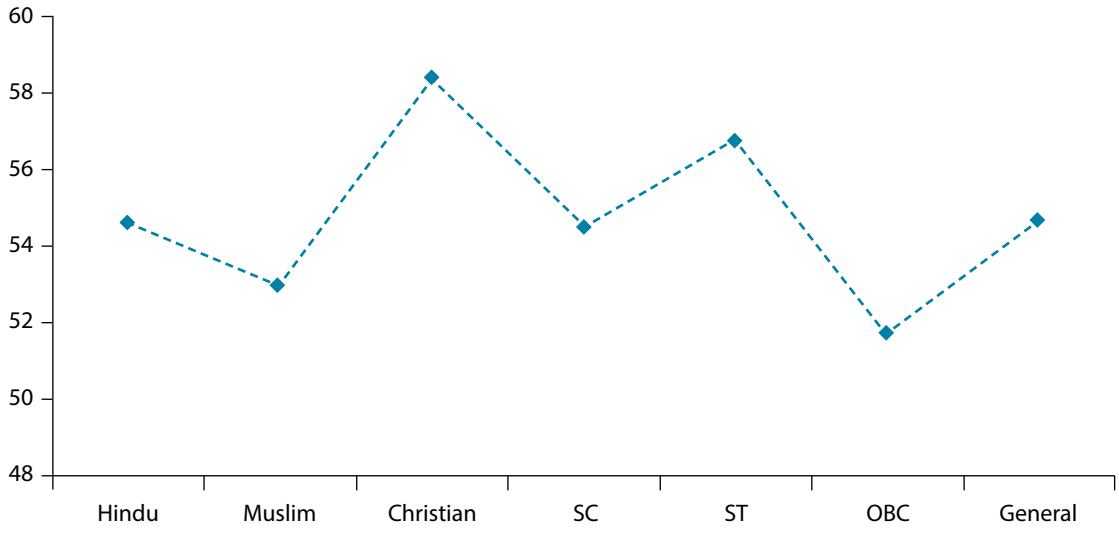
Figure 2.1: Life expectancy across districts of Assam



Source: HDR Field Survey (2013)

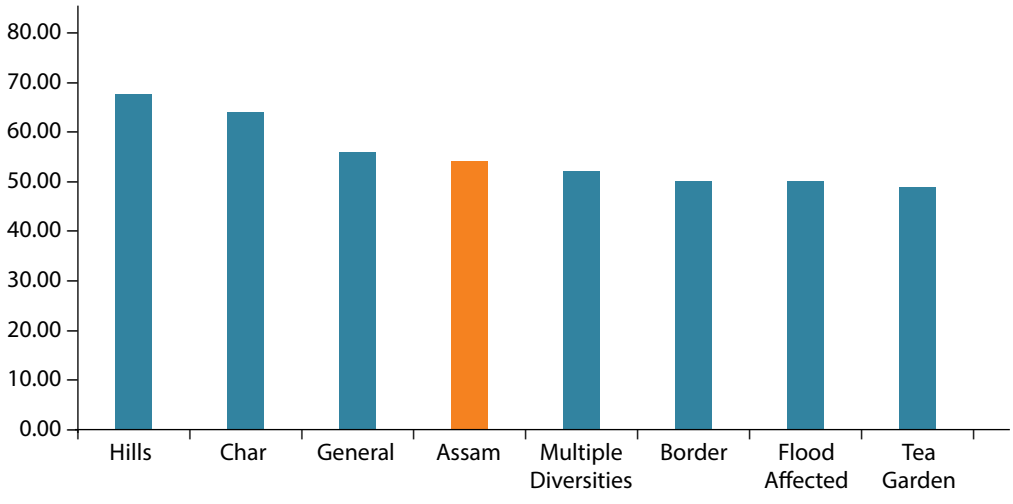
[4] Life expectancy at birth in India for the same period (2006-10) is estimated at 66.1 years. The highest life expectancy is in Kerala (74.2 years).
[5] The total number of reported death is 3113 in last 5 years. 95 percent Confidence Interval bounds are given by (53.13, 54.80). The estimates were obtained by standard Chiang method.
[6] The higher estimates of life expectancy in these districts are to be considered keeping in mind the smaller number of reported deaths in these districts.

Figure 2.2: Life expectancy by religious and social categories



Source: HDR Field Survey (2013)

Figure 2.3: Life expectancy by diversity categories



2.3.2 Mean Years of Schooling

Mean Years of Schooling (MYS) is one of the two indicators used to measure educational achievement in HDRs by UNDP. It replaced the literacy rate as an indicator under the education dimension in 2010[7].

MYS indicates the average number of completed years of education of a country's population[8]. Usually, MYS is estimated for populations aged 25 years and older, which is also the indicator used in the calculation of the HDI by UNDP.

[7] It may, however, be noted that MYS figured as an indicator under the education component in the HDRs of early years, that is, 1990-94.
[8] This typically excludes years spent repeating individual grades.

MYS is derived from data on educational attainment. For obtaining estimates of MYS, distribution of population by age and educational attainment is required at a given point of time. The officially required number of years for each level of education is then applied as a multiplier to the age-education frequency distribution to get the mean years from the distribution[9].

Based on the HDR survey data, the MYS for Assam is estimated at 6.17[10]. Given the normative goal of 15 years which ensures secondary level of schooling[11], the present educational achievement in the state is only about 40 per cent of the goal[12]. Besides, there is a clear rural-urban divide with MYS in rural areas at 5.70 and that in urban areas at 8.59. The second visible divide is observed in male-female achievement levels: the MYS of males is estimated at 6.93 against the MYS of females at 5.32. Differences in MYS are also prominent along religious and social categories. The MYS amongst Hindus is found to be 6.85 compared to 4.49 amongst Muslims. Similarly, MYS is found to be lower (5.92) amongst SCs compared to other social categories (Figure 2.4).

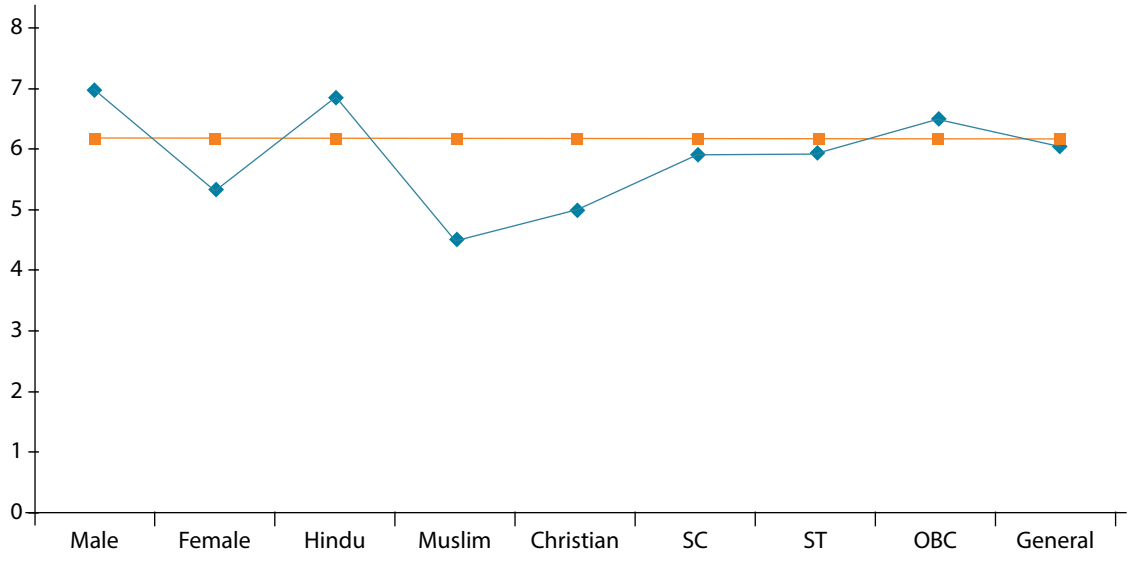
In terms of MYS, the most disadvantaged section is found to be rural Muslim women –

[9] See Barro and Lee (1993, 2010). Also see UNESCO Institute for Statistics (2013).
[10] It may be noted that the Global HDR 2014 gives the MYS for India as 4.4.
[11] The maximum value used for normalisation.
[12] This, however, comes with the fact that the estimation is done for individuals aged 25 years and above.

their MYS is estimated as a mere 3.3. However, the estimated MYS for rural Muslim women varies widely across districts, the lowest being observed in Darrang (1.55 only) and the highest is found in Sibsagar (7.98).

District wise estimates show that MYS ranges from 3.77 to 9.16. The highest MYS of 9.16 is found in Kamrup (M) while the lowest 3.77 is found in Darrang (Figure 8.5). In terms of MYS in rural areas, Darrang again figures at the bottom with 3.59 followed by Dhubri with 4.09. The highest MYS in rural areas is observed in Sibsagar (8.26) followed by Jorhat (7.20) and Nalbari (7.07). As far as the MYS among females is concerned, the lowest is found again in Darrang (2.87) followed by Baksa (3.51) and Dhubri (3.50). The highest MYS in females is

Figure 2.4: Differential MYS across sex, religion and social categories



Source: HDR Survey (2013).

Figure 2.5: District-wise estimates of MYS

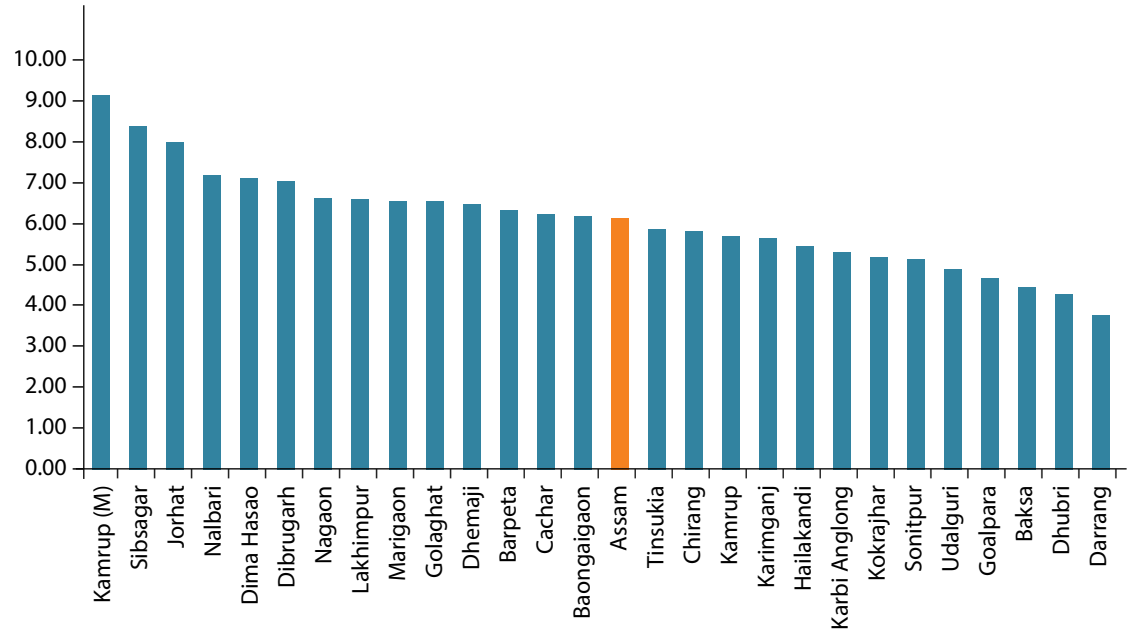
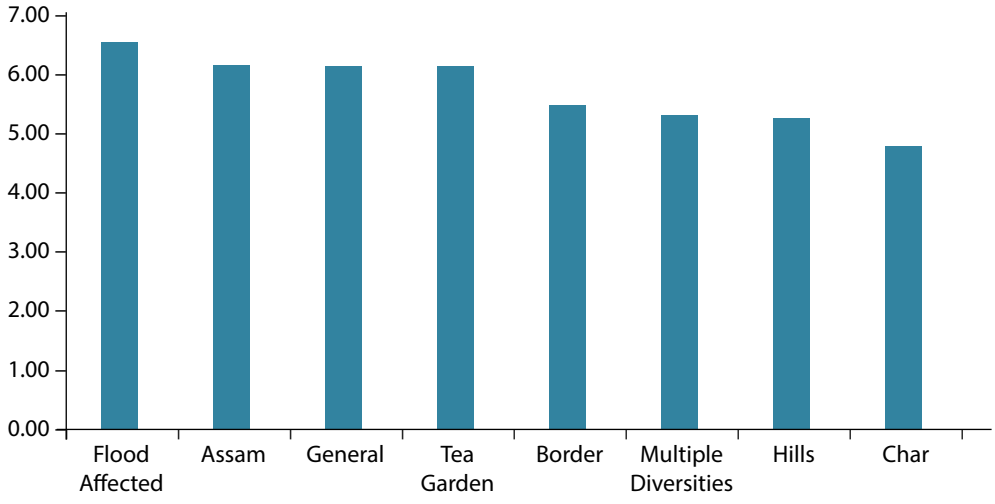


Figure 2.6: MYS across spatial diversity categories



Source: HDR Survey (2013).

obtained in Kamrup Metro (8.35) followed by Sibsagar (7.79) and Jorhat (7.22). This notwithstanding, the highest gender gaps in MYS are also observed in Sibsagar, Kamrup (M) and Jorhat.

Looking at the MYS across spatial diversity categories, it is seen that the estimated MYS is rather low in Char blocks (Figure 2.6)

2.3.3 Expected Years of Schooling

The second indicator of educational achievement in HDI is Expected Years of Schooling (EYS) which replaced the gross enrolment ratio in 2010. Nevertheless, EYS is built upon enrolment rates. EYS is a measure of the number of years of schooling a child at the start of his or her education is expected to receive, if current rates of enrolment are maintained throughout the child's life[13]. The advantages of using this indicator are that it represents a measure which takes into account both *stock* and *flow* dimensions of the school system and it does not require standardisation in comparing countries or societies with distinct age structures. The indicator is intended to represent knowledge accumulation under the formal school system where higher value of EYS is believed to denote higher accumulated knowledge[14].

For Assam, the estimated EYS is found to be 11.85 years[15]. This indicates that, on an average, given the present enrolment pattern in the state, a child is expected to complete at least the secondary level when he or she starts going to school. There are, however, many divides. The EYS in rural areas is found to be 11.80 which is less than the EYS of 12.20 estimated in urban areas. The EYS for males is found to be 11.72 against that of females which is 11.99. Similar divides are also noticed across religious and social categories (Figure 2.7).

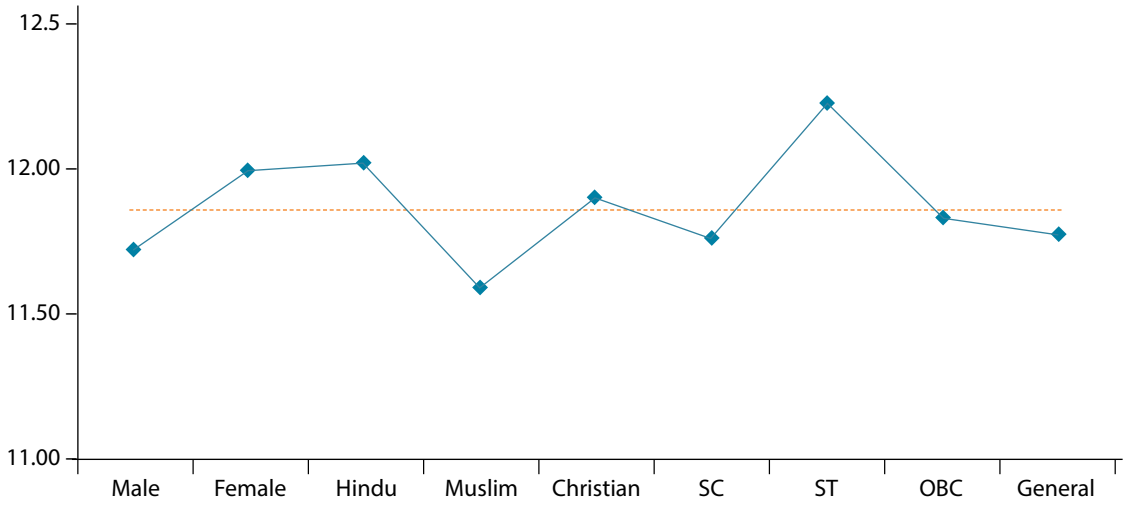
[13] See UNESCO Institute for Statistics (2009).
[14] The fact that EYS overlooks the progression structure and, therefore, sometimes may be misleading is discussed in Rigotti et. al. (2013).
[15] The maximum value for normalisation is taken as 13 instead of 18 in the UNDP method. This is due to the fact that one is considered to be a child in India up to the age of 18 with a school start age of 6. Therefore, enrolment rates for the age cohort 6-18 are only considered for estimation of the EYS from the survey data. Further it may also be noted that the HDR 2014 (UNDP) gives EYS for India as 11.7 years.

District level estimates reveal that EYS in the state varies in the range 10.98 to 12.57. The lowest if found in Hailakandi (10.98) and the highest is found in Chirang (12.57). Similarly, tea garden areas and areas with multiple diversities have relatively low EYS compared to other spatial diversity categories (Figure 2.8 and Figure 2.9).

2.3.4 Income Per Capita

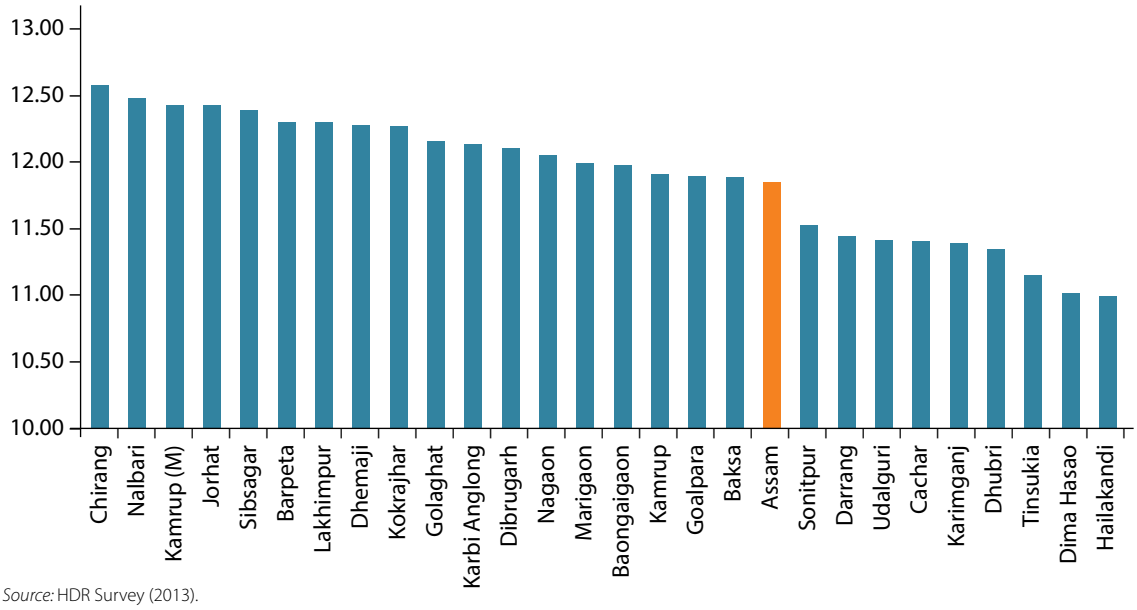
Income per capita is considered as an 'indirect' indicator of human development. The first HDR of UNDP (1990) observes that an indicator of 'command over resources needed for a decent living' requires data on access to land, credit, income and other sources. However, there

Figure 2.7: Differential EYS across sex, religion and social categories



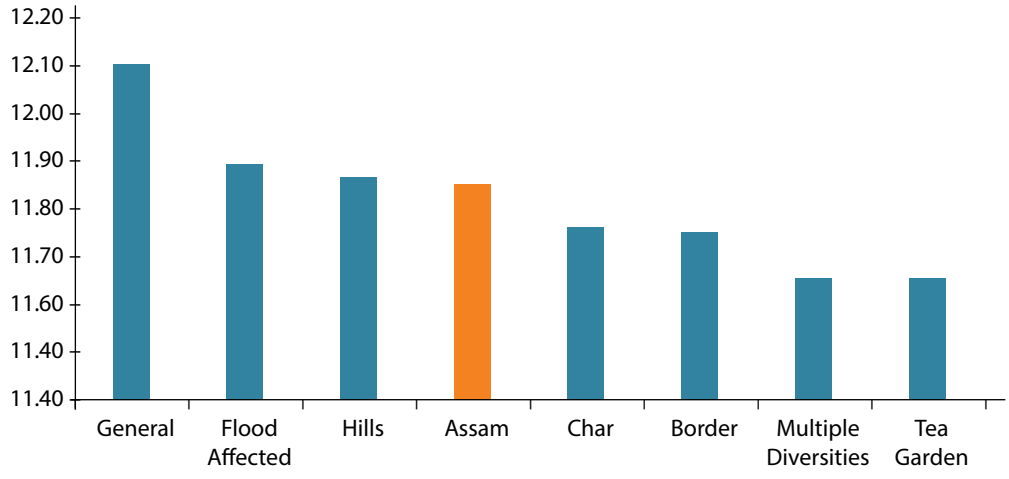
Source: HDR Survey (2013).

Figure 2.8: District level EYS



Source: HDR Survey (2013).

Figure 2.9: EYS across spatial diversity categories



Source: HDR Survey (2013).

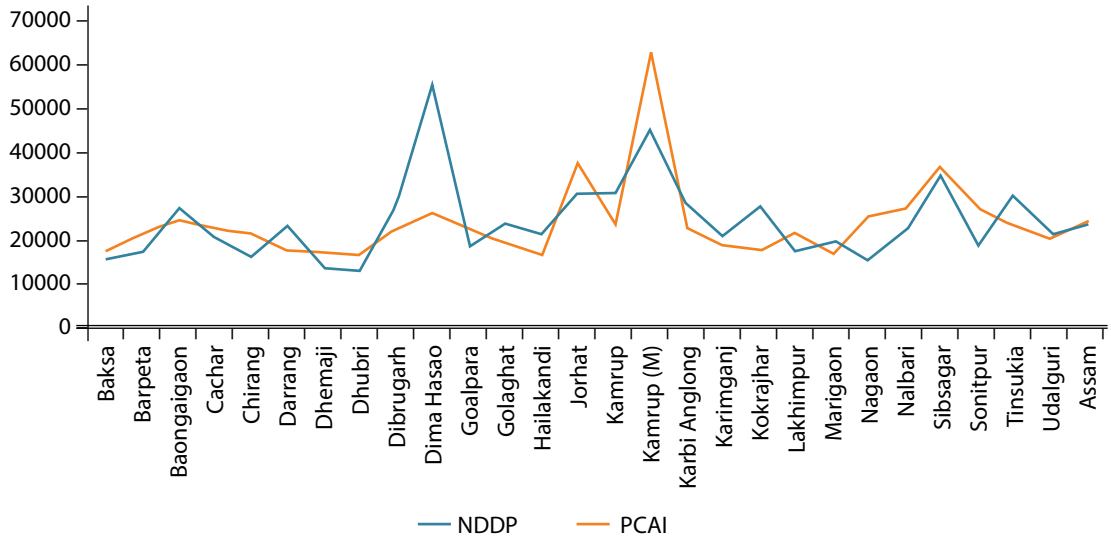
is a dearth of reliable data covering all these aspects. Since data on GDP per capita are widely available, this indicator is taken to represent the income dimension of human development. In 2010, instead of GDP per capita, Gross National Income (GNI) per capita is taken as the indicator. For allowing cross-country comparison, the GNI per capita of the countries was adjusted by Purchasing Power Parity (PPP) ratios.

However, income has the peculiar property of having diminishing contribution to human development as income rises. Therefore, income needs 'treatment' to reflect such a feature and, over the last two decades, various treatments have been applied in HDRs[16]. The 2010 method uses logarithmic transformation over income values to reflect this property. As income rises, a marginal change in logarithmic transformation of income declines giving lower weights to higher income.

In a state HDR, ideal replacement for GNI per capita is taken to be the Net District Domestic Product (NDDP) measured in constant prices. However, since NDDPs are district aggregates, the underlying distribution is not known. To make the indicator consistent with inequality measures, instead of NDDP the average per capita annual income estimates of the districts obtained from the HDR survey are used in the report. This also allows other disaggregation. It has been found that the estimated Per Capita Annual Income (PCAI) from the household level data fairly match the latest (2012-13) data on NDDP (2004-05 prices) for the districts (Figure 2.10).[17]

There are obvious gaps in PCAI in rural and urban sectors. The average PCAI in rural areas is only about 40 per cent of that of the urban areas (INR 22,087 in rural against INR 56,157 in urban areas). It could further be found that the average PCAI of Christians (INR 16,068) is the lowest followed by Muslims (INR 18,228). The average PCAI of Hindus is found as INR 28,092. A similar income gap prevails amongst different social categories as well. The average PCAI of

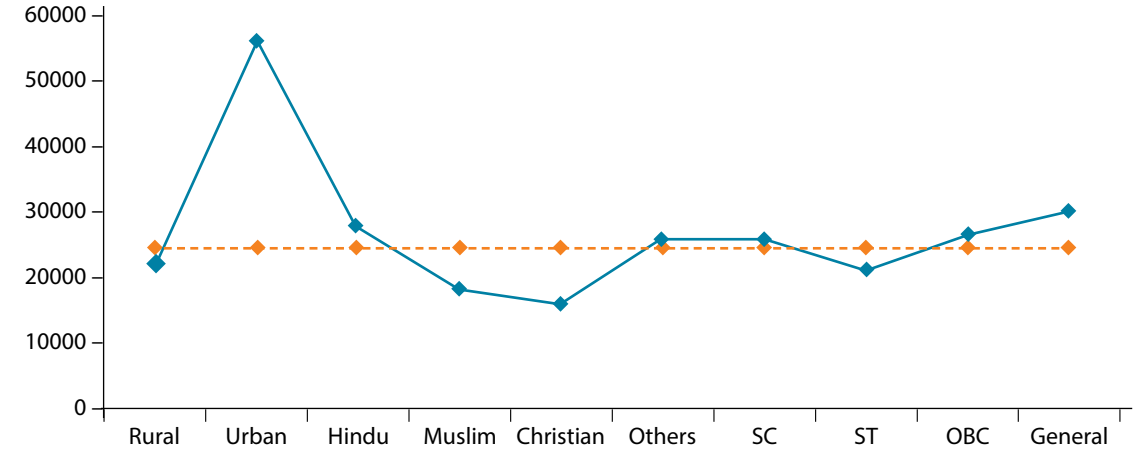
Figure 2.10: Relation between NDDP per capita (2000-05 prices) 2012-13 and PCAI



Source: NDDP from the Directorate of Economics and Statistics, PCAI from the HDR Survey.

[16] See Anand and Sen (2000) for details.
[17] The estimated average PCAI in Assam is found to be INR 24,660 against the per capita NDDP for the state (2012-13, at 2004-05 prices) of INR 23,448.

Figure 2.11: Differential PCAI across rural-urban, religion and social categories



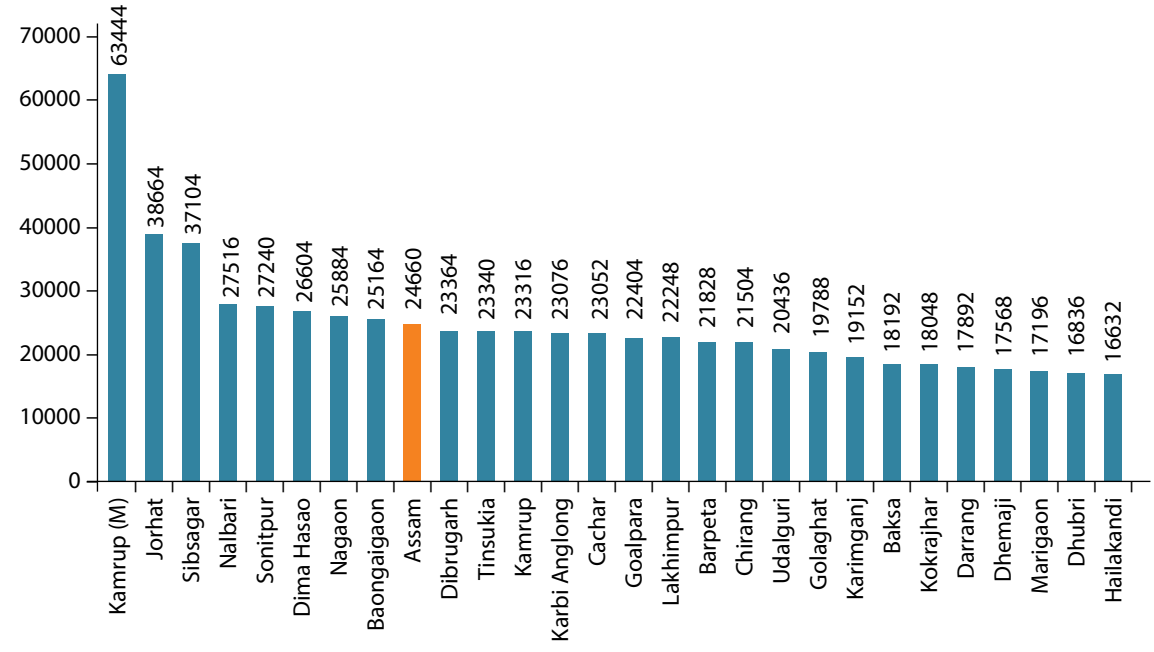
Source: HDR Survey (2013).

STs is the lowest (INR. 21,445) compared to that of other social categories (Figure 2.11).

District wise, the highest PCAI was found in Kamrup (Metro) (INR 63,444) followed by Jorhat (INR 38,664). The lowest PCAI was obtained in Hailakandi (INR 16,632) followed by Dhubri (INR 16,336) (Figure 8.12). In general, it is found that low PCAIs in border areas, areas with multiple spatial diversities and amongst religious minorities are major downward factors in the income dimension (Table 8A.1, Statistical Appendix).

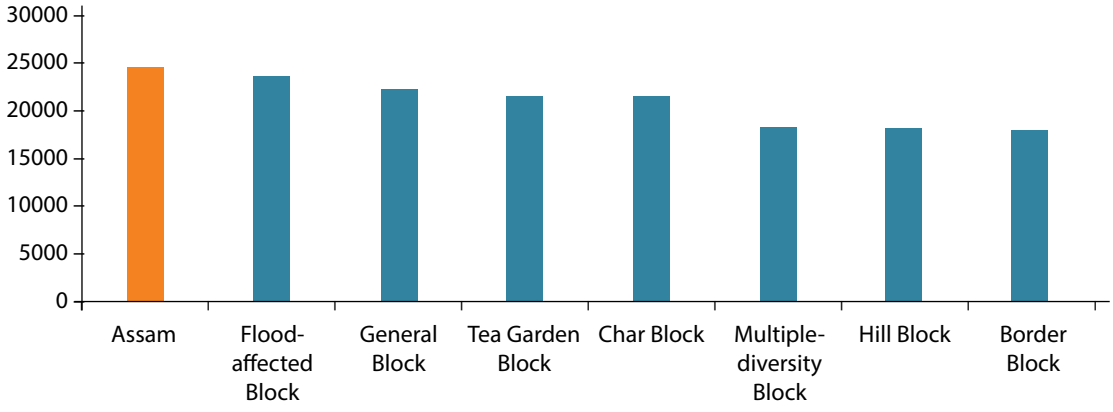
It could also be found that the average PCAI in all spatial diversity categories is lower than

Figure 2.12: District level PCAI



Source: HDR Survey (2013).

Figure 2.13: PCAI across spatial diversity categories



Source: HDR Survey (2013).

the state average. The average PCAI is found to be the lowest in border and hill blocks (Figure 2.13).

2.3.5 Dimensional Achievements

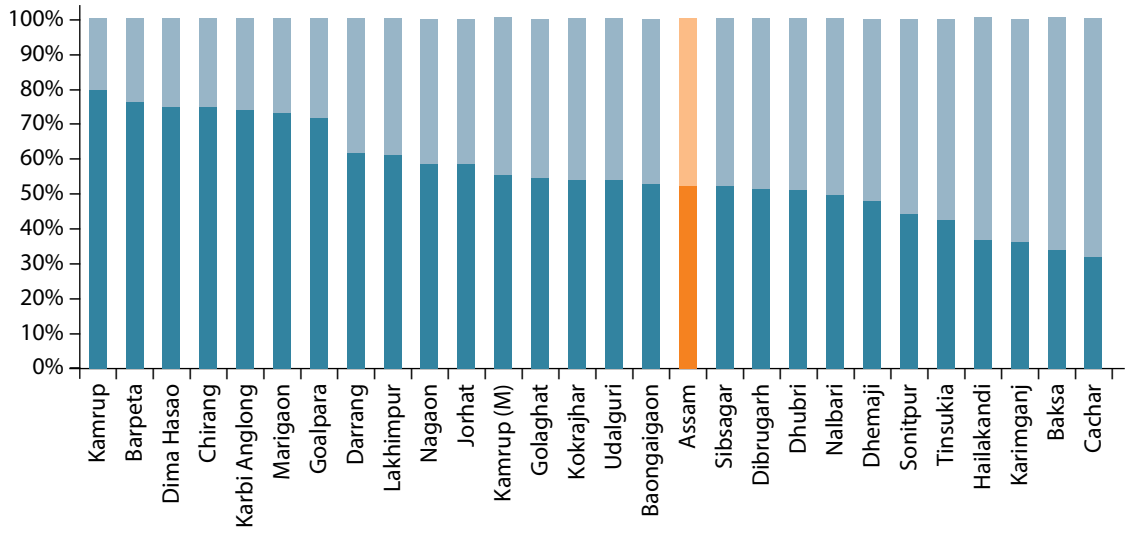
The dimensional achievements in health, education and income dimensions of human development are obtained by normalising the values of respective indicators in each of these dimensions[18]. These normalised dimensional values reflect levels of achievement given the normative goals in each of the dimensions, that is, how much of distance has been covered towards the desired goals. Typically, a wholesome achievement in human development requires full achievements in *all* three dimensions. It is, however, possible to have a higher value in the aggregate level driven by any single dimension but surely that cannot be regarded as a balanced human development outcome. The examination of dimensional achievements is, hence, needed for understanding the nature of human development – whether or not the development achieved has been a balanced one.

The dimensional achievement in health in the state reveals that the maximum level of achievement is witnessed in Kamrup (80 per cent of the goal) while the lowest is observed in Cachar (only 30 per cent of the desired goal). In the state, the average achievement level in living a long and healthy life is only about half of the desired level. Further, in 11 of 27 districts, the health achievement is lower than the state average of 50 per cent indicating in several districts achievement levels in health are even less than half of the desired level (Figure 2.14).

On the other hand, the highest dimensional achievement in education is found in Kamrup (M) with about 78 per cent achievement of the desired goal, while the lowest is found in Darrang with only about half of the goal achieved. On the average, the achievement level of the state is found to be a little above two-third of the desired goal. It could also be found that about half of the total districts fall short of the state average in attaining achievements in the educational dimension (Figure 2.15).

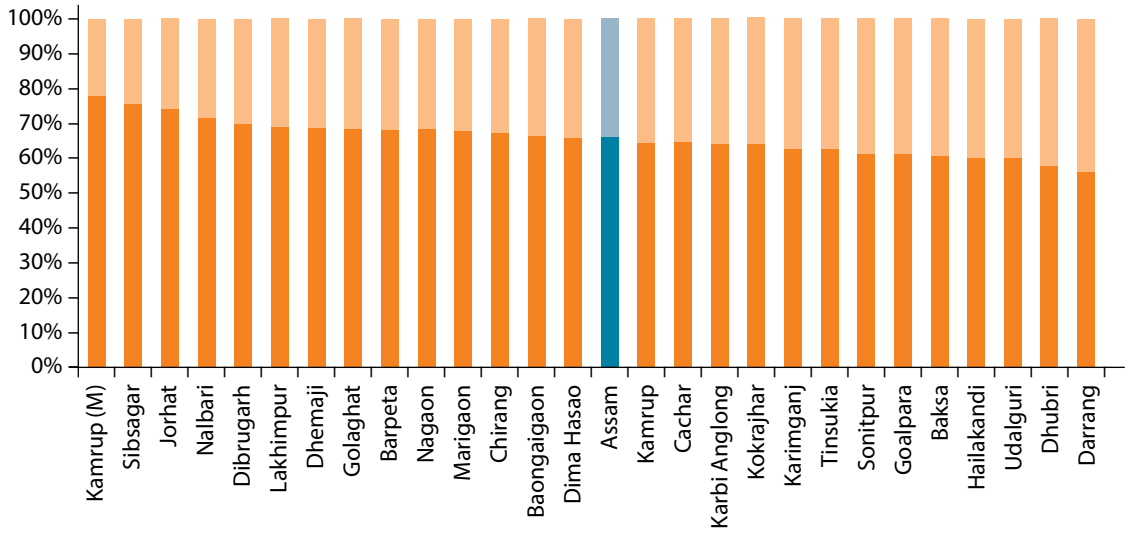
[18] Methods of normalisation are provided in Technical Appendix 2.

Figure 2.14: Dimensional achievements in health across districts



Source: HDR Survey (2013).

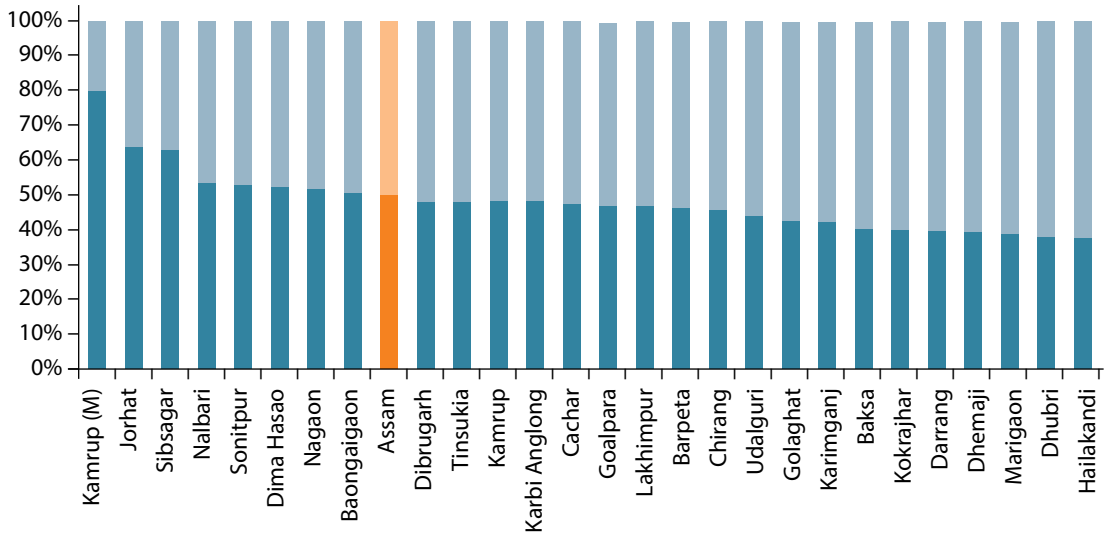
Figure 2.15: Dimensional achievements in education across districts



Source: HDR Survey (2013).

In terms of dimensional achievement in the income dimension, the average achievement level in the state is found to be only at 50 per cent of the goal. The highest achievement (80 per cent of the goal) is observed in Kamrup (M) and the lowest is obtained in Hailakandi (only 37 per cent of the goal). The levels of achievement in the lower echelon are only about four-10th of the goal. It has been found that the dimensional achievement in income is more than the state average only in eight districts (Figure 2.15).

Figure 2.16: Dimensional achievements in income across districts



Source: HDR Survey (2013).

2.3.6 HDI and the Districts

The HDI is a composite index derived on the basis of dimensional achievements in health, education and income. The HDIs are estimated for the districts[19] based on the UNDP's new method (2010). The index presents the status of human development in the districts. The values of HDI represent how much progress the people have made in overall human development given the pattern of dimensional achievements in the district and the normative goal of capability expansion. The values of the index range between 0 and 1 – where 0 implies no progress made and 1 signifies complete achievement with regard to the normative goals set for the purpose of assessment.

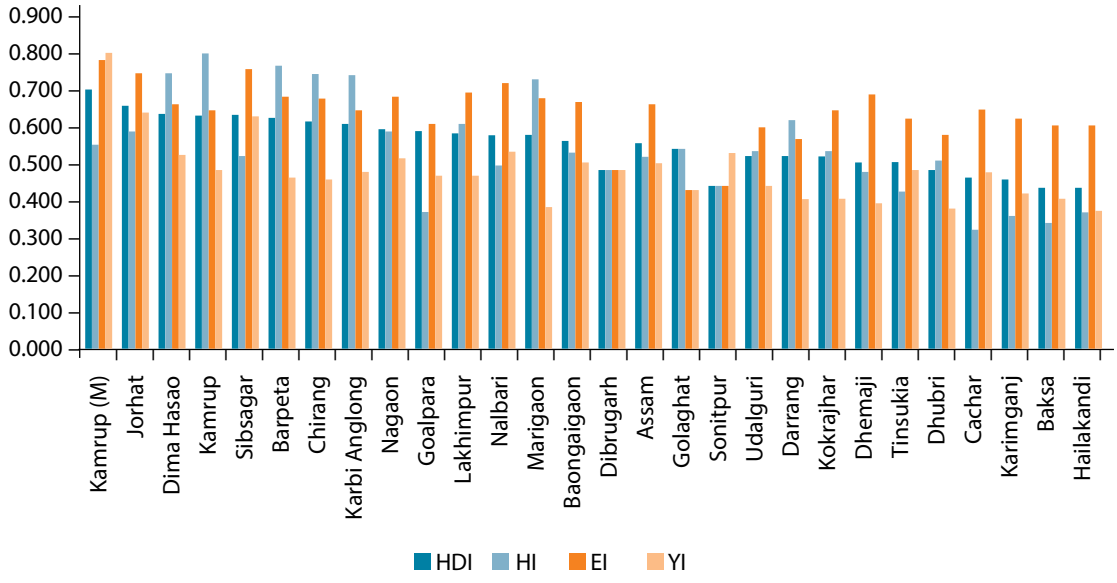
The present report estimates the value of HDI for the state as a whole at 0.557. This tells us that given the desired normative goal, the present level of progress in overall human development in the state is just a little beyond the halfway mark. The highest attainment is observed in Kamrup (M) and the lowest in Hailakandi. In 15 of 27 districts, the average level of achievement in human development is found to be more than the state average (Figure 2.17 and see Table 2A.4 in the Statistical Appendix).

It could also be seen that, in general, educational achievement is the main driver of overall human development in the state and districts. However, in certain districts, namely, Dima Hasao, Kamrup, Barpeta, Chirang, Karbi Anglong, Goalpara and Marigaon, achievements in the health dimension have contributed substantially to overall human development. Contrary to this, barring the district of Kamrup (M), achievements in the income dimension have remained relatively lower limiting the improvement in overall human development (Figure 2.17).

Further, the PCAI and values of HDI across the districts indicate a clear positive correlation (Figure 2.18). Therefore, improving the HDI requires ensuring income and livelihood of people across the state. Income and

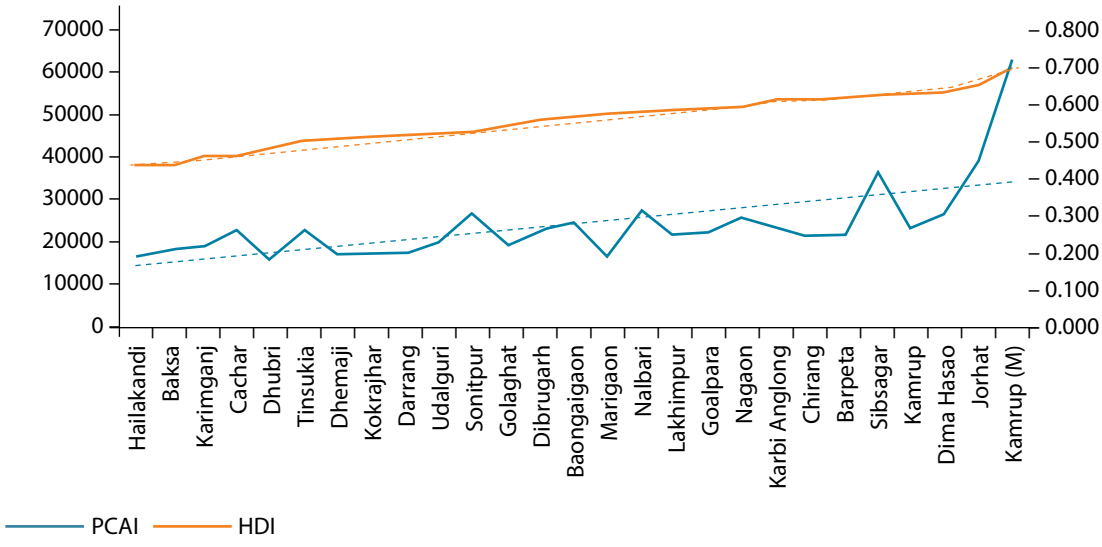
[19] See Technical Appendix 2 for details about estimation procedures.

Figure 2.17: HDI and districts



Source: HDR Survey (2013).

Figure 2.18: PCAI and HDI in districts



Source: HDR Survey (2013).

employment, thus, emerge as the most significant policy variable for enhancing overall human development in the state. This is, however, not to undermine the significance of the other two dimensions of human development in the state.

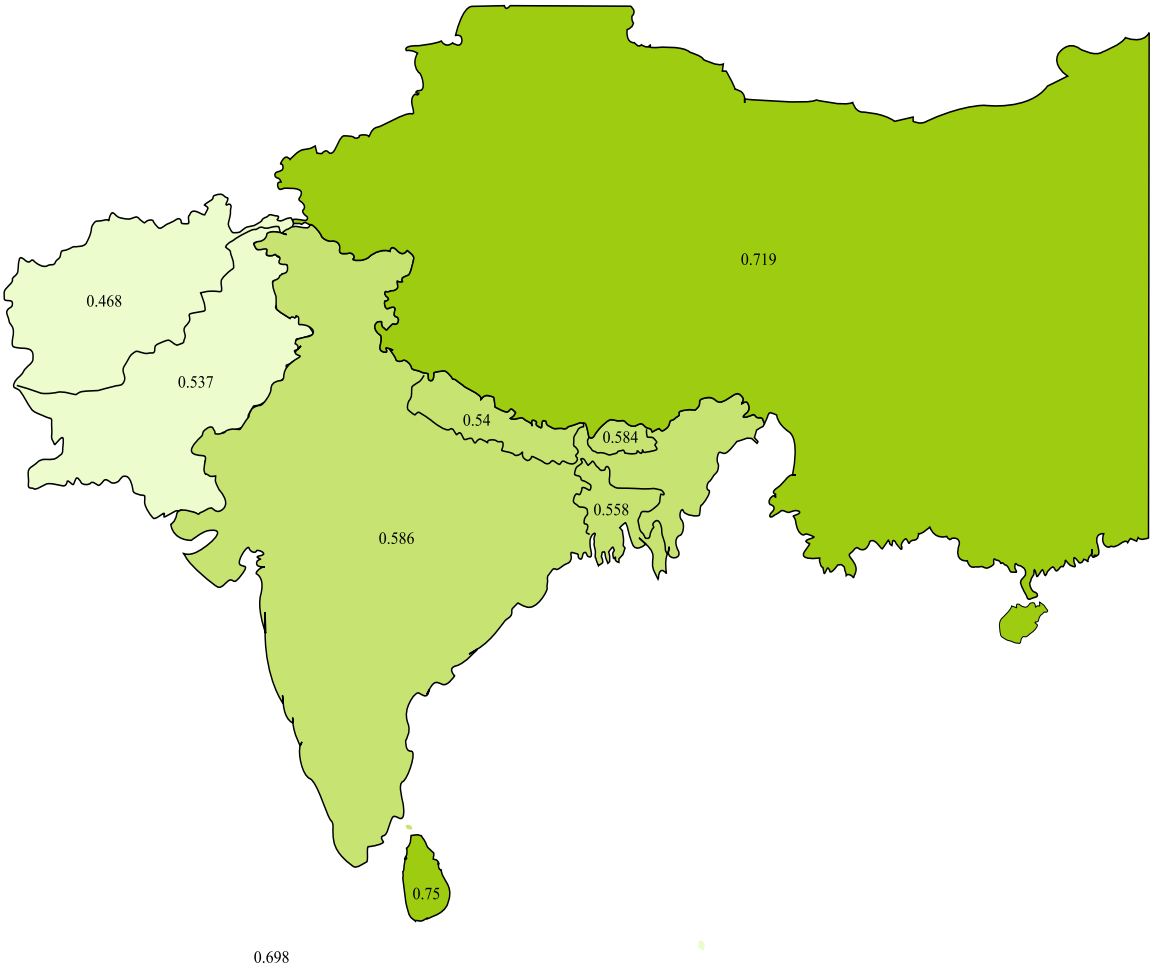
2.3.7 Locating Assam's Human Development

The estimated value of HDI indicating the present status of human development in Assam is found to be 0.557. It may be mentioned that

according to the global HDR (2014), the value of HDI for India is 0.586. Therefore, the present report puts Assam in the band of medium human development states. It may further be mentioned that the HDIs of neighbouring countries of Bhutan and Bangladesh are also in the same band (Map 2.1)[20].

The National HDR, 2011 provides the value of HDI for the state as 0.444[21]. This marks an improvement of 15 per cent point over the HDI value of 0.386 for the state given in the National HDR 2001[22]. The comparative picture of the human development outcome in 2011 indicates that Assam's achievement falls within the category of low HDI in the country (Map 2.2). Besides, the Assam HDR 2003 estimated the HDI for Assam at 0.407[23] (Figure 2.19).

Map 2.1: HDI in South Asia (2013)



Source: Global HDR (UNDP, 2014)

[20] The indicators and methodology used are comparable.
[21] Data used in the report belong to year 2007-08 though.
[22] Data used in the report belong to year 1999-2000.
[23] The indicators used were Infant Mortality Rate, Adult Literacy Rate and Combined Gross Enrolment Ratio and Net State Domestic Product for calculating the HDI.

Map 2.2: HDI in India (NHDR, 2011)

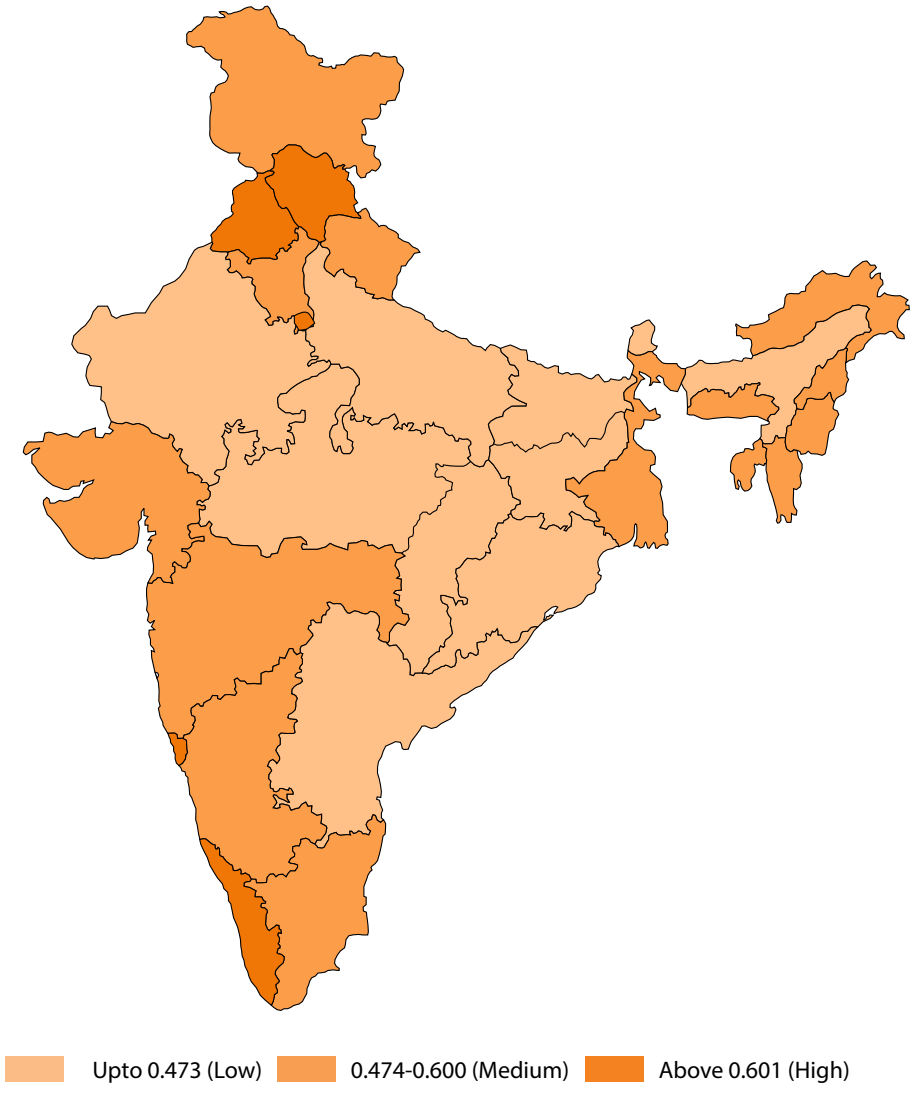
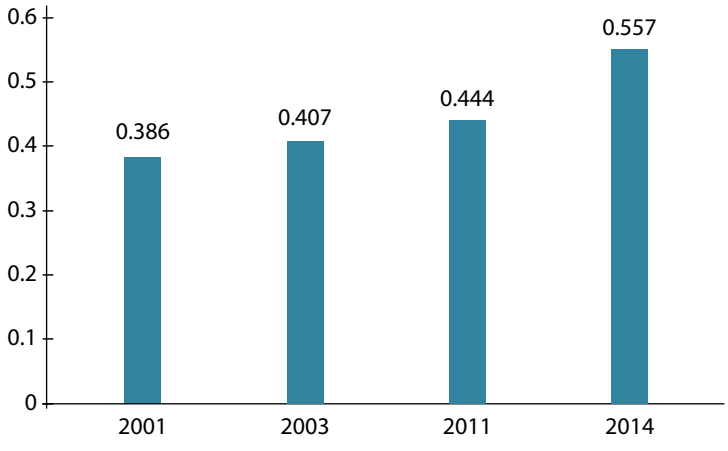


Figure 2.19: HDI in Assam (2001-14)



Source: NHDR 2001, ASHDR 2003, NHDR 2011, ASHDR 2014

It may be noted that the values of HDI as depicted in the Figure 2.19 are, however, not strictly comparable since the indicators and methods of their aggregation differ fundamentally. The values can only help in locating the overall human development scenario in the state. The values provide an idea about the progress made at different points of time in achieving the aggregate human development outcome relative to the normative goals set at the given points of time. For instance, while the overall progress in human development in 2001 was about 39 per cent of the normative goal set at that period of time, it has been about 56 per cent in 2013 given the normative goal for the year. In this sense, Figure 2.19 suggests that there has been distinct and steady progress towards achieving the desired level of human development in the state during 2001-13.

2.4 Accounting for Inequality: Inequality Adjusted HDI

The foregoing discussions reveal that, at various aggregate levels, that is, districts, rural-urban, male-female, religion, social and spatial diversity categories, the gaps in human development achievements and, hence, in various indices are quite visible. While these gaps indicate the extent of inequality at the average levels of achievement, there is an inherent distributional inequality underlying these average levels of achievements as well. The underlying distributional inequality is reflective of an inequality of opportunities which impedes the capability of individuals. The human development approach is concerned about these aspects; since the publication of the first

report of the UNDP, there have been attempts at addressing these concerns[24]. The UNDP's new method (2010) proposes a new index which not only takes into account the distributional inequalities in underlying dimensions but also takes the inequalities across the dimensions into consideration, and accordingly accounts the human development index for the extent of inequalities involved both ways – intra as well as inter[25].

2.4.1 Aspects Health Inequality

The estimated health inequality in Assam is found to be 0.321. This means that by reducing the inequality in the underlying distribution in health the health outcomes can be improved by about one-third of the present level[26]. The highest inequality in health is found in Dhubri (0.435) while the lowest is found in Chirang (0.177). Strikingly, there is not much difference in rural-urban inequality (both equal to 0.322). Inequality in health is more in areas with multiple diversities (0.385) than in hills (0.243).

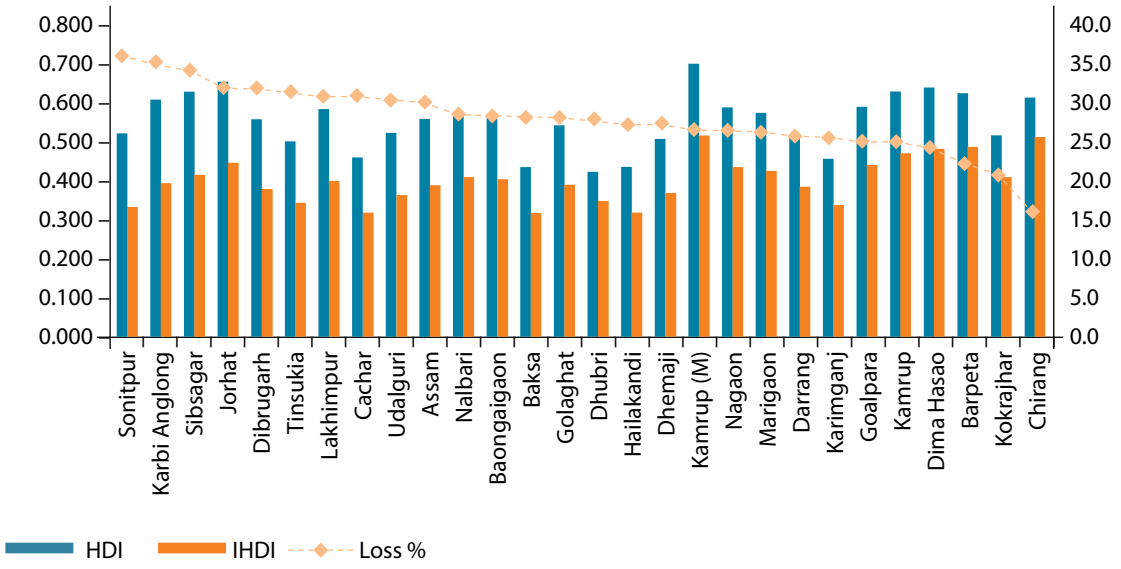
2.4.2 Aspects of Educational Inequality

The inequality in education in the state found to be rather low (0.088). At the level of district the lowest inequality is found in Dima Hasao (0.045) and the highest in Golaghat (0.120). Amongst the spatial diversity categories the inequality is found more in areas with multiple diversities (0.106).

2.4.3 Aspects of Income Inequality

Compared to health and education, inequalities in income[27] in the state are found to be higher (0.441). The income inequality is found to be the highest in Karbi Anglong (0.593) and lowest in Chirang (0.241). The income inequality in rural areas is found to be higher (0.419) than in

Figure 2.20: Loss in potential human development due to inequalities involved



Source: HDR Survey (2013).

[24] See Kovacevic (2010) and Alkire and Foster (2010) for details on these aspects.
[25] For detail method see Technical Appendix 2.
[26] This interpretation comes from Atkinson's Index.
[27] Measured by inequality over PCAI

urban areas (0.396). Across the spatial diversity categories, inequality in income is higher in the hills (0.530) while in border areas it is the lowest (0.349).

2.4.4 IHDI and Loss of Human Development due to Inequality

The estimated Inequality Adjusted HDI[28] depicts the loss of potential human development caused by inequality. It is found that almost one-third of potential human development is lost in the state due to inequalities involved. The loss is the highest in Sonitpur and the lowest in Chirang (Figure 2.20).

2.5 Multi-dimensional Poverty

In the human development framework, the notion of poverty essentially constitutes multi-dimensional deprivation. Multi-dimensional poverty recognises interactions amongst various dimensions of deprivation and any failure to achieve one dimension results in failures in other dimensions. The Multi-dimensional

[28] See Technical Appendix 2 for details on estimation.

Poverty Index (MPI) offers significant insights into multi-dimensional deprivations – both its magnitude and breadth[29].

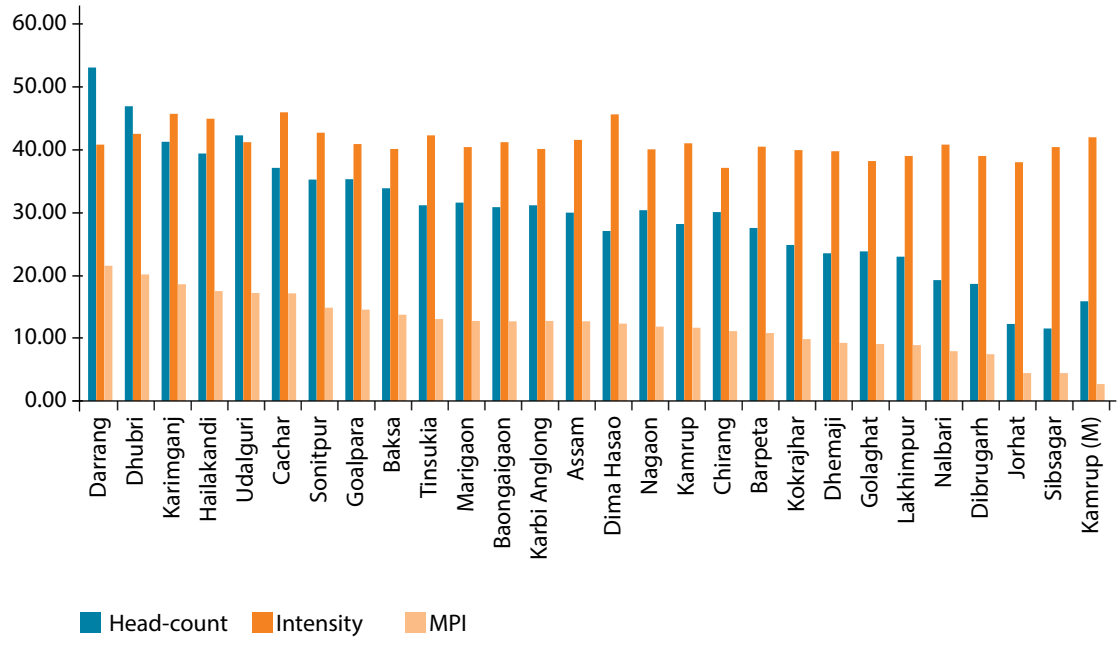
The MPI takes into consideration the three key dimensions of human development, that is, health, education and living standard, and combines 10 indicators. Based on a joint distribution, it identifies a person as poor when the person is deprived in one-third of the indicators weighted equally over three dimensions[30]. It provides poverty head-count ratios along with the proportion of population vulnerable to become multi-dimensionally poor. The MPI combines both head-count and average deprivation of the poor (intensity).

It is estimated that 30 per cent of the population in Assam is multi-dimensionally poor with an intensity of deprivation of atleast 4 out of 10 indicators. Further about 17 per cent of people are vulnerable to become multi-dimensionally poor. The poverty head-count is the maximum in Darrang with more than half of its population being multi-dimensionally poor. However, the intensity of poverty is the highest in Cachar (45.87) with the poor in the district being deprived of about half of the indicators (Figure 2.21).

Moreover, the incidence of multi-dimensional poverty is found to be the highest in Char areas (44.59) while the intensity is the highest in the hill blocks. The proportion of people vulnerable to multi-dimensional poverty is the highest in flood affected areas (Table 2A.10, Statistical Appendix).

It is further found that lack of six years of schooling, adequate sanitation facilities, access to improved fuel for cooking and housing are the four major areas of multi-dimensional deprivation in Assam.

Figure 2.21: Multi-dimensional poverty head-count, intensity and MPI in districts



Source: HDR Survey (2013).

[29] See Alkire and Santos (2010) for details.
[30] Detail method is given in Technical Appendix 2.

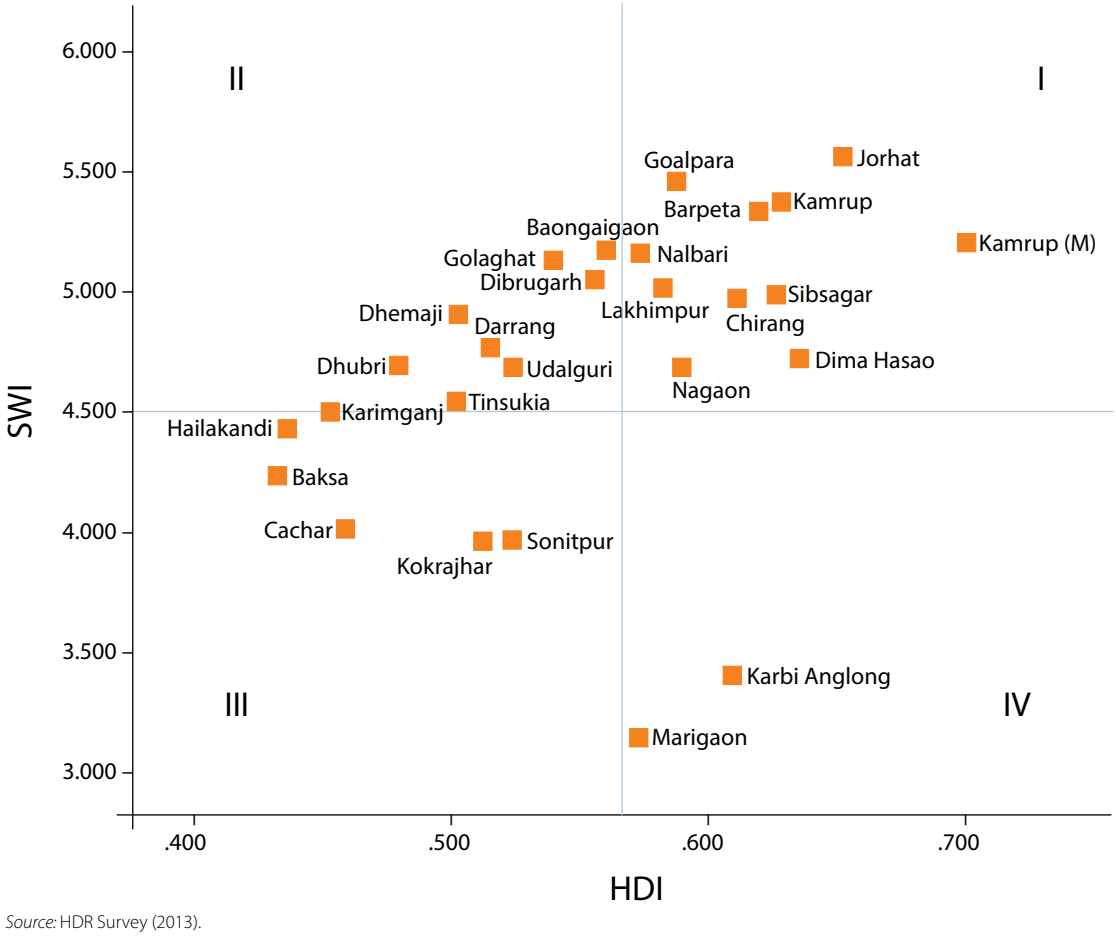
2.6 Combining 'Objective' and 'Subjective' Aspects

Overlaying of objective well-being given by HDI and subjective well-being given by SWI in the Chapter 8 offers an important insight. Figure 2.22 provides the overlay. It can be seen that both indices for districts are fairly correlated in a positive direction[31]. This is indicative of the complementarities between 'opportunity' and 'process' aspects of freedom in achieving human development.

The districts in the first and third quadrants in Figure 8.22 reflect complementarities between the objective and subjective aspects of well-being. The districts located in the second quadrant are suggestive of higher SWI relative to HDI. Similarly, the two districts located in the fourth quadrant indicate high HDI but low subjective well-being. To understand the relations between objective and subjective well-being of the districts located in the second and the fourth quadrants, one has to examine the 'drivers' of well-being in the districts. For instance, the high HDI in Marigaon and Karbi Anglong is primarily driven by high health achievements measured in terms of life expectancies. Contrary to this, low SWI in Marigaon is driven by domains of ecology, education and governance. Satisfaction in the governance domain is also low in Karbi Anglong. Most interestingly, satisfaction over the health domain is the lowest in Karbi Anglong. Additional information provided by the subjective well-being index can be extremely useful in improving the quality of life of people.

[31] The rank correlation between the two is found to be 0.58.

Figure 2.22: Overlaying of HDI and subjective well-being index



Source: HDR Survey (2013).

2.7 Summing up

The forgoing discussion suggests that, on the whole, human development in Assam remains about half way in relation to the desired level. The dimensional achievements differ district wise as well as important diversity wise, that is, spatial, demographic and sector wise. The differential achievements in human development observed in the districts, thus, need to be accounted for these diversities within the districts. Improving income and health emerges as the most critical policy concern. Gainful employment thus assumes the central place in the human development strategy in the state.

Inequalities in opportunity with regard to health, education and income have been pervasive and these result in considerable loss in potential development achievements in the state. The distinct divides in achievements, therefore, are to be bridged to improve overall human development in the state. Notwithstanding this, the various processes of service delivery and governance have significant impact over levels of achievements and those need to be set right for better development outcomes. All these hint at major policy directions in terms of addressing multi-dimensional deprivation and inequality in the state.

3 Employment, Income and Standard of Living

Gainful Employment is Central to Decent Life

3.1 Introduction

People are both a means as well as an end of development in the human development approach. The ultimate aim of development is to improve the quality of life people live. An improved life is characterised as one in which people have opportunities to choose the most, if not all, of the functionings they consider worthwhile.

People, however, perform not one but a range of activities in life. These activities require, besides health and education, several other 'means', including inter alia, 'command over resources' which can ensure amenities for a decent life. Command over resources differs from health and education in its role in development. Unlike health and education, the command over resources does not possess any 'intrinsic' significance on its own; it only has an 'instrumental' significance.

Command over resources, however, is a complex, multi-dimensional idea and depends greatly on several factors including social and institutional structures prevailing in the society. Essentially, it reflects all those basic capabilities which have been unrepresented in the human development approach. Given the complexities involved and limitations in acquiring the required data on income, instead, it is taken as an indirect indicator of it. Income, thus, emerges as one of the key components of human development and deprivation in income can lead to obvious deprivations in other components[1].

This chapter discusses the income scenario in Assam in general. It accordingly discusses various livelihood options as sources of household as well as individual income, the overall employment-unemployment scenario, and the situation on wages and consumption. Besides, the chapter also attempts to highlight aspects of poverty and inequality together with the standard of living in terms of housing and other basic amenities. Analyses have been provided for different levels of disaggregation to facilitate effective policy formulation.

3.2 Labour Market Scenario: Key Indicators

Access to adequate livelihood opportunities is fundamental to human development as poverty, vulnerability, and inequality are essentially the consequence of livelihood opportunities. It is also well accepted that having mere access to livelihood opportunities is not enough; the nature of opportunities is more important. While being gainfully employed or not creates a primary divide in the economy, a secondary divide is created along high or low returns from work together with other security and benefits attached to it. Thus, the extent and nature of employment, and associated trends in returns from employment are crucial aspects in livelihood assessment.

3.2.1 Key Labour Market Indicators

The Census data provide useful insights to set the backdrop of the analysis. As per Census 2011, the Work Participation Rate (WPR) in Assam is 38.4 per cent – male 53.6 and female 22.5 per cent[2]. In 2001, WPR in the state was 35.8 (male 49.9 and female 20.7 per cent, respectively). During 2001-11, the labour force, that is, the economically capable population

[1] The fact that income is an *indirect* indicator of capability has resulted in different types of *treatment* given to 'income' in the human development approach. The most fundamental point in these 'treatments' is to reflect the normative idea that there is a diminishing return to transforming income into human capability. For a detail discussion on this, see Anand and Sen (2000) "Consumption and Human Development", accessible at http://hdr.undp.org/sites/default/files/sen-amartya_anand-sudhir_consumption.pdf.

[2] The Census defines WPR as the proportion of total workers (both main and marginal put together) of the total population. Main workers are classified as those having work for more than six months in a year and those with work for less than six months are classified as marginal workers.

both employed and unemployed, in the state has grown by 31.7 per cent against the overall population growth of 17.7 per cent. The overall Labour Force Participation Rate (LFPR)[3] in the state, on the other hand, has increased by 12.5 per cent during the same period (51.3 in 2011 against 45.6 in 2001)[4]. The LFPR is found to be higher in urban areas compared to rural areas. It is further observed that growth of the female labour force (41.2 per cent) has been almost one-and-a-half times of the rate of growth of the male labour force (27 per cent) during 2001-11. LFPR is higher than the state average in the districts of Jorhat, Sibsagar, Golaghat, Dibrugarh, Dhemaji, and Baksa, fuelled mainly by a relatively high female LFPR[5].

It may further be noted that, during 2001-2011, the LFPR for males increased to 64.9 per cent from 59.2 per cent whereas that for females has risen to 37.1 per cent from 31.2 per cent. The Unemployment Rate (UNER)[6] in the state, consequently, has increased from 21.6 per cent to 25.3 per cent – that of males increasing from 17.5 per cent 15.7 percent and that of females from 33.5 per cent to 39.5 per cent. The growth of those seeking employment during 2001-11 stands at 54.4 per cent – that of females being as high as 66.5 per cent. The creation of adequate employment opportunities, thus, emerges as a critical policy intervention to cater to the need of an ever-increasing proportion of job-seeking population – particularly females.

NSSO data also offer useful indications related to the key labour market indicators of LFPR, employment rate and unemployment rate in the state. The data indicate a near stagnant labour market during 2004-11 with the key indicators largely remaining unchanged during the period (Table 3.1). It may, however, be noted that the Census definition of employment and labour force participation is quite different from that used in NSSO employment/unemployment surveys. Nevertheless, both together can indicate broad, general tendencies of overall labour market conditions in the state. Given this, the general tendencies of a stagnant labour market indicated by NSSO data coupled with the indication of an ever-swelling labour force from the Census data effectively underline the major challenge to sustainable human development in the state.

Table 3.1: Changes in key labour market indicators over NSSO rounds

		2004	2011
Share in 11+ population	Not in Labour Force	62.9	63.3
	Unemployed	2.4	5.5
	Self Employed	23.6	23.2
	Wage Employed	11.1	11.0
Key parameters	LFPR (% of Pop)	37.1	36.7
	Employment Rate (% of pop)	34.7	34.2
	Unemployment Rate (% of LF)	6.5	7.1

Source: Unit level NSSO Surveys on Employment and Unemployment, relevant Years

[3] LFPR is measured as the proportion of the labour force to the total population.
[4] The corresponding LFPR at the all-India level is estimated at 49 per cent with wide gender disparity, female LFPR at 35 per cent and male LFPR at 62 per cent as per Census 2011.
[5] Some of these districts are in the tea plantations belt. About 50 per cent of the workforce in the tea sector is women.
[6] UEMR is measured as the proportion of those seeking employment of the total labour force based on the Census B series Table B01.

Table 3.2: Hierarchical decomposition of the labour force (in %)

Total population	100.0
1. Population 6 years and above	90.1
1.1 Child population (6-14 years of age)	21.5
1.1.1 Child labourers	3.5
1.2 Population above the working age limit	8.2
1.2.1 Employed	78.2
1.3 Working age population (15-59 years of age)	70.2
1.3.1 Inactive	43.9
1.3.2 Active	56.3
1.3.2.1 Employed	86.6
1.3.2.2 Unemployed	13.4

Source: HDR Survey, 2013

Given this backdrop, the HDR survey helps depict the livelihood scenario of the state in some details. Table 3.2 provides a summary of the labour market profile based on the survey data.

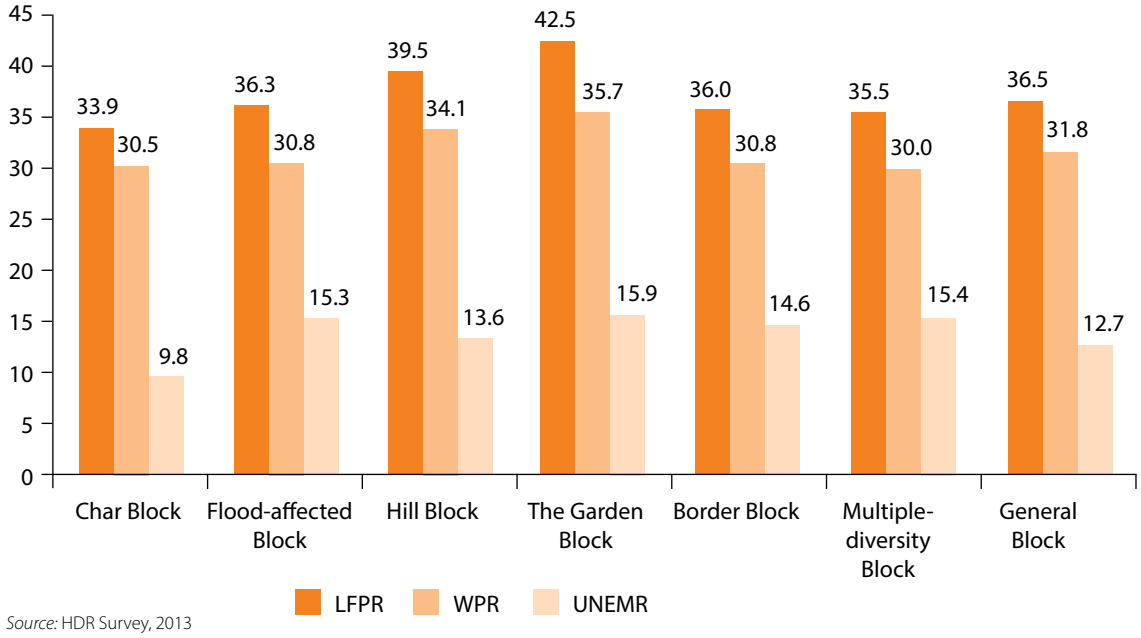
The overall WPR for all age groups in the state is estimated to be 31.9 per cent. The WPR for males is found as 54 per cent whereas that for females only 9 per cent. A relatively higher male WPR is observed in Dima Hasao (63.2 per cent), Kokrajhar (58.0 per cent), Kamrup Metro (57.6 per cent), Jorhat (57.6 per cent) and Dibrugarh (56.1 per cent) while the female WPR is high in Tinsukia (17.7 per cent), Dima Hasao (17.5 per cent), Dibrugarh (14.8 per cent), Sonitpur (13.6 per cent) and Jorhat (13 per cent) (Table 3A.1, Statistical Appendix).

The HDR survey estimates all age group's LFPR at 37 per cent at the aggregate with 59 per cent for males and just 15 per cent for females. The total LFPR rate is found to be relatively higher in the districts of Dima Hasao, Dibrugarh, Tinsukia and Jorhat. The rate is relatively low in districts such as Dhubri, Karimganj and Dhemaji. The highest female LFPR is found in the hills district of Dima Hasao followed by tea garden districts of Dibrugarh, Tinsukia, Sonitpur and Jorhat. Across the spatial diversity categories, the LFPR is found to be higher in hill blocks (39.5 per cent) and tea garden blocks (42.5 per cent) (Table 3A.2, Statistical Appendix). The LFPR is also comparatively higher in the hills (39.5 per cent) and tea garden blocks (42.5 per cent).

The HDR survey estimates the total unemployment rate (considering all age groups) at 13.4 per cent. The estimated unemployment rate for females is 33.9 per cent against 8.0 per cent for males (Table 3.3). A relatively high unemployment rate, particularly among females, affects the LFPR adversely through the discouraged worker effect. Among the districts, unemployment is found to be rather high in Cachar, Dibrugarh, Karimganj, and Dhemaji where more than 16 per cent of willing workers are unable to get gainful employment. Alarmingly high female unemployment rates could be found in districts of Karimganj (58 per cent), Marigaon (56 per cent) and Cachar (54 per cent) (Table 3A.1, Statistical Appendix). Unemployment is higher in the hills and tea garden blocks as also in the flood-affected blocks (Figure 3.1; also see Box 2.1 and Box 2.2).

In order to firm up the estimates of unemployment rates, age group can be restricted to working ages of 15-59. Such 'firmed up estimates' are provided in Table 3.3.

Figure 3.1: LFPR, employment and unemployment rates by spatial diversity



Source: HDR Survey, 2013

Table 3.3: Unemployment rates among selected categories

Categories	Unemployment Rate by Groups	Group Share Among Unemployed
Total	13.4	100.0
Gender		
Male	8.0	46.9
Female	33.9	53.1
Age group		
15-24	37.7	66.0
25-54	6.4	33.4
55-59	1.3	0.6
Religion		
Hindu	14.4	74.2
Muslim	10.6	21.2
Christian	14.4	4.0
Buddhist	14.3	0.4
Sikh	21.6	0.1
Others	15.1	0.1
Area of residence		
Urban	13.4	15.1
Rural	13.4	84.9
New FSS		
Urban Areas	13.4	15.1
Char	9.2	8.8
Flood Affected	15.2	11.5
Hills	13.9	3.4
Tea Garden	15.3	18.4
Border	14.1	23.2
Multiple Diversities	14.7	7.2
General	12.3	12.4
Level of Education		
Not literate	5.7	7.8
Literate: without formal schooling	5.3	0.6
Below primary	8.9	3.2
Primary	10.9	13.7
Middle	15.2	24.5
Secondary	16.5	22.3
Higher secondary	21.3	16.8
Diploma/certificate course (ITI etc.)	19.5	0.5
Graduate (general)	19.2	9.0
Post-graduate & above (general)	15.1	1.1
Technical/professional degree (medical, engineering, law etc	14.1	0.6

Source: HDR Survey, 2013

It may be observed from the Table 3.3 that, category wise, most of the unemployed are located in rural areas, are female, in the age group of 15 to 24 years, border areas and tea gardens. The UNER is particularly high in tea gardens, border areas and flood-affected areas and also among educated youths. Clearly, alarmingly high UNER amongst the youth (15-24 years) presents a major challenge to policy interventions. The youth (15-24 years) UNER among males is 26.4 per cent and that among females is found to be as high as 69.8 per cent. It is further observed that youth unemployment is relatively higher in urban areas than in rural areas and also in tea garden blocks (20.8 per cent).

Box 3.1: Focus on human development in the tea plantation sector

There are indications that the labour situation in the tea plantations of Assam has worsened in recent years. Rising casualisation of the workforce in the tea estates and emergence of a flexible production structure (on the labour front) in the form of small tea gardens reveal that competitiveness in the ailing tea sector is presently viewed as reducing labour costs and avoiding mechanisms and legalities that ensure labour welfare. The tea management often points at low labour productivity and subsequent rise in labour costs as the reason for under performance of the tea sector. Attendance registers of the workers in tea estates also indicate high rate of absenteeism from work. Determinants of this could be poor health (indicated by estate hospital registers) of the workers and lack of enthusiasm for work. There is need to assess to what extent the prevailing wage structure (though revised at timely intervals) and the associated pecuniary and non-pecuniary benefits ensured by the Plantation Labour Act, 1951 are helping to workers lead a decent life on plantation estates.

The supply of work in the tea plantations depends on field productivity. Rising field productivity raises the demand for more work hours which can be ensured by more labour absorption or by extending work hours with adequate incentives. The rise in productivity is again dependent on how efficiently the management uses its acreages by maintaining the re-plantation norms, applying inputs in optimum quantity and following specified guidelines. Data on re-plantation norms, decline in tea acreages under bearing and stagnant productivity do not support a promising picture of Assam's tea estates. Overall, we observe a vicious cycle of low performance, low return and poor labour standards.

The state by now has well perceived the significance of ensuring field productivity. The Government of India has come out with schemes for extending financial support to ailing tea estates for rejuvenation and to arrest the trend of declining productivity and quality. The issue now is how these approaches will help labourers? Will all these steps make the sector efficient enough to absorb more labour and ensure that field productivity is right enough to guarantee high labour productivity and decent benefits? It is likely that field productivity of tea estates would improve with such interventions. It is also a fact that, in the foreseeable future, Assam's tea sector will not face a crisis of labour supply (there are enough impoverished workers agreeing to work at low wage). In such a situation, we do not expect a fair labour standard unless there are serious interventions from the state.

Source: Excerpt from Das, K. (2013, 10 January.) "Focus on Human Development in Assam's Tea Plantation, *Seven Sisters' Post.*

The above discussion on the overall labour market situation in the state indicates several broad tendencies and, consequently, throws up some fundamental challenges. An ever increasing labour force, low labour force participation rate and increasing UNER, particularly among females and youth, bear far reaching implications for society at large. The worrisome situation finds expression in employment related out-migration from the state as a negotiating strategy adopted by considerable section of people (see Box 3.2).

3.2.2 Occupational Diversification, Nature of Employment and Earnings

An important indicator of the employment and livelihood situation in an economy is the change and diversification of the occupational pattern. The most stylised concomitant of economic progress is the movement of labour from agriculture to manufacture, and from manufacture to commerce and services[7]. This transformation is also visible in India – over the

Box 3.2: Migration as a coping strategy

Migration due to the floods, erosion and sand deposition from villages for employment has now become a significant phenomenon in Assam. A large number of youth are migrating to distant places looking for jobs in plywood and rubber factories of Kerala, security services jobs in Tamil Nadu, coal mines in Meghalaya, to name a few. Movement to some of the remotest areas of the country is unheard of but it has become a common phenomenon revealing constraints faced in the domestic labour market to absorb workers.

Interaction with some workers revealed that a lack of avenues for regular and decent sources of income back in their villages and neighbouring towns has forced them to move to Kerala. The workers enjoy their jobs, employment and labour market security in Kerala. The workers, though they work in an unregulated environment where the minimum wages and other pecuniary and non-pecuniary benefits are not ensured, enjoy their acceptance in industry and societies as they are not looked down upon as migrant workers (informal discussion with Prof. D. Narayana of State Planning Board, Trivandrum too reveals this. Prof. Narayana is the co-author of the report on Domestic Migrant Labour in Kerala, Labour and Rehabilitation Department, Government of Kerala, 2013). The workers are happy to earn a decent amount through their hard work and support their families back home.

The endeavour and struggle made by the youth in the distant land opens up some significant issues for the state of Assam. The state enjoys enough provisions in industrial subsidies and concessions but has failed to create adequate sustainable employment avenues. There is depletion of forest resources, which had compelled the Supreme Court to impose a ban on timber felling. The consequences of closure of hundreds of saw mills and wood factories in the state are well known. There are numerous examples how the state has failed to address sustainable use of resources from saving the paddy fields from negative externalities of flood and sand deposition to resource-based job sectors through effective policies and plans.

*Excerpt from Das, K. and D. Chutia (2011, February 6) "Outward Bound", *Assam Tribune*.

[7] See, for instance, Clark (1941) and also Kuznets (1966).

years, more and more people have shifted out of the agricultural (and primary) sector entering secondary and tertiary sectors, although the trend tends to bypass the manufacturing sector. Consequently, the share of primary sector workers of the total is showing a secular decline over the years.

Such a shift in occupations is also visible in the state as revealed by the National Occupational Classification (NCO 1-digit Codes, (Table 3.4)). There is a discernible tendency of people moving out of agriculture and there is a perceptible increase in myriad service-related occupations. What is more worrying is the fact that the share of white collar jobs has remained almost stagnant over the past years, and almost all the decrease in *blue collar jobs* has been accommodated by commensurate rise in *pink collar jobs*, raising doubts about the quality of the occupational shift witnessed in the state.

The HDR survey data on occupation reveal that most of the working population is engaged as daily wage earners (30.6 per cent) while 26.6 per cent is engaged in agriculture and allied activities (Table 3.5).

In the human development context, nature, regularity, and returns from work are more important than mere availability work. It has been long argued that the poor can hardly afford

Table 3.4: Changes in occupational classes over NSSO rounds, Assam

Occupation Groups	2004	2011
Shares in Workforce		
1. Technical & Professional	7.4	6.5
2. Administrative & Managerial	1.2	1.5
3. Clerical	2.0	3.1
4. Sales	10.5	11.5
5. Service	2.7	11.6
6. Farmers	63.9	44.4
7. Production	1.2	7.4
8. Transport	2.3	2.3
9. Others	8.8	11.6
White Collar Jobs (1+2)	8.6	8.0
Pink Collar Jobs (3+4+5)	15.2	26.2
Blue Collar Jobs (6+7+8+9)	76.2	65.7

Source: Unit level data from NSSO Surveys on Employment and Unemployment, NSSO, Various Years

Table 3.5: Distribution of workforce by occupational category

Occupation	Male	Female	Total
Agriculture & Allied	28.7	13.7	26.6
Agricultural Labourer	2.7	4.0	2.9
Daily Wage Earner	30.1	33.6	30.6
Petty Business/Self-employed	15.4	9.9	14.6
Trade/Business	5.0	1.5	4.5
Salaried Service (Regular)	10.3	22.3	12.0
Salaried but casual	7.8	14.5	8.7
Total	100.0	100.0	100.0

Source: HDR Survey, 2013

to remain idle and, therefore, both observed LFPR and employment rates tend to be higher in poorer societies, though most workers in these cases are engaged in low-paying work, mainly self-employment and in family enterprises, which also include petty vending activities. This is revealed in the HDR survey as well and it is observed that more than 80 per cent of the non-agricultural sector (including livestock) workers in Assam are either self-employed or work as casual labour. Only about 14 per cent of the workers are engaged in regular wage jobs (Table 3A.3, Statistical Appendix). Casual workers are evidently prominent in tea garden, border and char blocks. Among the religious communities, the percentage of casual workers is high among the Muslims and Christians (Table 3A.4, Statistical Appendix).

Earnings from various employment options vary according to the nature of employment. It could be observed from the HDR survey that, on the average, earning from permanent work – both in the agricultural and non-agricultural sectors – is significantly higher than all other categories. Inequality is also highest among permanent workers. Earnings from agriculture are the lowest among all types of employment, primarily because of the nature of agriculture pursued in the state (Table 3.6).

Table 3.6: Earnings and earning inequality by nature of employment

Nature of Employment	Non-agriculture	Agriculture
Casual worker		
Median earnings (INR/Month)	3,791.7	4,000.0
Gini coefficient for earnings	38.9	35.0
Theil index for earnings	44.3	36.7
Permanent worker		
Median earnings (INR/Month)	15,000.0	7,541.7
Gini coefficient for earnings	48.7	46.2
Theil index for earnings	59.6	36.9
Self-employed		
Median earnings (INR/Month)	5,333.3	5,137.5
Gini coefficient for earnings	44.1	43.3
Theil index for earnings	49.7	47.5
Agriculture		
Median earnings (INR/Month)		916.7
Gini coefficient for earnings		46.3
Theil index for earnings		47.1

Source: HDR Survey, 2013

Given the nature of employment and earnings from various employments, the economic situation of households in terms of household income may be arrived at. The HDR survey estimates the average monthly per capita income in the state as INR 2,000. It is however, observed that variations exist in the estimates across districts and spatially diverse categories. The estimated average monthly per capita income is highest in Kamrup Metro (INR 5,287) followed by Jorhat (INR 3,222) and Sibsagar (INR 3,092). On the other extreme, the reported monthly income per capita is less than INR 1,500 in Hailakandi, Marigaon, Dhubri, Dhemaji, and Darrang. Monthly income levels are relatively lower in the border areas (INR 1,499) and hill blocks (INR 1,505) compared to the general blocks (INR 2,168), but flood-affected blocks (INR 1,967) show relatively higher income[8]. Income amongst the Muslim (INR 1,519) and Christian (INR 1,339) households is found to be comparatively low (Table 3A.5 and Table 3A.6, Statistical Appendix).

[8] From the flood-affected area, we now observe massive out-migration of youth for employment. The higher income may because of the remittance.

Box 3.3: Regulatory constraints in the unorganised manufacturing sector

The all-India census of small scale industries (2001-02) had revealed that about 42 per cent of registered units in Assam was found to be closed in the third census. The focus was on three main causes of closure – the problems of market access, lack of required finance and competition faced in the market. These three reasons seem to be universal for the entire small and unorganised manufacturing sector in the country. Overall, small scale entrepreneurs need information on market access, small-time finance on working capital and development of their capability to produce quality products, creating their own niches. In many instances, to procure working capital and raise finances for daily living, the micro entrepreneurs sell their products at a throw away price. An exploration of all traditional manufacturing sectors of the state would reveal a similar phenomenon. In addition to these three factors, making raw materials and inputs available at appropriate prices remains as a prime issue.

For example, the rich handloom sector of the state, which has immense potential to add value and employment, is now trapped in a crisis. The National Textile Policy, 2000 states that handlooms must produce for upper end markets to overcome competition from cheap products of power looms and mills. The constraint faced by petty weavers at present is more from supply of yarn to add value and sustain their livelihood. India, overall, has an annual demand of 32,000 mega tonne (MT) of raw silk. Production of mulberry raw silk in India during 2013-14 was about 19,500 MT. During 2009-10, India imported about 12,500 MT of silk, mostly from China (Final Report: National Fibre Policy Sub-Group on Silk, 2010-11), though import had declined to 4000 MT in 2013-14. In the silk weaving hub of Sualkuchi in Assam, there are severe shortfalls of yarn, as production of mulberry and non-mulberry silk of Assam is meagre at 27 and 126 MT, respectively. This cannot even meet one-fourth of the demand of the looms, revealing reliance on imported silk. Evidence reveals a positive impact of the inflow of Chinese yarn in terms of raising the opportunity to weave and add value. On the regulatory front, the Government of India however has been apprehensive about the inflow, because of the probable impact of the dumping and import of cheap Chinese silk on the internal growers of mulberry silk (Ministry of Commerce and Industry, 2003). The fallout of this is that now the landed price of imported Chinese yarn accounts for 31 per cent import duty, and the present price of silk at the local market is about INR 4,000 per kilogram (Annual Report, Central Silk Board, 2013-14). Notification on the imposition of anti-dumping duty on Chinese silk came in September 2003 after investigations on anti-dumping by the Ministry of Commerce and Industry. In January 2012, the Government of India further extended the anti-dumping duty for the next five years. The pegging up of the price through imposition of the duty affected production of the silk weaving hubs.

**Source:* Das, K. (2012) Understanding Sluggish Industrialisation Process in Northeast India, Research Paper Series 2, OKDISCD, Guwahati.

We also need to look at productivity/ remuneration in different sectors/occupations as reflected by per worker returns to suggest policy directions. It is observed that per worker return is highest from livestock (INR 62,340), partly because of the low number of workers directly involved and partly because of the higher value of products in recent times. Per worker monthly return is lowest in agriculture (INR 2,629, especially in Marigaon (INR 1,480), Lakhimpur (INR,1662), Dima Hasao (INR 1,693) and Bongaigaon (INR 1,671). A relatively higher per worker return from agriculture is obtained in Darrang (INR 5,028), Chirang (INR 4,169), Cachar (INR 3,556), Karimganj (INR 3,529) and Tinsukia (INR 3,804).

Self-employment has a per worker return of about INR 7,000 per month. Casual jobs provide a return of INR 4,000 while permanent salaried jobs provide more than INR 16,000. In certain pockets of the state, intensification of agriculture and farm activities has yielded better returns. On the other hand, the diminishing scope in land-based activities along with poor returns has forced some households to diversify their income and yield better returns.

3.3 Poverty Scenario

In India, official poverty line is indirectly obtained from Monthly Per Capita Consumption Expenditure (MPCE) based on a fixed calorie norm. As such, poverty in India is, essentially, consumption poverty and it relates to deprivation in one of the most fundamental functioning, that is, to be able to live and be nourished. However, the motivations behind consumption are many: they range from 'nourishment to amusement, from living long to living well, from isolated self-fulfilment to interactive socialisation'[9]. Although consumption is not an 'end' in itself, it is an important, indeed, an elementary functioning in human life. Any deprivation on the consumption front must necessarily result in deprivations in a series of functionings.

The poverty rate (that is, the poverty head count ratio) in Assam, as per the official poverty line, was estimated at 30 per cent in 2011-12 with rural poverty being at 33.9 per cent and urban poverty at 20.5 per cent[10]. In 2004-05 the total poverty rate in the state was 34.4 per cent – the rural poverty rate being 36.4 percent and urban being 21.8 per cent.

The HDR survey collected information on household level consumption expenditures both on food and non-food items. The average MPCE on food is found to be INR 710.22 in the state. The urban MPCE on food is found to be INR 1,185.71 which is almost twice the MPCE on food in rural areas (INR 622.12). The average total MPCE (food and non-food) in the state is found to be INR 1,284.32; that of rural areas being INR 1,060.74 and of urban areas INR 2,491.15. It may be noted that the average MPCE in the lowest decile is found to be even lower – only INR 436 in rural and INR 478 in urban areas. Further, data show that, in rural areas, households spend 58.6 per cent of the total expenditure on food and, in urban areas, the proportion is 47.6 per cent. Moreover, there are wide district variations as well (Table 3A.7, Statistical Appendix).

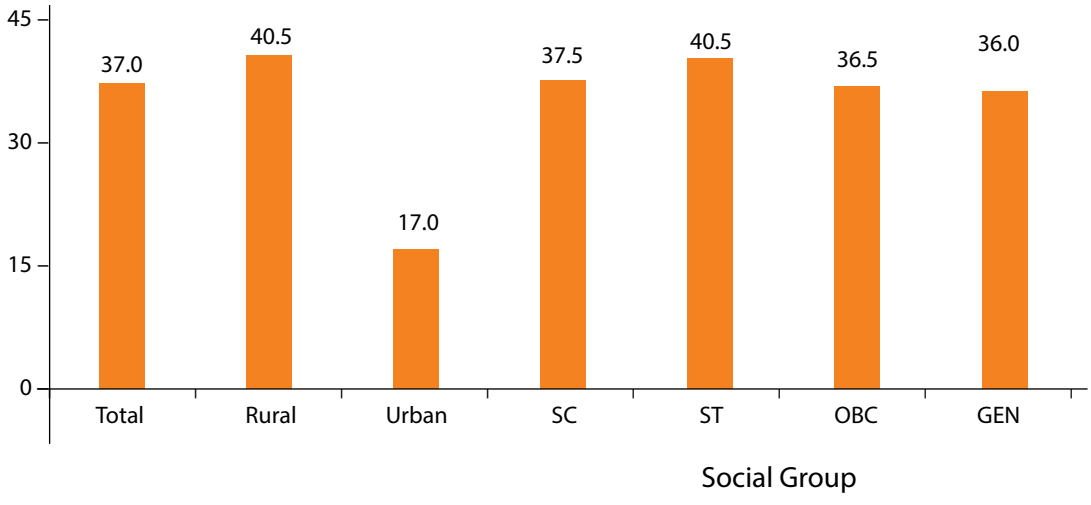
Given this pattern of consumption expenditure, the HDR survey estimates the poverty headcount ratio in the state at 37 per cent[11]. Estimates reveal that poverty is substantially high in rural areas at 40.5 per cent compared to

[9] See "Consumption and Human Development" by Anand and Sen, accessible at http://hdr.undp.org/sites/default/files/sen-amartya_anand-sudhir_consumption.pdf (accessed on 6 October 2014).
[10] Using the Tendulkar Method. For comparability and consistency, the analysis is based on the Tendulkar Method.
[11] Poverty levels are calculated as HCR by taking the Tendulkar Committee recommendations on the Poverty Line. If the more recent Rangarajan Committee recommendations are used then poverty rates would be higher.

just 17 per cent in urban areas. Poverty is also higher among STs compared to the general caste households (Figure 3.2).

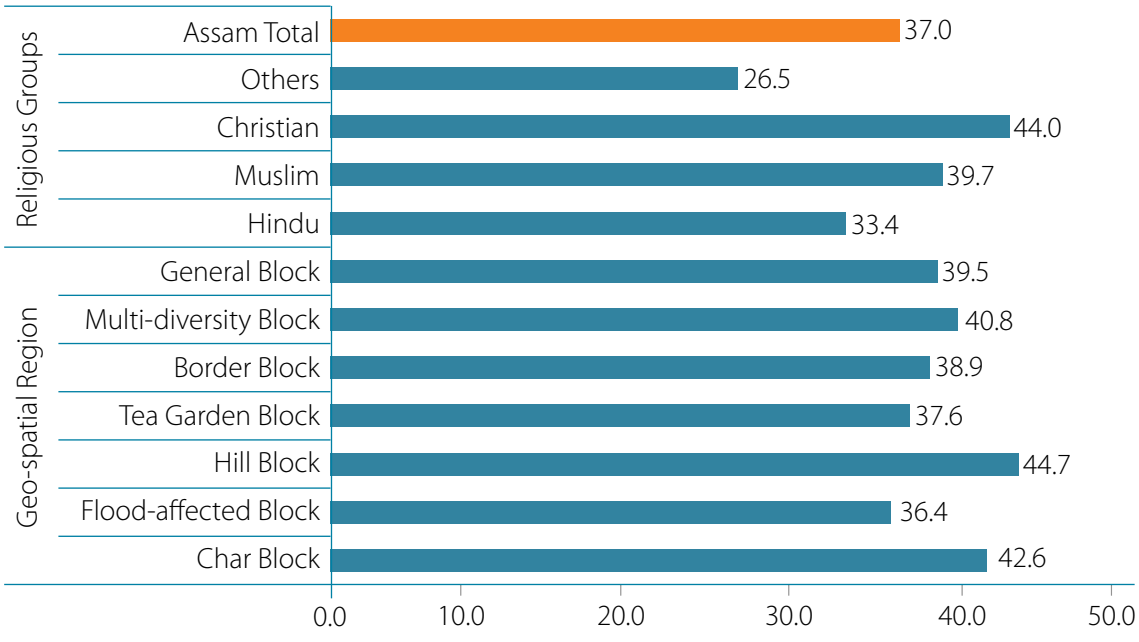
In case of spatial diversity categories, it is observed that poverty is the highest in the hill blocks, followed by Char blocks (Figure 3.3).

Figure 3.2: Poverty rates in assam by rural-urban and social category (%)



Source: HDR Survey, 2013

Figure 3.3: Poverty rates in Assam by spatial diversity categories (%)



Source: HDR Survey, 2013

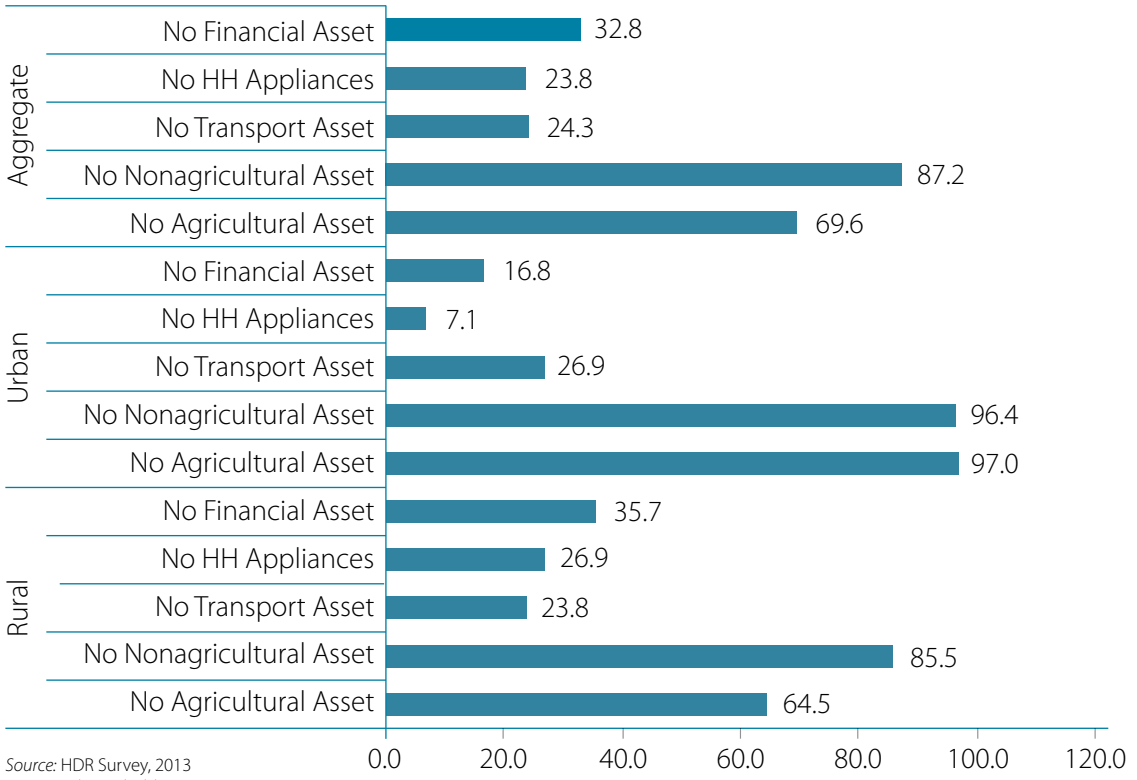
Contrary to the common perception, poverty is found to be relatively low in flood-affected blocks. The flood-affected areas of the state show large-scale outmigration of people for employment[12] and this might have dampened the poverty impact. Besides, poverty is also found to be higher among religious minorities, that is, Christians and Muslims compared to Hindus.

It is further revealed that there are significant variations in poverty rates across districts. Poverty is significantly higher in Darrang (45.5 per cent), Marigaon (44.5 per cent), Golaghat (43.5 per cent), Udalguri (43.0 per cent), Karbi Anglong (42.5 per cent), Dhubri (41.5 per cent), Chirang (41.5 per cent), Baska (41.0 per cent) Sonitpur (40.5 per cent) and Goalpara (40.5 per cent). On the other end, poverty is relatively lower than the state average in Kamrup Metro (3.5 per cent), Bongaigaon (31.5 per cent), Cachar (31.5 per cent), Dibrugarh (31.5 percent) and Sibsagar (32.0 per cent) (Table 3A.8, Statistical Appendix).

3.3.1 Asset Poverty

While poverty measures through income and/or consumption levels are widely used and universally acknowledged, this is by no means an exhaustive measure, especially in developing societies plagued with multi-dimensional deprivations. As such, deprivations in other dimensions of standard of living such as a lack of specific household assets, land ownership, proper housing, and housing amenities like electricity, drinking water, toilet, etc., are also needed to be considered to assess the extent of deprivation and overall standard of living. It is believed that asset poverty reflects long-term poverty in a household[13].

Figure 3.4: Asset poverty in Assam: rural and urban (% households)



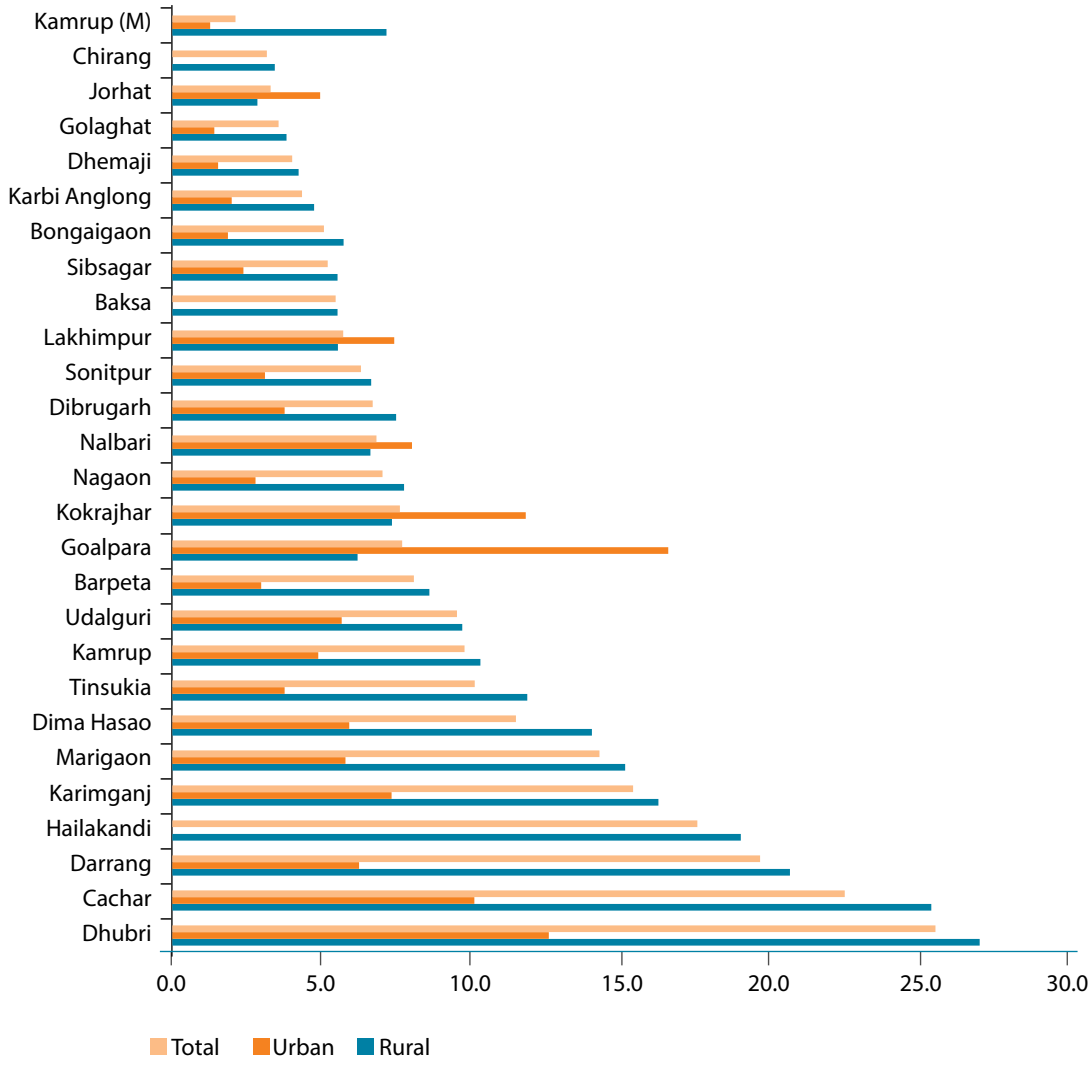
Source: HDR Survey, 2013
Note: HH: household.

[12] Das, K. and Chutia, D. (2011) Outward Bound, The Assam Tribune, 6 February.
[13] Mckay, A. (2009) Assets and Chronic Poverty, Background Paper, Working Paper No. 100, Chronic Poverty Research Centre, University of Sussex, Brighton.

The HDR survey data reveal that about 10.8 per cent of rural households and 4.5 per cent of urban households do not possess household assets of any kind. This represents the incidence of acute long-term poverty in rural and urban areas of the state. About 65 per cent of rural households do not possess any agricultural asset, such as ploughs, bullock carts, farm equipment, etc. It is also found that 85.5 per cent of rural households do not have any non-agricultural productive assets such as handloom or power-loom either. In urban areas, about 27 per cent of households do not own any vehicle/means of transport including bicycles. This figure is 23.8 per cent in rural areas. Further, about 35 per cent households in the state as a whole do not have any financial assets or insurance (Figure 3.4).

Among the spatial diversity categories, asset poverty is especially acute in the Char blocks, border blocks, and multi-diversity blocks (Table 3A.10, Statistical Appendix). Besides, the intensity of asset poverty is prominently visibly in the districts of Dhubri, Cachar, Darrang, Hailakandi, Karimganj and Marigaon. It is also seen that intense asset poverty is relatively high in rural areas. However, urban asset poverty is outstandingly visible in Goalpara, Kokrajhar, Nalbari and Lakhimpur (Figure 3.5).

Figure 3.5: Intensity of asset poverty in districts

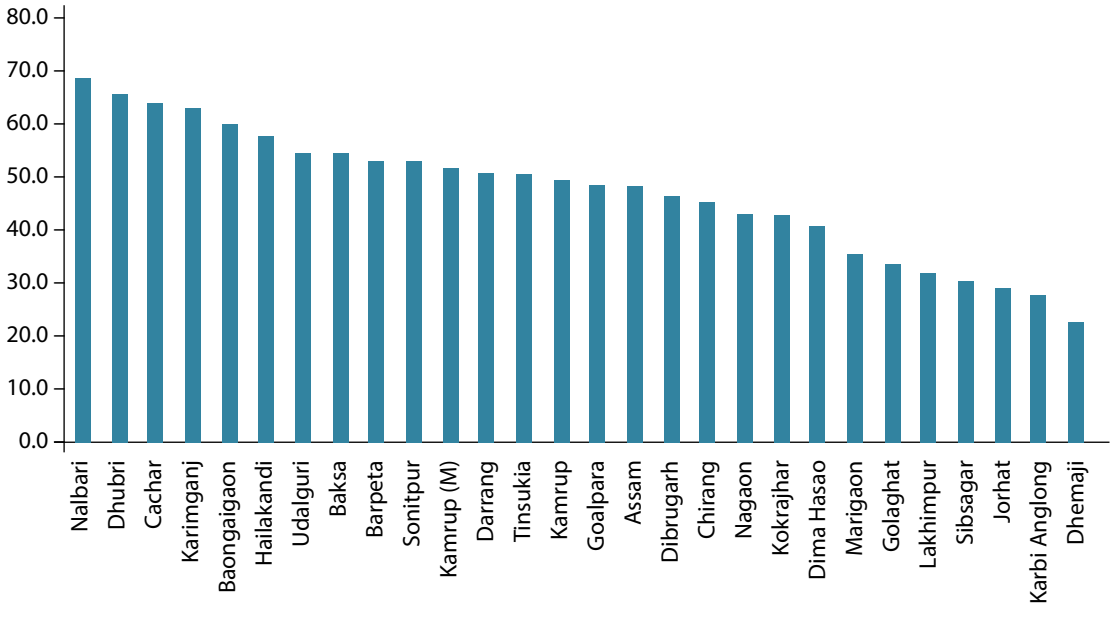


Source: HDR Survey, 2013

3.3.2 Land Holding in Rural Areas

Access to land is extremely critical for income and livelihood security of households, particularly in rural areas. It serves as a measure of productive capital, collateral for loans, a measure of prestige and power in the villages. Moreover, land ownership is a crucial determinant of socio-economic status.

Figure 3.6: Agricultural landlessness in rural areas of Assam (% household)



Source: HDR Survey, 2013

From the HDR survey it is found that 48.5 per cent of households in rural Assam do not own any agricultural land. Landlessness is marginally higher in the Char areas and amongst Muslims (Table 3A.14, Statistical Appendix). District-, wise, the incidences of agricultural landlessness are higher in Nalbari, Dhubri, Cachar, Karimganj and Bongaigaon and relatively lower in Dhemaji, Karbi Anglong, Jorhat and Sibsagar (Figure 3.6). It is further observed that average cultivated land per household in rural Assam is about 3.2 bigha (0.4 hectare) while the per capita agricultural land is found to be 0.68 bigha (0.09 hectare). In per capita terms, agricultural land holding is marginally better amongst the STs (Table 3A.16, Statistical Appendix). Small and uneconomic holdings of agricultural land naturally impede productivity growth and income from the sector. In addition, as is evident from the data, it is found that, in all districts, a lack of irrigation is a major constraint in agricultural development in rural areas. It is found that only one-seventh of the per capita holdings has access to irrigation facilities. In addition to the size of the land holding, the quality of land also has become a prime issue in the state. In many flood-affected areas of the state, there are cases of land degradation caused by sand deposition[14]. Moreover, the use to which land is put has implication for the out turn. The altitude or relief of the land too leads to differentiated returns.

3.4 Standard of Living

Gainful employment and sustained decent income are fundamental in eliminating poverty and improving standards of living. Sustained decent income is not only essential for improving the standard of living but also quality of life of people reflected in enhanced capability. The foregoing sections discuss some important aspects of employment, income and poverty situations in Assam. In the following sections, some aspects related to the living standard are provided while subsequent chapters propose to deal with long-term improvements in the quality of life of people in the state.

3.4.1 Housing and Household Amenities

Typically, the type and condition of house and amenities available in a household are considered indicative of the living standard. The HDR survey reveals that 22.7 per cent of the population dwells in *pucca* houses while a majority (43.7 per cent) live in *kutcha* houses. In rural areas, 48 per cent of people live in *kutcha* houses. *Kutcha* houses are predominantly existent in the districts of Karbi Anglong, Dima Hasao, Hailakandi, Golaghat, Darrang, and Udalguri (Table 3A.18 & Table 3A.19, Statistical Appendix)[15].

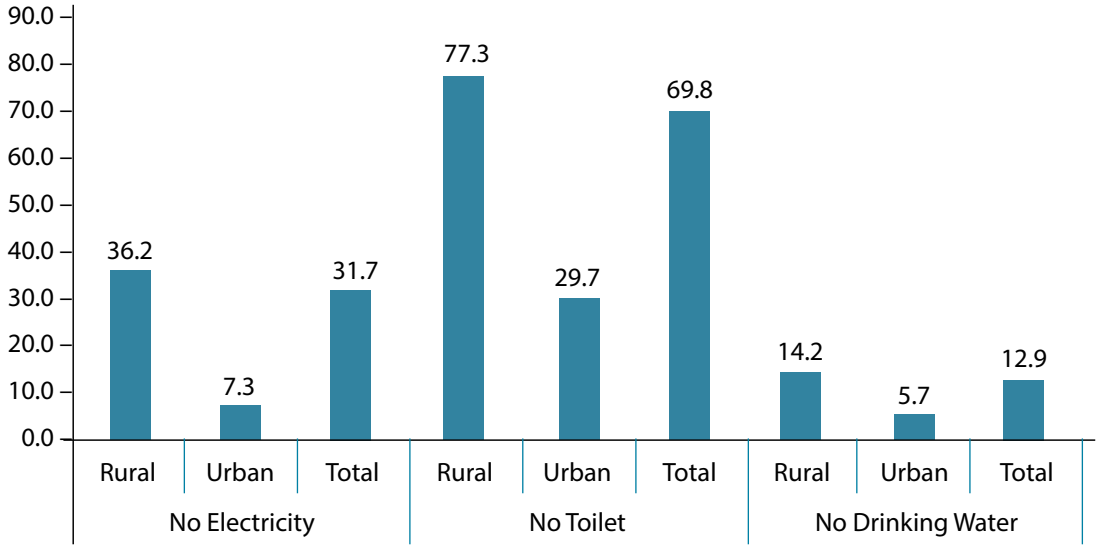
It is further found that 32 per cent of households in Assam are not electrified (Figure 3.7). The proportion of non-electrified households is higher in rural areas (36 per cent). Access to household electricity is particularly poor in Hailakandi (74.1 per cent), Nalbari (57.9 per cent), Sibsagar (58.2 per cent), Marigaon (46.8 per cent), Dhubri (52.8 per cent), Darrang (47.2 per cent) and Goalpara (43.1 per cent). The percentage of non-electrified households is high in the Char blocks (47.1 per cent) and in blocks characterised by multiple diversities (46.4 per cent)[16].

[14] Das, K. (2012b), Farm Productivity Loss due to Flood Induced Sand Deposition: A Study on Dhemaji, India, South Asian Network for Development and Environmental Economics, Kathmandu.

[15] *Kutcha* houses, however, in all circumstances cannot be considered as a major indicator of deprivation. For example, in certain localities of the state and in the hill districts, *kutcha* houses may be a norm. The house listing operation of Census 2001 of India saw a major shift in approach to account houses as good, liveable and dilapidated. In Census 2011, 10.9 percent of households in the state have been recorded as dilapidated houses. The percentages for Karbi Anglong (4.2), Dima Hasao (4.1), Golaghat districts (7.5) and Udalguri (10.5) are lower than the state average but higher in Hailakandi (16.1) and Darrang (17.2).

[16] In Assam, 85.3 per cent of villages have electricity connections (Government of Assam, 2013). A significant percentage of households not having electricity connections raises the issue of affordability to acquire the connection.

Figure 3.7: Deprivations in basic household amenities



Source: HDR Survey, 2013

Drinking water, however, within the premises is available in 85 per cent of rural households and 94 per cent urban households. However, t access is relatively poor in Dima Hasao (63.8 per cent), Hailakandi (55.6 per cent), Cachar (55.6 per cent), Karimganj (39.8 per cent), Karbi Anglong (33.6 per cent), and Sonitpur (30.6 per cent). Access to safe drinking water is found to be a major issue in general, in the hill blocks (67.3 per cent).

The survey reveals about 70 per cent of households do not have a toilet facility in the state. More than three-fourth rural houses do not have toilets or improved sanitation facilities. The situation is most awful in Darrang (86.4 per cent), Chirang (84.4 per cent), Karbi Anglong (83.8 per cent), Dhemaji (82.5 per cent), Kamrup Rural (78.2 per cent) Udalguri (78.1 per cent), Marigaon (77.4 per cent), Hailakandi (79.6 per cent), Golaghat (74.9 per cent), Cachar (76.9 per cent) and Bongaigaon (75.9 per cent).

Among the spatial diversity categories, improved sanitation facilities are evidently lacking in the hills (88.0 per cent) and in the Char areas (84.6 per cent)[17]. It is further observed that close to four-fifth of Muslim households do not have proper sanitation facilities (Table 3A.20 and Table 3A.21, Statistical Appendix).

It, thus, emerges from the HDR survey that, on the whole, there is a considerable degree of deprivation in terms of consumption, ownership and access to assets and myriad dimensions of standards of living[18]. In specific cases, deprivations are worryingly substantive not only in the relative sense but also in the absolute sense. These deprivations underline manifold impediments to human development in making people's life qualitatively better in general.

3.5 Self-assessed Poverty

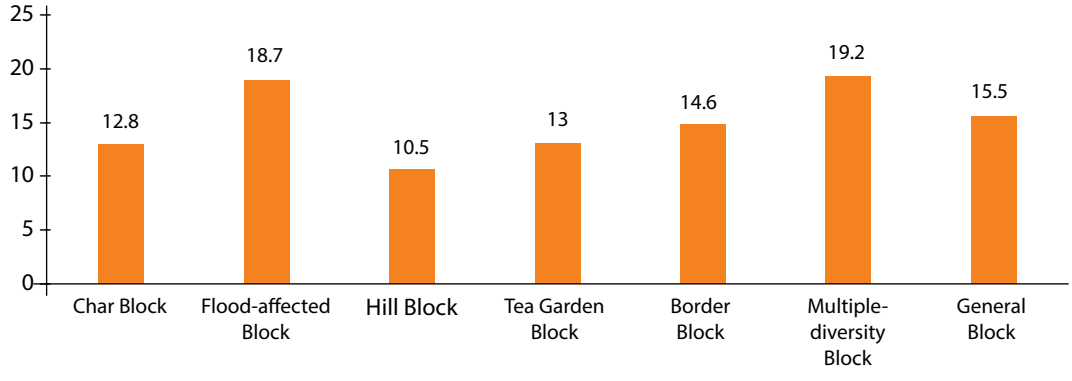
The HDR survey further makes an attempt to analyse a *self-assessed* poverty (SAPov) based on direct responses drawn from people on their perception of livelihood and various vulnerabilities they face. Households were

[17] One of the reasons for not constructing sanitary toilets in the Char areas is repeated waves and damage caused by the floods.
[18] The Census of India (2011) data also reveal a significant gap in terms of electricity connections (more than 30 per cent in absolute terms), use of clean sources of cooking (about 10 per cent), access to treated safe water (21 per cent), sanitary toilets (about 8 per cent) in the state with the average of the country.

asked to rate themselves in terms of several indicators of stressors and deprivations. Based on these indicators, a SAPov index has been calculated[19].

It is found that self-assessed poverty is about twice in rural areas (15.3 per cent) compared to urban areas (7.6 per cent). Intriguingly, the proportion of households self-assessed as poor

Figure 3.8: Incidence of self-assessed poverty across spatial diversity categories



Source: HDR Survey, 2013

[19] The SAPov Index is based on six self-reported indicators: worsening economic condition over the past five years, present indebtedness, having financial stress, facing threat to crops, relative poverty in the village/community, and income insufficiency in meeting basic needs. A household is given a score of 1 if it suffers from any of the aforesaid vulnerabilities. Households with deprivations in more than three indicators are identified as self-assessed poor.

are found to be near equal (about 15 per cent) among all social categories. The proportion of rural household self-assessed as poor is distinctively higher in Dhemaji (28.8 per cent), Hailakandi (20.6 per cent) and Sonitpur (19.8 per cent) (Table 3A.22, Statistical Appendix). Also, the SAPov rate is relatively high among Muslims (16.2 per cent) and in flood-affected and multiple-diversity blocks (Figure 3.8).

3.6 Aspects of Inequality

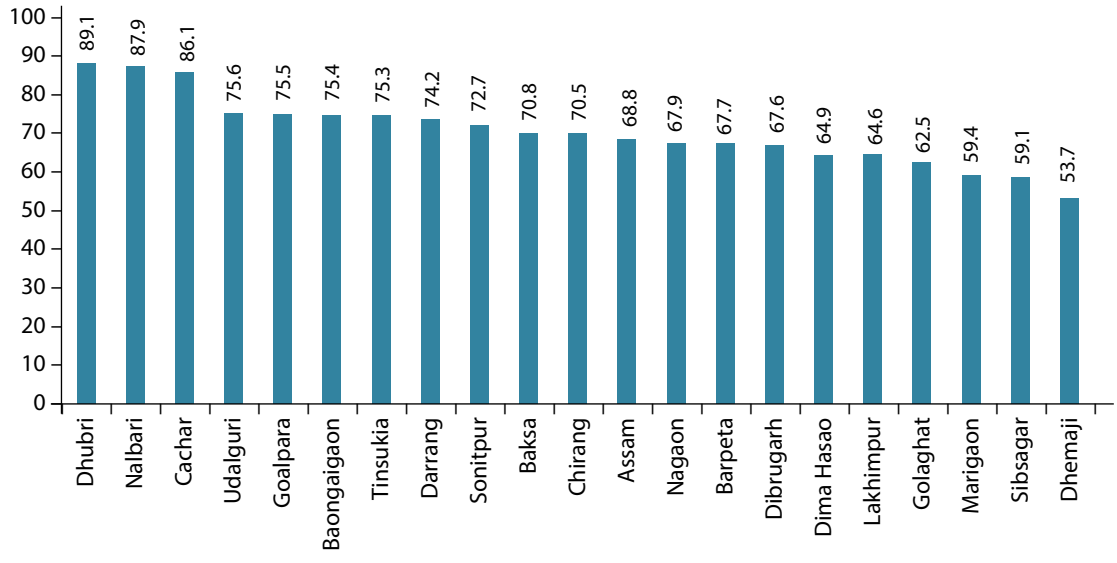
Concern for inequality is very fundamental to the idea of human development. In fact, the capability approach emerged as a response to the fundamental question of "equality of what?" There are three basic approaches of looking at inequality – inequality of outcome, inequality of opportunity and inequality of processes. Here two inequalities have been highlighted – inequality in land holding and inequality in consumption. Both these inequalities are related to the opportunity aspects given their instrumental significances. Income and consumption can, however, be viewed as outcomes as well. These inequalities have been examined by both Gini Coefficients[20] and relative shares of the top and bottom 20 per cent of the population.

3.6.1 Inequality in Land Holding

The HDR survey reveals that holding of land is highly inequitable in rural Assam. It is seen that the top 20 per cent of the rural households own 68.8 per cent of the cultivated land. Since a vast majority of the surveyed population is landless, it was not possible to compute either a ratio between the richest 20 per cent and poorest 20 per cent of landholders[21]. However, the share of top 20 per cent of the landholders gives us a fairly good idea of the extent of inequality in land holding in the state (Figure 3.9).

It is observed that the share varies from close to 90 per cent in the districts of Dhubri, Nalbari, and Cachar, to close to 55-60 per cent in

Figure 3.9: Inequality in Land-holding in rural Assam: Share of the top Quintile



Source: HDR Survey, 2013

[20] The Gini Coefficient gives a formal measure of inequality, that is, greater the value greater the inequality. The Gini value lies between 0 and 1.
[21] This also prevents estimation of Gini Coefficient in this context.

Dhemaji, Kokrajhar, Sibsagar, and Marigaon. This inequality highlights a major deprivation amongst a vast number of rural people who are denied basic productive asset whereas these assets are concentrated only among a few.

3.6.2 Consumption Inequality

The most common measure of inequality is MPCE – typically reflecting inequality in living standards and well-being. It is observed that the top 20 per cent of people in Assam have around 45 per cent share in the MPCE while the share of the poorest 20 per cent is only around 8 per cent. The situation is worse in rural Assam where the share of the top quintile is even higher and that of the bottom quintile is lower. The extent of inequality would be much higher if we look at the relative shares of the richest 20 per cent and the poorest 20 per cent of the population. It emerges that, on an average, the poorest quintile of the population has a consumption level that is approximately one-sixth that of the richest quintile. The disparity is alarmingly high in rural Sonitpur (the top 20 per cent accounts about 68 per cent while the share of the bottom 20 per cent is only 4.7 per cent) and urban Kamrup (top 20 per cent consumes about 53 per cent and bottom 20 per cent consumes 4.2 percent). This has resulted in substantial inequality – the Gini Coefficients obtained are 0.49 for both rural and urban areas in the state (Table 3A.23 & Table 3A.24, Statistical Appendix).

3.7 Understanding Inter-linkages

Understanding the inter-linkages between poverty, diverse forms of vulnerability and other characteristics is crucial for capability expansion. Two factors that have a bearing on poverty profiles are educational achievement of the individuals and their activity status. Indeed, if we look at the distribution of employment, type of economic activity and poverty status, we find a strong common linkage between them (Table 3.7). It may be observed that the poverty incidence is relatively higher among people with low educational achievement as indicated by a fewer number of years of formal education.

It is also true that, in developing countries, unemployment is lower among the poor as they can hardly afford to remain unemployed. We have to therefore looked into the type, regularity and quality of employment to

Table 3.7: Education-poverty linkage

Level of Education	Regular Salaried (in percent)	Poverty HCR
Illiterate	4.0	45.0
Barely Literate	4.8	41.7
Primary passed	3.9	43.2
Middle School passed	7.9	39.4
Secondary passed	17.7	34.7
Hr Secondary passed	32.0	28.9
UG Diploma	55.5	24.6
Graduate& above	62.5	18.3
Technical & Professional	65.9	18.5

Source: HDR Survey, 2013

understand the linkage between income, poverty and employment. Analysis carried out of the HDR survey data offers some insights regarding the probability of becoming poor given various household characteristics[22]. It has been found that agricultural labourers, casual workers, and unemployed persons have almost five times the probability of being 'poor'[23] as compared to regular salaried workers. On the contrary, traders/businessmen and self-employed persons have a lower chance of being poor compared to those who are regular workers. Belonging to a Christian household increases the probability of poverty by about one-and-a-half times that of the Hindus while the probability is about 75 per cent for the Muslims. People from the hill blocks are more than double as likely to be poor as compared to those from the general blocks while those from the Char blocks are one-and-a-half times as likely. However, the best bet to come out of the poverty trap is found to be education as one additional year of formal education reduces the probability of being poor by 12 per cent (Table 3A.25, Statistical Appendix).

3.8 Employment and Livelihood Quality Index

To understand the overall condition of employment, an Employment and Livelihood

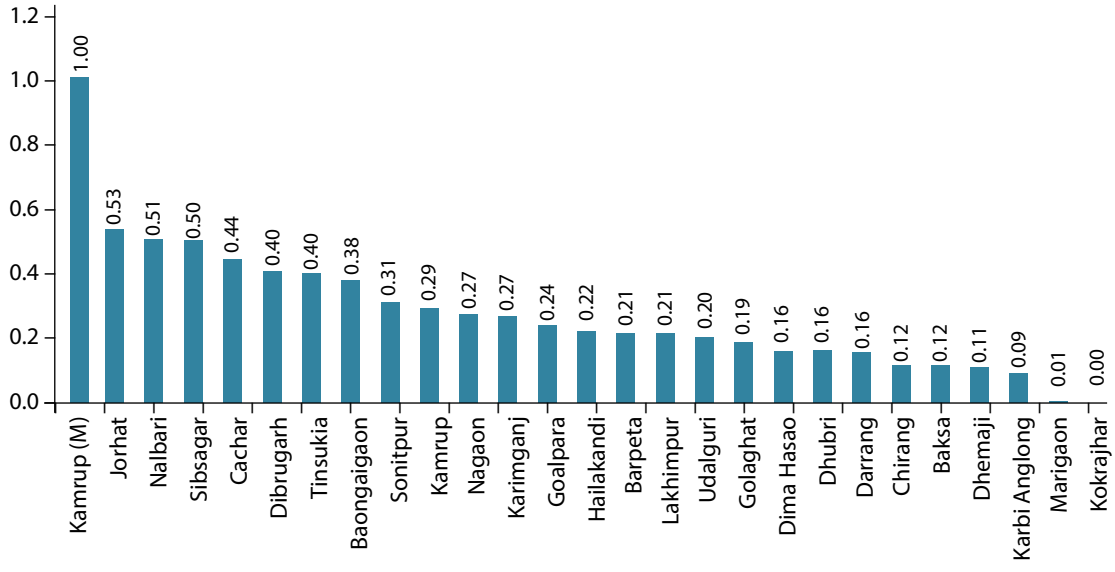
[22] The probability of being poor is computed using a Logistic Regression where the dependent variable is whether the person belongs to a poor household and the causal factors are years of formal education, employment types, religion, and spatial diversities.
[23] As per the official poverty line

Quality Index (ELQI) has been constructed for the districts as well as for the state. This index consists of employment parameters reflecting labour market situations, and income parameters reflecting the sustainability of livelihoods. Obviously, higher income indicates a fruitful livelihood while low income indicates an unsustainable livelihood. The index is constructed based on: a) proportion of workers having regular salaried employment; b) percent of workers in non-agricultural sectors; and c) average per capita income from different sources. These three components are combined[24] to arrive at the Employment and Livelihood Score for each district. After that, these scores are converted to ELQI using the goalpost method.

It is observed that the value of the index is highest for the Kamrup Metro, followed by Jorhat, Sibsagar, Nalbari, and Bongaigaon districts. Districts at the bottom are Kokrajhar, Marigaon, Dhemaji, Chirang, and Darrang (Figure 3.1). General blocks and tea garden blocks are at the top of the ladder while hill blocks and border blocks are at the bottom (Table 3A.26, Statistical Appendix).

How does the ELQI relate with the characteristics of the districts? It is generally believed that various social and economic characteristics such as the proportion of marginal social groups in the total population, level of education, dependency on agriculture, etc., are linked with the quality of livelihoods in a district. The EQLI is observed to have a strong negative correlation with the proportion of population being SC/ST, 7+ illiterate, proportion of children being out of school, and proportion of workers dependent on casual work. These inter-linkages offer useful policy directions for improving the quality of employment and livelihood in the state in an inclusive manner.

Figure 3.10: Employment and livelihood quality index for districts



Source: HDR Survey, 2013

[24] The method used is Principal Component Method (Modified), Kundu, A. (1980). Measurement of Urban Processes: A Study in Regionalisation, Popular Prakashan, Mumbai.

3.9 Summing up

It, thus, emerges that the lack of productive and remunerative work opportunities is a cause of major concern in the state. An ever-increasing labour force faced with low employment opportunities increases unemployment. The unemployment rates among female and educated youth are becoming particularly alarming in the state. So far as those employed are concerned, the quality of employment and earnings are emerging as major issues. While a majority of people is engaged in the farm sector and casual employment, income from these activities is meagre. The relative income shares from these two sources are abysmally low, though together they account for more than three-fourth of the total employment. This typifies a low level equilibrium situation in the labour market. This low level equilibrium has a severely limiting impact on the income dimension of human development. Given the instrumental significance of income in capability expansion, this low level equilibrium witnessed in the employment and livelihood sector constricts opportunities for people to make choices and impedes qualitative improvements of their lives. Enhancing capability and improving the quality of life of people needs, therefore, to overcome this low level equilibrium trap by providing gainful employment to people entering the labour force. This invariably emphasises a strong role of the state in intervening and breaking the low level equilibrium trap currently characterising the labour market in the state.

4 Literacy and Education

Going to and Staying in School Matters

4.1 Introduction

The literacy rate and level of educational attainment of people are two key indicators of a country's development. Literacy and level of education influence a person's daily life and help her/him perform a range of activities, which are not possible without the ability to read, write and communicate in the social sphere. The quality of life of a person, therefore, depends on educational achievements which inter alia, depends on the proper provisioning and governance of the education system as well as personal and social contexts. Most importantly, the enhancement of literacy and level of education presupposes a set of enabling conditions ensuring adequate and equitable opportunities and scope for creative engagement through a system of quality education.

An assessment of literacy and educational attainment within the framework of human development, thus, needs to adequately account for the complexities that abound in various processes related to the system of education as a whole. This requires a surfeit of evaluative information offering insights on the status of literacy and educational achievements and also conditions that seem to influence such achievements.

4.2 Literacy and Level of Education

4.2.1 Literacy Rate

The Census 2011 records the proportion of literates in Assam as 73.18 per cent, placing the state at 26th among the 35 states and union territories in the country. The state has, however, gained about 10 per cent in the total literacy rate over the last Census (63.25 in 2001).

Three important particulars emerge from Census 2011 data. First, female literacy rates in the state – total, rural as well as urban – are better than the national average. Besides, the gap between male-female literacy in the state has been lower than the national average (that is, 11.5 in the state against 16.2 in the country). Further, the male-female gap in literacy has reduced by one-third during 2001-11. Most importantly, the reduction in the male-female gap in literacy has been across all districts and sectors, that is, rural and urban. The gap which was hugely dispersed across districts in 2001 has become considerably uniform in 2011[1].

Second, in contrast to the male-female gap in literacy, the decline in the rural-urban gap in the state has been rather slow – it has declined by only about one fifth during 2001-11. The range in the gap across districts also remained quite stagnant[2].

Third, data further reveal sizable inter-district variations in literacy rates in the state – total, rural as well as urban. In 2001, the range in total literacy rates in the districts was about 40 (maximum 88, minimum 48) which became 30 (maximum 89, minimum 59) in 2011. Similarly, the range in the rural literacy rate has narrowed from 38 to 25. Interestingly, however, the range in the urban literacy rate across districts has increased from 17 to 28. It is, moreover, seen that while the range in literacy rates among urban females has reduced by one third, amongst males it has, in fact, doubled during 2001-11. This emerging inequality in urban male literacy across districts has significant implications for various labour market outcomes.

[1] The range in the male-female gap in literacy across districts, for instance, has come down from 58 (maximum 72, minimum 14) in 2001 to 12 (maximum 17, minimum 5) in 2011.
[2] The range has been 22.9 (maximum 25.3 and minimum 2.5) in 2011 against 26.7 (maximum 34.6 and minimum 7.9) in 2001.

Table 4.1: Literacy rate Assam and India: 2001 and 2011

	India 2011			India 2001		
	Total	Rural	Urban	Total	Rural	Urban
Male	80.9	77.2	88.8	75.3	70.7	86.3
Female	53.7	46.1	72.9	71.3	68.2	89.7
Total	73.1	67.8	84.1	64.8	58.7	79.9
	Assam 2011			Assam 2001		
	Total	Rural	Urban	Total	Rural	Urban
Male	78.8	76.5	91.8	53.7	46.1	72.9
Female	54.6	50.7	80.2	54.6	50.7	80.2
Total	73.2	70.4	88.9	63.3	59.7	85.3

Source: Census 2011, 2001.

The Assam Human Development Survey (AHDS) data offer further insights into the literacy scenario in the state. Among the religious groups, the Muslims, comprising a little over 30 per cent of the population in the state, have been found to have the lowest total literacy rate in the age group 7+ years of 75.8 per cent. The literacy rate in the age group 15+ years of the Muslims is again the lowest (67.7 per cent) amongst the religious communities. Similarly, spatial diversity-wise, the Char area reflects the lowest literacy rates in both the age groups 7+ years and 15+ years (see Table 4A.1 to 4A.5, Statistical Appendix).

The survey data hint at couple of tendencies – first, the literacy rates tend to decline as the age progresses in general. This is, on one hand, indicative of the palpable progress made in the state in the overall enrolment scenario during the recent past. On the other hand, lower literacy at the working age level has limiting impacts on the overall level of earnings affecting thereby the current level of enrolment of their wards. Second, it is further observed that the gaps in the rates of literacy, that is, rural-urban, male-female, across communities and space become more pronounced as age progresses. This again is indicative of progress made in bridging these gaps in the recent past. These gaps become instrumental in bringing differences in the current standard of living of various communities making some of them marginalised (Table 4.2).

It also becomes evident from the survey that the dispersion in the rates of literacy across districts is lower in the 7+ years age group compared to the 21+ years age group[3]. However, the districts where the literacy rate is lower than the average state level by the amount of standard deviation or more in the 21+ years remains unchanged even in the 7+ years age[4]. This goes on to highlight that progress in literacy in these districts has to be even faster to reduce the overall inequality in literacy in the state.

The survey, in addition, reveals that the illiterates are disproportionately concentrated in certain districts. Of 27 districts of Assam, more than two-third of the total illiterates are in 12 districts[5], and almost one-seventh of them belong to Dhubri district alone. These districts are characterized by hills, Chars and tea gardens

[3] The Standard Deviation for instance is 6.5 in the 7+ year age group while it is 9.8 among the 21+ year group.
[4] These are the districts of Baksa, Darrang, Dhubri, Goalpara and Udalguri.
[5] These 12 districts are Baksa, Barpeta, Cachar, Darrang, Dhubri, Goalpara, Kamrup, Karbi Anglong, Nagaon, Sonitpur, Tinsukia and Udalguri. Incidentally, nine out of the 12 districts with high illiteracy have predominance of Muslims as per the 2001 Census. The Census 2001 also records Muslim literacy rate in Assam as 48.4 per cent (male 56.1, and female 40.2), which is much lower than the national averages of 59.1, 67.6 and 50.1, respectively..

Table 4.2: Literacy rates in different age groups

	(7+ Years)	(15+ Years)	(18+ Years)	(21+ Years)	(24+ Years)
Total	82.3	78.2	76.6	74.7	72.6
Sector					
Rural	80.8	76.1	74.3	72.2	69.9
Urban	90.8	89.3	88.6	87.8	86.7
Sex					
Male	86.7	83.7	82.6	81.2	79.7
Female	77.6	72.3	70.4	68.0	65.1
Social Category					
SC	83.4	79.7	78.2	76.3	73.9
ST	81.9	78.0	76.3	74.0	71.5
OBC	84.3	81.1	79.8	78.3	76.4
Religion					
Hindu	85.4	82.6	81.4	79.9	78.2
Muslim	75.8	67.7	64.9	61.8	58.6
Christian	78.8	73.4	71.1	68.6	66.2
Spatial Diversity					
Char	75.0	67.4	65.0	62.3	59.6
Flood	86.0	83.0	81.8	80.2	78.5
Hills	77.7	72.5	70.4	67.7	64.6
Tea	82.5	78.9	77.4	75.7	73.9
Border	80.9	76.2	74.3	72.0	69.3
Multiple	78.5	72.7	70.5	68.2	66.0

Source: HDR Survey, Assam (2013).

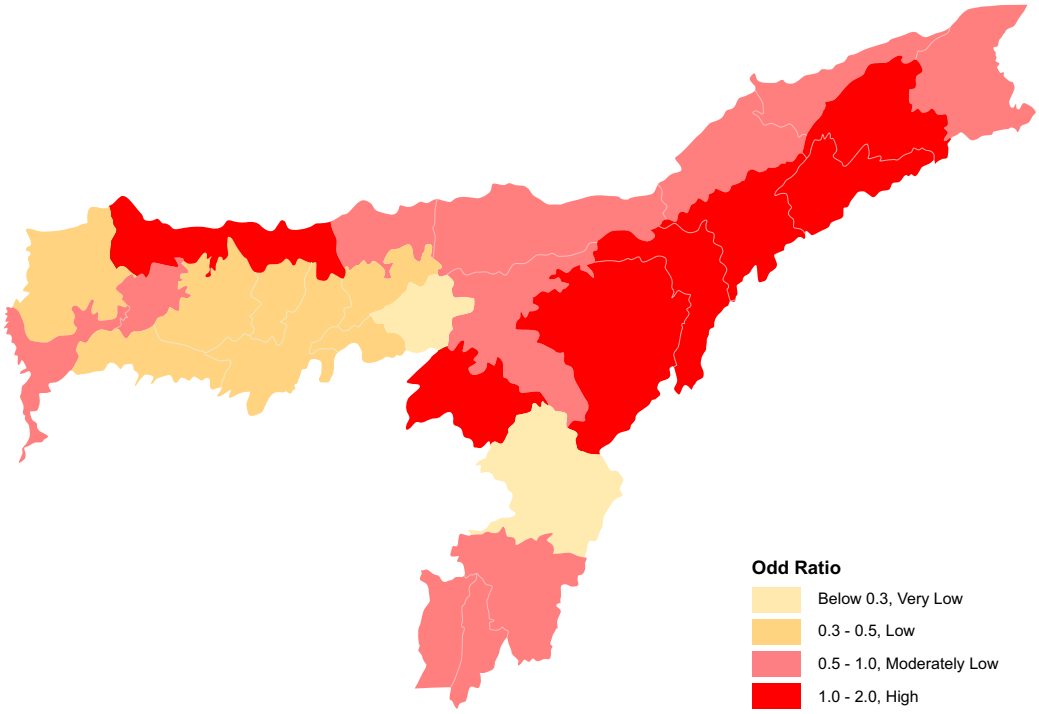
predominantly inhabited by Muslims together with Adivasis and tribals. The rate of illiteracy, on the other hand, has been highest in Baksa and Darrang (each with a rate at 29.3 per cent), followed by Goalpara (28 per cent) and Dhubri (26 per cent).

Muslims, however, cannot be regarded as a homogeneous group in the state. District wise religious breakup of literacy data among Hindus and Muslims shows that literacy among Muslims is higher or marginally lower than that of their Hindu counterparts in the upper Assam districts of Dhemaji, Dibrugarh, Golaghat, Jorhat, Lakhimpur, Sibsagar, Sonitpur and the two hill districts besides Cachar. The maximum difference in literacy between Muslims and non-Muslims is observed in the districts of Darrang, Goalpara, Kamrup and Morigaon (Table 4A.6, Statistical Appendix). Notably, the Muslims in these districts are predominantly composed of immigrant settlers of erstwhile East Bengal and East Pakistan origin.

Intriguingly, the overall 'odd ratio'[6] calculated from the district-wise distribution of 7+ years literacy rates among Muslims against non-Muslims is found to be 0.552[7], indicating that the chances of Muslims being literate, in general, in the state is almost half of that of non-Muslims being literate. However, there prevail wide variations in odd ratios across districts. In certain

[6] 'Odd ratio' is a useful measure of probability of occurrence of an outcome given a condition relative to its occurrence when the condition is absent. Here, when the 'odd ratio' is less than 1, the chances of Muslims being literate is less than that of non-Muslims. When it is greater than 1, the chances of Muslims being literate are greater than that of non-Muslims.
[7] Found to be highly significant, that is, significant at 1 per cent level of significance.

Map 4.1: Plot of 'odd ratios' of literacy (7+ years) of Muslims against non-Muslims



districts, such as Baksa, Chirang, Dibrugarh, Golaghat, Jorhat, Karbi Anglong and Sibsagar, the odd ratios of being literate are in favour of Muslims. Similarly, the chances of Muslims being literate are only marginally lower in the districts of Cachar, Dhemaji, Sonitpur and Tinsukia. But, the odd ratios are rather low in lower Assam districts and the lowest in Marigaon (Table A4.7, Statistical Appendix). In Marigaon, the chance of Muslims being literate is just one-fifth that of non-Muslims. Disaggregated analysis further reveals that the odds are further lower for women within Muslims where Muslims have lower odds of literacy in general.

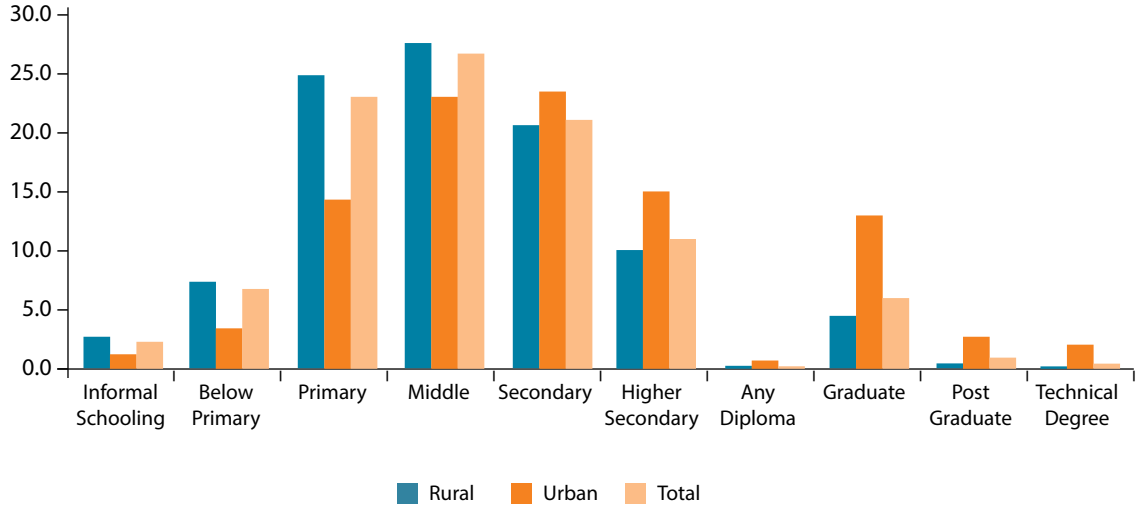
The disaggregated analysis presented above, thus, underlines the significance of bridging myriad gaps in literacy within the districts and sectors, that is, rural and urban, male-female and communities, in improving overall literacy in the state. This necessarily emphasises the strategy of improving averages by lowering all possible dispersions for inclusive human development in the state.

4.2.2 Levels of Formal Education

The level of education (measured by formal years of schooling) of the total eligible members in the sample households[8] has been found to be rather low in the HDR survey. The level attained by most turns out to be middle school, that is, class VIII, followed by primary and secondary school. Only 11 of 100 persons are reported to have reached the Higher Secondary level, while only seven are reported to have completed the graduation level and above. Evidently, there is not much difference in levels of education between rural and urban areas (Figure 4.1).

It has been observed that there is not much difference in levels of education, in general, among various social categories, religious communities and spatial diversities.

Figure 4.1: Distribution of population by levels of education (in %)



Source: HDR Survey, Assam (2013)

[8] Eligible household members include literates above seven years of age.

However, levels of education have been found to be somewhat negatively skewed for SCs, Muslims and Christians and also in the Char areas (Tables A4.8, A4.9, A4.10; Statistical Appendix). This only confirms that the level of educational attainment in the state has been pervasively "middle heavy". This, consequently, implies MYS[9] of individuals in general. Clearly, more the number of years spent in school, higher will be the level of educational attainment.

The survey data also clearly brings out the instrumental value of education as the nature of occupational engagement of people varies with levels of education. It is observed that higher the level of education, greater is the possibility of being absorbed in permanent salaried work[10] (Table 4.3).

Thus, whether it is literacy or level of educational attainment, the forgoing discussion is potentially indicative of 'basic capability failure'. Some capabilities are so basic (education is surely one of them) to human well-being that their deprivation leads to inability at both individual and community levels to make crucial choices in life.

4.3 School Education

4.3.1 Enrolment in Schools

The latest District Information System for Education (DISE) data (2013-14) puts the Gross Enrolment Ratio (GER) in Assam at the primary level (I-V) at 113.4 and that at the level of upper primary (VI-VIII) at 93.1. The DISE data reveal that, during the last decade, the GER in the state both at the primary and upper primary levels have improved markedly. In 2005-06, the GER at the primary level was 96.7 and at the upper primary level was only 37.73. The major success is, thus, found at the level of upper primary in terms of gross enrolment which marks a significant improvement[11].

The DISE data further reveal that this improvement in enrolment has come from the rise in the transition rate from primary to upper primary together with a fall in the dropout rates. In 2005-06, the transition rate from primary to upper primary was 86 per cent which has increased to 93 per cent in 2013-14. At the same time, the dropout rate at the primary level has come down from 11.2 in 2005-06 to 6.24 in 2013-14. Notwithstanding this, the dropout

Table 4.3: Occupational engagement by level of education (in %)

Levels of education	Agriculture & Livestock	Casual Work	Permanent Salaried Work	Self Employed in non farm	Total
Not Literate	28.35	57.65	4.00	10.00	100.00
Up to Middle	30.77	44.93	5.82	18.48	100.00
Up to Higher Secondary	26.04	24.85	22.73	26.38	100.00
Diploma/ Degree	8.99	12.39	55.40	23.22	100.00
Above Graduation	4.65	11.05	62.40	21.90	100.00
Total	27.38	39.90	13.60	19.12	100.00

Source: HDR Survey, Assam (2013).

[9] MYS, the average number of completed years of education of a population, is a widely used measure of a country's stock of human capital.
[10] The Pearson Chi-Square test is found significant at 1 per cent level of significance.
[11] The Net Enrolment Ratio, however, is less than 100 indicating that a section of children in the 6-14 years age group is not in age-appropriate classes.

rate at the primary level in the state continues to be higher than the national rate of 4.67. The dropout rate at the upper primary level also is higher than the national level –7.2 against 3.1 – which is more than double the national level. One striking feature of the dropout rate emerging from the DISE data is that the dropout rate in class I remained almost sticky during 2005-14 whereas it declined in all other classes. The dropout rate in class I was 13.6 in 2005-14 which DISE 2013-14 puts at 11.9. This marks an important policy concern for the state.

The HDR survey data offers a few more insights. It is found that about 93 per cent of children in the age group of 6-14 years in the state are currently enrolled, which indicates that the state is yet to achieve universal elementary education. The proportion of those enrolled in the age group 6-11 years is 96 per cent while that of 12-14 years is 89 per cent. Within the age group 6-24 years, about half of the individuals are found to be pursuing some form of education; however, the proportion of males is higher than females.

Even though initially at lower age groups, more girls are enrolled in school; their presence gets reduced with age, in the subsequent higher levels. Consequently, the Gender Parity Index (GPI) (ratio of the number of female students enrolled to the number of male students enrolled) exhibits a decline for successive age groups. It is also a serious concern that for both males and females more than half of the post-secondary school age children are not pursuing education, while at least one-fourth of the secondary school age students are not in school (Table 4.4).

These figures are largely in conformity with the secondary sources showing declining enrolment with age irrespective of the level of education. The Age Specific Enrolment Ratio (U-DISE 2013-14) indicates that while the enrolment is 87.99 per cent in the age group of 11-13 years, the proportion decreases to 69.10 per cent for 14-15 years and further to 36.79 per cent for 16-17 years age group in Assam. The corresponding national averages are 89.92, 66.43 and 45.71 per cent, respectively.

The HDR survey also reveals that the situation is particularly worrisome in the districts of Cachar, Darrang, Dhubri, Goalpara, Hailakandi, Karimganj and Marigaon, where the literacy rate in general is poor. In these districts about three out of five children in the age group of 17-18 years are not pursuing an education of any kind (Table 4A.11, Statistical Appendix). These districts have a substantial Muslim population and amongst the Muslim enrolments at the secondary (17-18 years) and beyond are particularly low (Table 4A.14, Statistical Appendix). Among the social categories, a higher percentage of ST students is enrolled in all the four age groups, which is a positive development (Tables A4.12, Statistical Appendix).

Table 4.4: Age specific enrolment rates

	Male	Female	GPI	Rural	Urban	Total
6 to 14 years	93.59	94.13	0.95	93.56	96.28	93.85
15 to 16 years	71.17	78.49	0.87	73.17	84.62	74.57
17 to 18 years	53.24	52.07	0.82	50.16	69.62	52.71
19 to 24 years	20.33	15.19	0.79	15.47	30.32	17.70
6 to 24 years	54.84	53.28	0.92	65.33	69.22	54.07

Source: HDR Survey, Assam (2013).
Note: Total sample between 6-24 age group: 90,699 (male: 46,472 female: 44,227).

Spatial diversity impacts children's enrolment as well (Table 4A.13, Statistical Appendix). The Char areas bring in a lot of vulnerabilities requiring the inhabitants to shift their homes at frequent intervals. The area suffers from communication deficits, lack of adequate schooling facilities beyond Primary, girl child marriage, poverty and illiteracy and lack of awareness of parents about the value of education. Another segment of population categorised as 'multiple diversity group' as their lives are bound by multiple disadvantages of flood, border, the Chars, etc., making them more vulnerable, also reflects low level of enrolment.

4.3.2 Out of School Children

Household level information on out of school children in the AHDR helped to observe closely the pattern of children remaining out of school, which is difficult from a school-based analysis. Of the total 6-16 year old children in the households, 6.45 per cent are found to be out of school[12]. Of the total of school children, more than 28 per cent have actually never been enrolled; more than three-fourth of those who were enrolled have dropped out of school at different classes and a smaller proportion of them, although they have not formally given up school, do not go to school either (Table 4.5).

Table 4.5 shows that the majority of out of school children is school drop-outs. So far as the never enrolled children are concerned, the highest numbers are found in Kamrup district, followed by Nalbari, Tinsukia, Darrang, and Dhubri, where this group constitutes more than 30 per cent. Rural diversity wise, it is the Char areas where a high proportion of children (33.21 per cent) have never been enrolled in school. Since the Char areas are mostly inhabited by the Muslim community, the weight is pulled by children belonging to Muslim families (Table 4A.15 to 4.18, Statistical Appendix).

What is most striking is that a high dropout rate prevails in educationally forward districts such as Sibsagar, Lakhimpur, Jorhat, Dibrugarh, Dhemaji and Bongaigaon. The rate is also high in border areas, where almost eight out of 10 students leave school without completing schooling. A similar scenario exists in the hills. The class from which students drop out most frequently in the state is class VIII. It is revealed that girl students remain in school for a longer period than the boys although, as Table 4.5 indicates, girls have a higher share of non-enrolment compared to boys. While boys in general left school in class III or IV, girls continued till class IX.

Table 4.5: Distribution pattern of out of school children of age 6-16 (in %)

Out of school children*	Rural	Urban	Male	Female	Total
Never enrolled	28.97	16.02	24.98	32.35	28.14
Left after enrolment	66.18	81.22	70.02	63.30	67.14
Enrolled but does not go to school	4.63	2.21	4.81	4.02	4.47
Goes to informal school	0.23	0.55	0.19	0.33	0.25
Total percent	100	100	100	100	100

Source: HDR Survey, Assam (2013).
*Total out of school children of 6-16 years: 2,839; total children of 6-16 years: 44,023.

[12] Out of school children here are those between 6-16 years of age, who have never been enrolled in any school or after enrolment has left school for ever, never to return and the ones who have been enrolled in school but currently do not go to school.

Students dropping out of school is a serious issue in the state. The current dropout rate in the state at the primary level is 6.24, at upper primary level 7.20, at secondary level 26.77 and at higher secondary level 4.69. Baring the last one, for which the all India dropout rate not available, in all the other levels, Assam's dropout rate is much higher than the national averages of 4.67, 3.13 and 14.54, respectively. The highest dropout at the Primary level takes place in the district of Goalpara, followed by Dhubri and Barpeta (U-DISE 2013-14).

The reason why children leave school without completing the cycle is highly complex and contextual because dropping out of school is not an event, rather a process. The HDR survey reflects that almost one-third of the dropout children leave school to support family income, another third give up because of disinterest in studies and one-tenth because they failed in examinations (Table A4.20 to A4.23, Statistical Appendix).

4.4 Access to School and School Facilities

Opportunities to get enrolled in a school can come to children only when it is available within a reasonable distance. Infrastructural bottlenecks and poor transport and communication, especially in rural areas including the Char and border areas, often make access to school difficult for children. Further, recurring floods, continuous erosion and difficult terrain in the hills also create barriers to access to school. Besides, a host of other factors such as poverty, frequent conflicts and violence, discrimination of diverse sorts, etc., also come in children's way of accessing schools.

4.4.1 Availability of School

As with other states of the country, access to school in Assam too has improved during the last decade or so. The total number of schools in the state has increased to about 64,000 in 2013-14 over about 40,000 in 2002-03 (DISE 2013-14, 2002-03). Consequently, the school village ratio has doubled from 1.5 to 2.9 during 2002-14. Notwithstanding this, Assam is yet to fulfil the mandate of providing primary schools within a distance of 1 km and upper primary schools within a distance of 3 km in all habitations[13] (Table 4.6).

District-wise, access to primary school is particularly low in the districts of Baksa, Darrang, Kamrup, Nalbari and Sonitpur. Access to upper primary school is again very low in the districts of Baksa, Chirang and Dima Hassi where more than 50 per cent of the schools are located at the distance of beyond 3 km (Table 4A.24, Statistical Appendix).

Access to secondary schools is even more difficult (Table 4.7), especially for the rural children. More than one-third of households have secondary schools located at a distance of 2 to 5 km, approximately another 12 per cent of the households have a secondary school at a distance of 5 km, making access extremely difficult. Commuting this distance mostly on foot in rural areas, especially during monsoons, is challenging. For girls, wearing *mekhala chaddar/saree* or *dakhana* while walking this distance becomes all the more tiring and such daily travails lead girls to drop out of school altogether.

It may further be mentioned that the ratio between primary to upper primary; upper primary to secondary; and secondary to

Table 4.6: Distance of primary and upper primary school from habitation, Assam

	Primary School			Upper Primary School		
	Within habitation	Within 1 km but not within habitation	Beyond 1 km	Within habitation	Within 3 km but not within habitation	Beyond 3 km
Assam	48.36	38.15	13.49	19.50	57.45	23.05
India	58.35	31.67	9.98	28.69	56.73	14.58

Source: 8th All India School Education Survey, 2009.

Table 4.7: Households by distance from secondary school (in %)

State/Country	Distance from Schools with Classes IX-X			
	Location	< 2km	2-5 km	>5 km
Assam	Rural	49.9	38	11.9
	Urban	82.8	13.9	3.3
India	Rural	47.3	35.5	17.1
	Urban	90.7	8.1	1

Source: Education in India: Participation and Expenditure, NSS 64th Round, 2007-08.

[13] The National Council of Educational Research and Training documents on educational surveys reveal that the primary, upper primary, secondary and higher secondary stage schooling facilities in India should be made available within a distance of 1, 3, 5 and 8 km, respectively.

higher secondary schools in Assam is 3.14, 2.28 and 4.36, respectively. The all India figures are, on the other hand, 2.04, 2.60 and 2.19, respectively. On the whole, therefore, it appears that there is a shortage of schools at the higher levels compared to the lower, indicating a mismatch leading to increasing deficient access to school in the state.

4.4.2 School Infrastructure

The all India education survey has shown that, as in India, the schooling infrastructure in Assam has also improved, but good school building is yet to be a reality for all. The state is lagging behind the country as whole in terms of the quality of school building, also marked by large rural-urban disparities (Table 4.8).

Notwithstanding this, there has been marked improvement in school facilities owing to the Sarva Sikhsa Abhiyan (SSA). In terms of various facility indicators such as student-class room ratio, drinking water provisioning, sanitation, boundary wall, etc., the situation has improved considerably (Table 4.9).

The HDR survey presents the current status of school facilities as reported by children's households. Notwithstanding the support provided by SSA, it is found that at least one-10th of the schools are short of rooms for each class,

Table 4.8: School building by type, rural and urban (in %)

Levels of school	Type of building*					
	Rural			Urban		
	Pucca	Partly Pucca	Kuchcha	Pucca	Partly Pucca	Kuchcha
Primary	69.84	23.96	5.74	77.61	20.97	1.35
	(88.20)	(7.88)	(2.14)	(89.06)	(8.51)	(1.17)
Upper Primary	46.62	35.12	17.96	67.22	29.26	3.52
	(89.39)	(8.70)	(1.38)	(91.51)	(7.39)	(0.79)
Secondary	37.92	49.37	12.63	64.64	29.78	5.58
	(84.45)	(12.24)	(2.53)	(92.66)	6.14)	(0.86)
Higher Secondary	57.70	38.52	3.77	75.42	24.17	0.42
	(90.49)	(8.31)	(0.89)	(94.93)	(4.60)	(0.26)

Note: Figures in parenthesis () indicate all India figures,
* Schools in tents and open spaces are not included.
Source: 8th All India School Education Survey, 2009.

Table 4.9: Improvement in school facilities in Assam (2005-14)

Facility Indicators	2005-06	2013-14
Student Classroom ratio	44	28
Schools with drinking water	70.6	79.7
Schools with Boys'Toilet	-	78.8*
Schools with Girls'Toilet	9.6	59.3*
Schools with Boundary Wall	30.3	26.4
Schools with Ramps	10.9	89.6**
Schools with Computers	4.1	7.7

Source: DISE, Relevant Years
*Single toilet in co-educational schools is considered as boys' toilet and multiple toilets as toilets for both boys and girls.
**Schools required and have ramps.

and around an equal number have a dearth of adequate numbers of desks and benches for students. Drinking water facilities are yet to be made universally available in all schools. The most glaring deficiency is noticed in non-availability of electricity. While the situation seems to be little better in private schools, it is worse in government schools with barely one-third having electricity connections. More than three-fifth of the schools is without girls' toilets and one-fourth without boundary walls. Overall, private schools appear to have better school facilities. District-wise data further reveal that there exists wide inter district variations in provisioning of facilities (Table 4A.25 Statistical Appendix).

4.4.3 How Regular are the Students in Attending Schools?

The mean age at which children start going school in Assam is five to six years. The HDR survey recorded a child's attendance in primary schools in past one week. A child's attendance in school is one of the most important indicators of success of the schooling environment. In rural Assam, on an average, more than 90 per cent of households reported that children regularly go to school. However certain districts turned out to be outliers. District Dima Hasao had 66 per cent of children attending school for less than five days a week. Hailakandi reported 34 per cent attending school for less than five days a week. In the urban areas, child attendance estimates were higher than rural. But urban areas of some districts showed low child attendance rates in primary schools such as in Cachar, Dhubri, Dima Hasao, Hailakandi, Karbi Anglong, Karimganj and Tinsukia.

4.4.4 Do the Students Face Discrimination in School?

Life in school for some can be delightful and for others it can be distasteful. Teachers' behaviour in school can make an enormous difference in a child's life. Any discriminatory and exclusionary behaviour can leave children's psyche irrevocably scarred. This issue is extremely important in the context of Assam, with diverse population groups representing diverse ethnicity, caste and religion. The HDR survey, Assam (2013), tried to elicit responses from the households regarding whether they perceive any discrimination being faced by their wards in schools.

In the survey, discrimination based on race/ caste or religion was reported by about 6 per cent of the households. Among those who reported discrimination, 95 per cent belong to the rural areas. Comparatively, reported discrimination is higher in the border, tea garden, flood affected and the Char areas[14].

It is reported that 10 per cent of schools are still engaged in beating children and this occurs more in government schools and in rural areas. Similarly, meting out punishment for not doing homework is also reported in more than 26 per cent of households. Interestingly, punishment for not doing homework and for being absent in school is reported to be higher in the private schools with 32.31 per cent and 30.53 per cent compared to the government schools with 25.85 per cent and 27.33 percent, respectively (Table 4A.26).

[14] Lashmi (age 15, name changed), a girl belonging to the tea community and studying in Class IX in a government school, expressed her experience of discrimination of students belonging to their community in school during a Focus Group Discussion. "When we go for admission they ask if we are bangaali' (meaning people from the tea community). Teachers go and teach student of their caste but they will not teach us. They don't respect us. We will respect elders when they respect us. If elders don't call us nicely and don't talk properly then why will we like or talk. Many students leave school because teachers use foul language, which they do not do to others." (Excerpt from a Focus Group Discussion with children in a tea garden in Lakhimpur, 1 September 2013.)

4.4.5 On Being Educated: Quality of Learning

The quality of learning is equally important with going to and staying in schools. Merely being in schools or completing school years does not guarantee accomplishment of the desired learning and accompanying social skills. Various national level surveys, indeed, reveal that the quality of learning across all levels of the education system in the country is abysmally low, including in Assam. For instance, the recent all India survey on the status of education in the country (ASER, 2013) indicates a declining trend in reading and arithmetic ability among students of class I to VIII. As per the report, in Assam, at least 54 out of a 100 students studying in class III to V (lower primary level) cannot read class I level text and 47 out of 100 students in class VI to VIII (upper primary level) cannot read class II level text. The situation is even more perilous in the case of arithmetic. At least 70 out of 100 students studying in class III to V cannot do simple subtraction and 81 per cent of those who are in class VI to VIII cannot do simple division. The report identifies Assam as one of the lowest performing states next to Jharkhand and Madhya Pradesh in reading ability at the primary level and only next to Chhattisgarh in the same ability among the upper primary students. In arithmetic skills, Assam is next to the lowest level in Puducherry in the primary section and the lowest in the country among students in the upper primary level.

Such poor learning outcomes result in entrenched inequalities in society which are perpetuated historically. Although, some differences in learning outcomes may be attributed to differential parental investment in education which is, of course, a miniscule section, the vast majority of students have different contexts for the low level of attainment and consequent educational deprivation. A host of contextual factors such as classroom environment, curriculum and pedagogy, teachers' quality and engagement with students, lived experiences of students – all impact learning outcomes.

4.5 Parental Awareness and Involvement at the Primary Level Learning

Parental involvement in children's education and their awareness and engagement with school plays a major role in a child's performance in school. Information related to parental involvement with the children's school-related activities, such as attending meetings of the Parents-Teachers Association (PTA), being aware of the child's performance in school, their level of satisfaction with the child's performance or the quality of education that they receive, and nature of help accorded to the child at home in his or her studies, etc., speak of their involvement in the child's education.

The HDR survey findings show a distinct line of demarcation between rural and urban parents and parents of children going to private school and government schools. Clearly, urban parents and parents of children attending private schools are more involved in their children's education at the Primary level (Table 4.10).

4.5.1 Future Plan of Study

Another measure of parental aspiration is the future plan of study for the child. More than 90 per cent of households expected to enrol students in higher secondary schools and colleges. Sending of children to schools and colleges outside the district was reported by 6 per cent of the households (Table 4.11).

Table 4.10: Parents' involvement in children's education and study (in %)

Nature of involvement	Rural	Urban	Govt. School	Pvt. School	Total
Attend PTA meeting	68.5	76.9	65.6	91.9	69.5
Aware about child's performance in school	77.6	88.3	75.8	96.1	78.8
Satisfied with child's performance at school	73.2	83.6	71.0	94.4	74.4
Satisfied with quality of education at school	74.6	85.3	72.6	94.8	75.8
Study help to child at home: No help	44.0	24.5	46.4	14.6	41.7
Parents help	29.1	35.5	26.9	46.8	29.8
Elder sibling help	14.1	11.6	14.8	8.2	13.8
Neighbor help	2.5	1.1	2.5	1.0	2.3
Private tutor help	10.3	27.4	9.4	29.4	12.3

Source: HDR Survey, Assam (2013).

Table 4.11: Reported future plan of study for children (in %)

Sector	Local Higher Secondary /College	School/ College outside the district	School/ College outside the state	Professional/ Vocational Colleges	No plans	Will not study further	Total
Rural	90.0	6.3	0.1	0.2	2.9	0.5	100
Urban	90.8	4.6	0.9	0.5	2.9	0.2	100
Total	90.1	6.1	0.3	0.2	2.9	0.5	100

Source: HDR Survey, Assam (2013).

4.6 Public and Private: the Growing Divide

Of the 39,998 households surveyed in the HDR survey, 29,953 reported having at least one child in primary school. It is found that six to 14 year old students predominantly study in government schools. There is, however, a distinct pattern indicating that more rural students compared to urban attend government schools (Table 4.12).

Information was also gathered from parents about the reasons for sending children to private schools. The specific reasons cited were better schooling infrastructure, quality of teaching, regularity of classes, teacher attendance and care taken of the students by the school. On an average, more than one-third (close to 33 per cent) of the households in all districts mentioned good schooling infrastructure as the reason for sending children to private schools (Table 3A.29, Statistical Appendix).

Paid tuition is another phenomenon impinging on the education system in general. The ASER 2013 brings out an interesting observation that, while children from both government and private schools take help of paid tuition in rural Assam, the proportion of students (12.2 per cent) going for tuition remained constant in the case of government schools students studying

Table 4.12: 6 to14 year students by type of schools currently attended (in %)

Type of School	Rural			Urban			Total
	Male	Female	Total	Male	Female	Total	
Govt.	86.70	89.40	88.01	55.80	61.68	58.66	84.61
Private	13.30	10.60	11.99	44.20	38.32	41.34	15.39
Assam	100.00	100.00	100.00	100.00	100.00	100.00	100.00

Source: HDR Survey, Assam (2013).
Note: Government and private schools include government and private Madrassas, respectively

in classes I-V during 2010 to 2013 but increased from 28 per cent in 2010 to 30.9 per cent in 2013 in the case of private school students.

On the other hand, the proportion of students studying in classes VI-VIII having support of paid tuition (22.3 per cent) reduced to 18 per cent, while that of their counterparts studying in private schools increased by more than 10 per cent from 28.8 per cent to 38.9 per cent. This could be because of the fact that students who study in private schools mostly belong to the affluent class, which is also ready to spend some more on private tutoring for better results. However, with the introduction of new textbooks of higher standards, several people in the rural areas reported that there were not many people in the locality who can teach their wards. The growing divide comes out very clearly when we compare students without any tuition in government and private schools. While more than 70 per cent of the former fall into this category, it is just 14 per cent in the latter.

The present survey also attempt at providing an estimate of annual average per capita expenditure on education at the household level. While the annual per capita expenditure in the government schools[15] is INR 2 426 (rural INR 2,143 and urban INR 5,235), in private schools it is INR 11,787 (rural INR 9,111 and urban INR 17,680). In addition, there exists wide rural-urban disparity; wide variations are seen across districts.

4.7 Higher Education Scenario

Currently, there are 14 universities in the state, including four state public universities, one state open university, two central universities, two institutions of national importance, and five private universities. Four out of the five private universities are recent additions during 2012 to 2014. There are altogether 511 colleges, of which 306 colleges are government colleges. There was a phenomenal increase in the number of colleges during 2012-13, with the addition of 11 private and 123 government colleges to the list. However, access to higher education (14 per lakh population in the18-23 age groups) is yet below the all India average of 25 colleges.

In total, around 12.81 per cent of persons in the age group of 18-23 years in Assam is enrolled in higher education institutions in the state, which is lower than the enrolment rate of 13.38 per cent two years back and much lower than the current all India average of 21 per cent. Among the social categories, ST students are better placed with a higher GER (13.8 per cent) than SC students with a GER of 10.9 per cent,

[15] Up to secondary level of schooling.

Table 4.13: Enrolment at various levels of higher education in Assam (%)

Education levels	2010-11			2012-13		
	Male	Female	Total	Male	Female	Total
PhD	0.22	0.14	0.36	0.32	0.19	0.51
M. Phil	0.01	0.01	0.02	0.01	0.02	0.02
Post Graduate	4.2	2.42	6.62	4.47	5.15	9.63
Under Graduate	46.11	44.88	90.99	42.14	43.23	85.37
P.G. Diploma	0.44	0.08	0.52	0.41	0.3	0.71
Diploma	0.38	0.63	1	1.64	1.65	3.29
Certificate	0.06	0.04	0.09	0.04	0.07	0.12
Integrated	0.19	0.2	0.39	0.16	0.19	0.35
Grand total	100.00	100.00	100.00	100.00	100.00	100.00

Source: AISHE- 2010-11and 2012-13, Department of Higher Education, Ministry of Human Resources Development, Government of India.

compared to the state average. Despite all the disadvantages associated with the social categories, the GPI of 1.00 for these groups in higher education is better than 0.93 for the state as a whole[16].

Typically, Assam has a higher percentages of students enrolled in graduate level courses compared to the all India level of 79.44 per cent; although post graduate level enrolment is marginally lower by 1.76 per cent (AISHE 2012-13). One can see an interesting shift towards higher enrolment above the graduation level in 2012-13 compared to the enrolment rate two years earlier, especially a higher percentage of females at the post-graduation level in Assam (Table 4.13). A portion of students have also dispersed towards diplomas from graduation, possibly to take some kind of skill education which has a job market. Moreover, newer skill-related diploma granting institutions have also come up in the state, both in public and private sectors.

Although technical education in Assam began prior to independence,[17] for more than four decades, the state had only three engineering colleges which limited the scope of engineering education in Assam for a long period of time. The present intake capacity of the government engineering colleges is only 1,158. Most of the polytechnics offering diploma courses in engineering and other vocational subjects were set up during the 1960s and 1980s and some more additions made in recent times. The Indian Institute of Technology was set up in 1994, which has boosted the academic ambiance for engineering education to a great extent. Historically, Assam faced a dearth of engineering and other professional colleges. Very recently, at least eight private engineering colleges and also management institutes have come up in the state. Engineering departments were also opened in conventional universities such as Gauhati University, Dibrugarh University and Tezpur University.

[16] All India Survey of Higher Education, 2012-13, NUEPA, New Delhi.
[17] With the establishment of the Prince of Wales Institute of Engineering and Technology at Jorhat in 1927, the first engineering college was set up in 1956 in Guwahati, then the other two followed in 1960 in Jorhat and in 1967 in Silchar, which was later upgraded to a National Institute of Technology in 2002. After more than four decades, the fourth engineering college was set up in 2010 in Kokrajhar. The Jorhat Science College which was set up in 1971 was renamed as Jorhat Institute of Science and Technology in 2008 and is currently offering courses in engineering as well.

With only three medical colleges till 2009, Assam suffered from a lack of facilities for medical education for a long time, despite its history of having the seeds of medical education in 1900 AD[18]. It is only recently that three more medical colleges were established, making it six, with a total intake capacity of 626 seats. Including these and one dental college, there are at present 19 medical institutions catering to pharmacy, nursing and paramedical education in the state. Assam faces a dearth of health professionals especially in the rural areas. As a response, the Government of Assam initiated a course called a Diploma in Medicine and Rural Health Care in 2004.

It is a big challenge for the state that, despite recent attempts at increasing the educational facilities in the state, each year there is a large-scale migration of students to other parts of India, notably, New Delhi, Bengaluru, Mumbai, Pune, Chennai, Hyderabad, and Kolkata, and so on, in search of better education. The lack of quality facilities and scope, inadequate opportunities of employment along with the educational environment have been pointed out as possible reasons for educational out migration in the state.

4.8 People's Perception about Education

People's perception about education reflects what people value in education. The HDR survey tried to assess the level of satisfaction of people with the kind of education system that is prevalent in Assam. Respondents were encouraged to express their level of satisfaction with education on four different dimensions: satisfaction with the education system as a whole; satisfaction with the quality of education that they themselves received; satisfaction with educational opportunities that they needed; and satisfaction with the type of education that their children are getting. What came out very strikingly is that a relatively larger proportion of the urban population expressed satisfaction with all the four dimensions compared to their rural counterparts. In comparison, the rural people expressed an indifference to the four dimensions of education mentioned above and also a larger number of them did not know what to say about satisfaction with education (Table A4.30, Statistical Appendix).

4.9 Summing Up

Assam with its heterogeneous population with diverse socio-cultural, ethnic and political dynamics combined with its difficult terrain and geo-spatial diversities faces immense challenges for the smooth functioning of the education system. Issues which are generic to the state, such as conflicts and disasters and floods and erosion, including other governance-related issues, add to the deficiencies and difficulties which are endemic to the present education system in general. Although initiatives in recent times have led to some improvement in terms of infrastructure and enrolment of students, Assam is yet to achieve the desired level in education.

Secondary data at the national level as well as the extensive household survey conducted in 2013 show that literacy and level of education in Assam are lower than the national average, and particularly low among certain groups such as Muslims and people suffering from multiple spatial disadvantages. But Muslims are

[18] British Philanthropist Sir John Berry White, a retired brigadier of the British army and later a surgeon in erstwhile Lakhimpur district in 1870, contributing his lifetime earnings to establish the 'Berry White Medical School' in 1900, which was upgraded to Assam Medical College in 1947. After more than a decade, the second and third medical colleges were set up in Guwahati and Silchar in 1960, while the last three were set up only recently in 2009, 2012 and 2013 in Jorhat, Barpeta and Sonitpur, respectively.

heterogeneous groups and disaggregated data show that, in nine districts, the level of literacy among Muslims is comparable to their Hindu counterparts. The maximum difference in literacy is observed in four districts, where the Muslim community is composed predominantly of immigrants from erstwhile East Bengal and East Pakistan, that is, the present Bangladesh. Moreover, the presence of 7 per cent of illiterate youths, besides others disadvantages constricts employment possibilities.

Universal enrolment is still an issue in the state, as only 93 per cent of the children in 6- 14 age groups in the households are currently enrolled in school. A large number of children are out of school, accounting for 6.45 per cent of the total Elementary school age children.

An analysis of data from secondary sources indicate that Assam is still deficient in providing all schools within the specified walking distance from habitations as per the Government of India norms at all levels, Primary, Upper Primary, Secondary and Higher Secondary, making access difficult. However, the state government is actively mapping areas to identify locations where more Primary, Upper Primary and Secondary schools are required in the state using Global Positioning System (GPS) and Geographic Information System (GIS) technology. In terms of school infrastructure, although considerable progress has been made, provisioning of good quality buildings, electricity, sanitation and drinking water need efforts.

Although the present exercise did not look at the educational attainment of students, different national surveys reveal that the quality of learning across all levels of the education system in the country is very low, including in Assam. What has become a serious concern for the state is the declining trend in educational attainment. The imbalances reflected in the HDR survey in terms of educational facilities and outcome need further probe to understand the different contexts for children being out of school, low level of attainment and educational deprivations among certain sections of people.

The teacher component of school education in Assam needs urgent attention. While low level of qualification and professional training has been a historical fact and played its role in the state, the recent introduction of the Teacher Eligibility Test (TET) also could not bridge the gap to the expected level. There is an urgent need to make an assessment as to why the TET qualified teachers cannot play their role and what needs to be done.

The Elementary school age children in the households predominantly go to government schools, but there is a distinct pattern indicating that rural compared to the urban and females compared to the males attend government schools. Despite increasing expenditure on public education, people's preference for private schools is growing, which is definitely a failure on the part of the government. The preference for private schools is reported to be mainly because of schooling infrastructure, quality of teaching, regularity of classes, teacher attendance and care taken of the students by the school. Although Elementary education is supposed to be free in government schools, households are spending some amount on schooling. Again inequality in the spending pattern on account of education is pervasive across districts reflecting higher spending in households in urban areas and on children attending private schools. This can have deeper implications leading to differential access to education.

In case of higher education, the current enrolment of only 12.81 per cent of youth between 18-23 age groups in higher education is low. It is a big challenge for the

state that, despite the recent attempts at increasing the educational facilities in the state, each year there is large-scale migration of students to other parts of India, notably, New Delhi, Bengaluru, Mumbai, Pune, Chennai, Hyderabad, and Kolkata, and so on, in search of better education. Students who study outside the state mention numerous deficiencies in higher education in Assam. Besides, there is a felt mismatch between demand in the job market and potential of the local educational system to meet the requirements of new economy occupations and professional service sector. There is a general perception that educational opportunities are superior in those cities, which will help in securing better job opportunities.

Against this backdrop, certain grey areas emerge: what causes educational disparities among different groups including the Muslims and non-Muslims? How can the distinct divide between private and government facilities be bridged? What needs to be done to raise the quality of learning at each level of education? Why has higher education in the state failed to be attractive to the youth?

It must be noted that all sources of educational inequalities as revealed in the present report needs differential approaches. The homogenising tendency of educational policies currently being pursued, in all probability, will fail to deliver the desired outcomes. What matters most is a proactive state role in provisioning universal and uniform schooling at the elementary level along the lines of a Common School system as envisaged by the Indian Education Commission way back in 1964-66.

5 Health and Nutrition

Better Health of Children Holds a Better Future

5.1 Introduction

Health is a core component of human development. A healthy and long life, free from risks of untimely death or disability apart from being an elementarily valued end in itself is also instrumental in attaining other relevant and valued functionings and, hence, forms a crucial basis of personal well-being. This chapter attempts to investigate some selected aspects of the health and nutrition scenario in Assam, with a perspective of equity and inclusiveness as well as a responsive public health system. In doing so, some vital indicators of health status and access to services are discussed, with specific consideration to issues of disparate performance among the socio-economically and spatially diverse and vulnerable groups. Based on the findings and emerging patterns, imminent priorities are highlighted towards achieving universal and equitable health outcomes and coverage in the state.

5.2 Health Scenario in Assam: Recent Trends

To begin with conventional health indicators put Assam in the band of poor-performing states along with the other such states of north and central India. However, the highly pluralistic socio-cultural milieu and considerable spatial diversity across the state makes the case of Assam unique. Given the scale of diversity, reaching out through appropriate health services influencing the critical health outcomes, understandably, calls for high levels of efficiency and enormous effort.

In this section, a disaggregated picture of the key health indicators of the state is presented highlighting the changes taking place during recent years. A discussion is also attempted to understand differentials in the average levels of attainment in terms of the state's demographic, socio-economic and spatial characteristics.

5.2.1Mortality and Causes of Death

Among conventional health indicators, levels and patterns of mortality – across age and sex– is considered as one of the best summary indicators of the overall health status of the population. In fact, indicators such as early-childhood (neonatal, infant and under-five) mortality rates and maternal mortality ratios belong to the wider family of development indicators such as the Millennium Development Goals (MDGs)while adult mortality and causes of death are valuable in assessing the prevailing epidemiological scenario and changing dynamics of diseases.

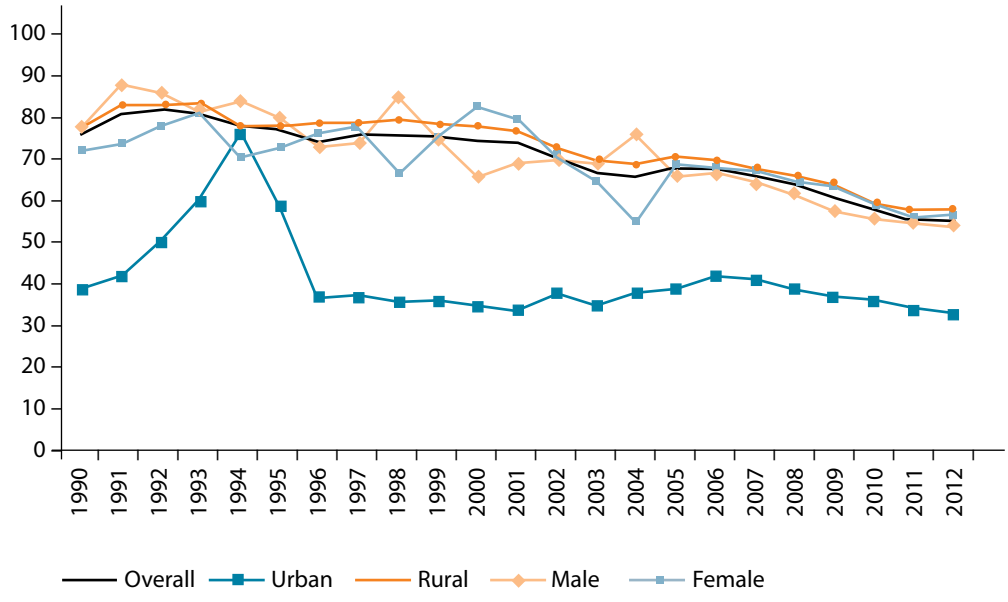
5.2.1.1 Childhood Mortality

According to the SRS, the Infant Mortality Rate (IMR), that is, the number of children dying before their first birthday, for Assam has fallen from 67 infant deaths per 1,000 live births in 2003 to 55 in 2012[1]. The IMR in the state is, however, constantly declining since the early 1990s (Figure 5.1). Notably IMR levels in urban areas have been consistently lower – about half the rural levels – during the last two decades. In terms of a sex bias in IMR, male infants had greater mortality risks till about the late 1990s, but since then the pattern has somewhat reversed with the male-female gap in infant mortality narrowing(Figure 5.1).

The long-term decline in IMR in the state, as evident from the SRS data (1990-2012), has been steady but at a slower pace than the national average. While, for India, the IMR

[1] Child mortality rates such as IMR and Under 5 Mortality Rate (U5MR) have not been estimated from the HDR survey because of a fewer number of reported deaths. However, it may be mentioned that the derived life table based on survey data yields an IMR of 34 for the state as a whole.

Figure 5.1: IMR by residence and sex, Assam: 1990-2012



Source: SRS, Various Years

declined during 1990-2012 from 80 to 42 – a fall of about 47 percent, or at a Compounded Annual (negative) Growth Rate (CAGR) of 2.8 percent – for Assam, the rate of decline was almost half – a fall of 28 percent during the last two decades, or at an annual rate of about 1.4 percent (Figure 5.2). The slow rate of decline in IMR in Assam is a definite cause of concern. Results from the last NFHS-3(2005-06), reiterate the influence of a few well-acknowledged determinants on high levels of infant mortality (71, as per NFHS-3) such as household wealth, mother's education and age at childbirth, and identified higher mortality risks for higher birth-order children, and for those with shorter birth intervals.

The Annual Health Survey (AHS)[2] has so far produced results for two years on district-level key population health outcomes for Assam. Amongst the most critical health outcomes the child survival assumes the utmost priority. Table 5.1 presents the IMR levels of the districts for 2011-12 and 2012-13[3]. The range of IMR varies from a maximum of 74 in Kokrajhar to a minimum of 40 in Dhemaji in 2011-12. While the maximum of 74 remains unchanged, the minimum declined to 37 in Dhemaji in 2013. According to the 2012-13 figures, 11 of the 23 districts have IMR higher than the state average (Table 5.1). It may be noted that, in some of these districts such as Kokrajhar, Darrang, Dhubri and Karimganj, IMR continues to be at the level where Assam's state average was about a decade ago. The AHS results serve as a concurrent information source to monitor district-level progress in reducing IMR.

Typically a significant proportion of infant deaths occur during the neonatal period, that is, the first 28 days after the child is born. Accordingly, reducing Neonatal Mortality Rate(NNMR) is considered as a key strategy to reduce infant mortality. The performance of Assam in reducing neonatal mortality, however, presents an intriguing picture.

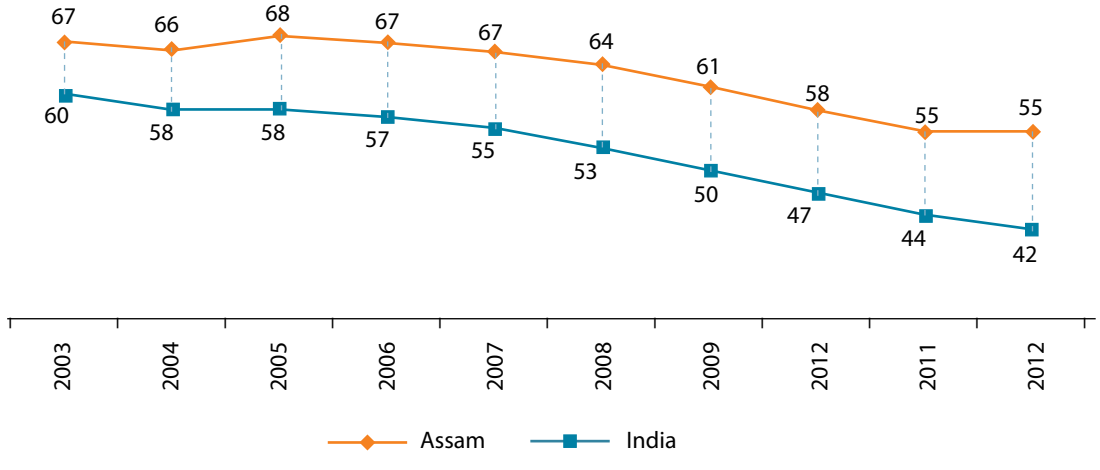
[2] AHS – modelled along the line of SRS – has been initiated in 2010 in nine states of India by the Office of the Registrar General of India.
[3] AHS provides data only for 23 districts of Assam.

Table 5.1: Infant Mortality Rates across districts in Assam, 2011-12 and 2012-13

Districts	2011-12			2012-13		
	Total	Male	Female	Total	Male	Female
Kokrajhar	74	76	71	74	78	71
Darrang	73	70	75	70	69	71
Dhubri	68	67	69	69	67	70
Karimganj	68	63	74	65	61	69
Marigaon	66	68	64	63	65	60
Sonitpur	65	64	66	61	60	63
Nagaon	64	62	66	62	60	63
Nalbari	59	59	60	58	58	58
Golaghat	59	56	62	56	55	57
Karbi Anglong	59	51	67	60	51	70
Goalpara	56	55	56	53	53	53
Sibsagar	56	53	60	56	54	59
Dima Hasao	56	52	59	54	50	58
Jorhat	55	53	56	50	48	52
Cachar	54	52	55	53	52	54
Hailakandi	54	55	52	52	56	48
Lakhimpur	53	47	59	48	43	53
Dibrugarh	52	52	53	51	51	51
Tinsukia	51	49	53	50	50	50
Bongaigaon	49	49	50	48	47	48
Barpeta	46	54	37	43	51	34
Kamrup	42	43	41	39	41	38
Dhemaji	40	38	42	37	37	37
Assam	**57**	**56**	**58**	**55**	**55**	**56**

Source: Annual Health Survey Bulletins, Assam (2011-12 and 2012-13.

Figure 5.2: IMR in Assam and India (2003-12)



Source: SRS, Various Years.

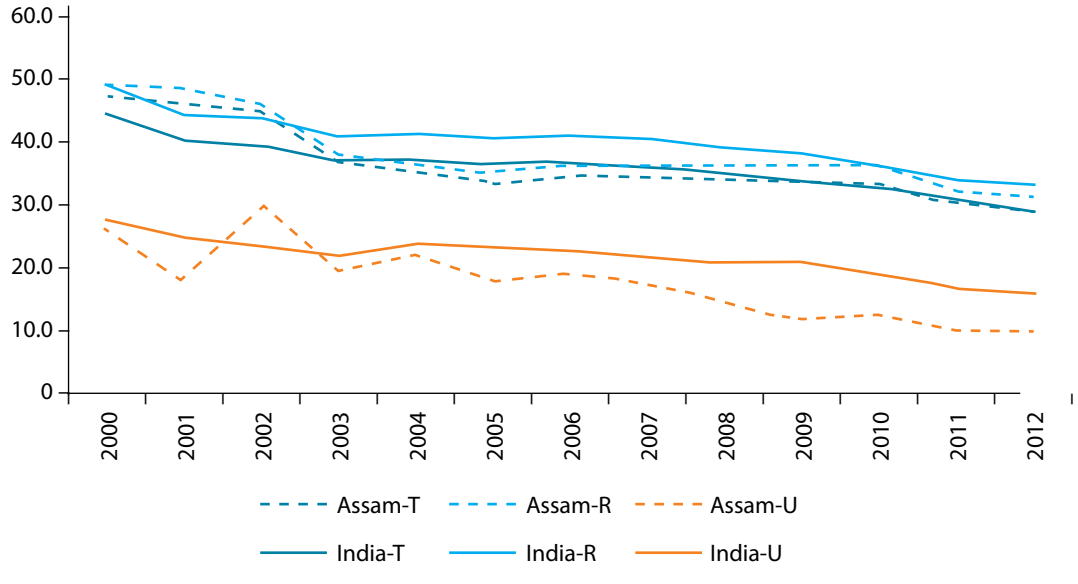
Unlike its performance in IMR, trends in NNMR in Assam closely shadow the national average, for both overall as well as rural-urban levels. In other words, the mortality risk of children within the first month of birth in Assam is almost similar to that of an average child born anywhere in India (Figure 5.3).

The striking gap between Assam's and India's IMR noted earlier, therefore, points towards the mortality risks possibly arising out of the external environment or other causes[4] during the time preceding the first month when infant mortality risks are actually the highest. However, in this context, Assam appears again to be a case in point – as is evident from successive SRS data during the last decade, with the exception of Kerala, the percentage of neonatal deaths to total infant deaths is the lowest in Assam among all major states. For example, in 2012, neonatal deaths in Assam accounted for about 58percent of the total infant deaths in the state as compared to the national average of 69percent. This pattern in the distribution of deaths in the neonatal period for children in Assam – taken together with its relatively better performance in terms of trends in NNMR – suggests that mortality risks for children in Assam is more likely to be stronger in the post-neonatal period than the first month after birth, with an indication towards a greater influence of external causes such as household and community environment, prevalence of pathogens and common infections, and other child-care practices impacting survival risks.

5.2.1.2 Maternal Mortality

Maternal mortality, or death due to causes related to pregnancy and childbirth, is another key health outcome indicator considered to have wider capability implications. The scenario of maternal mortality typically summarises the status of women's health, health system preparedness and responsiveness, prevailing socio-economic characteristics including general status of women in the society.

Figure 5.3: NNMR by residence: Assam and India (2000-12)



Source: SRS, Various Years.

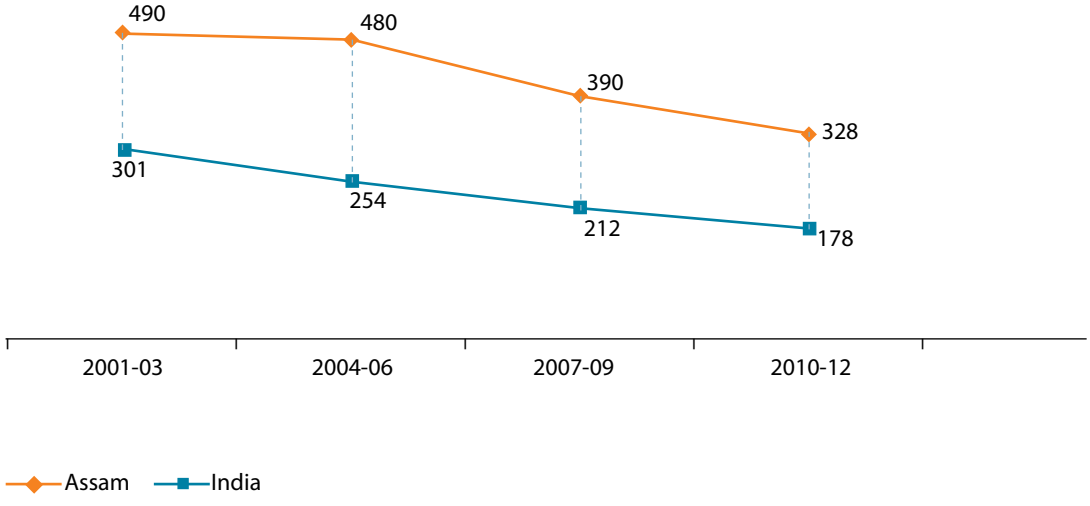
[4] That is, non-medical causes.

The Maternal Mortality Ratio (MMR)[5] is one of the few health outcome indicators where India as a whole continues to perform rather poorly. India accounts for a fifth of total maternal deaths occurring in the world[6]. Presently Assam with an MMR of 328 has the highest MMR in the country (RGI, 2013). Assam's current MMR, in fact, is even higher than the national average almost a decade ago(Figure 5.4). Besides, the rate of reduction in MMR in Assam (33percent) during 2001-12 has been slower than the national rate of decline (41 percent) during the same period.

The two recent rounds of the AHS – based on a much larger sample than SRS – are, perhaps, a better source to examine the maternal mortality scenario is Assam, and also its variation across regions[7]. Evidently, MMR has fallen in the state from 381 in 2010-11 to 301 in 2012-13; region-wise maternal death risks appear to be the higher in the four districts in upper Assam, which also happen to be tea garden districts (Table 5.2).

Not withstanding the declining trend in MMR in the state in recent years, believed to be largely induced by the increase in institutional deliveries consequent on *Janani Suraksha Yojana* (JSY), the relatively high MMR still continues to be a major concern for the state. Consequently, the *Chief Minister's Vision for Women and Children in Assam* targets reducing MMR to 210 by 2016 as a key goal[8] through a combination of strategies[9]. However, much depends on how best the state can take on board different stakeholders with defined roles in such programmatic measures.

Figure 5.4: Maternal mortality ratios in Assam and India (2001-12)



Source: RGI, Relevant Years.

[5] Expressed as a ratio of maternal deaths per 100,000 live births.
[6] World Health Organization (2012).
[7] Given the sample size and design, the HDR survey (2013) is not suitable for robust estimates of MMR.
[8] Visit http://nedan.in/Chief%20Ministers%20Vision%20for%20Women%20and%20Children%202016.pdf (accessed 6 August 2014).
[9] These strategies include pregnancy tracking using the Mother and Child Tracking System (MCTS), introducing iron sucrose injections for anaemic women, strengthening quality antenatal care to help identify high-risk pregnancies and complications, strengthening health facilities through 24X7 primary health centres and sub-centre delivery points, emphasising night C-sections using adequate number of specialists.

Table 5.2: MMR in Assam and Administrative Divisions (2010-13)

State/Region	2010-11	2011-12	2012-13
Assam (all regions)	381	347	301
Hills and Barak Valley Division *(Karbi Anglong, North Cachar Hills, Cachar, Karimganj, Hailakandi)*	342	288	281
Lower Assam Division *(Kokrajhar, Dhubri, Goalpara, Darrang, Bongaigaon, Barpeta, Kamrup, Nalbari)*	366	325	254
North Assam Division *(Marigaon, Nagaon, Sonitpur, Lakhimpur, Dhemaji)*	367	314	251
Upper Assam Division *(Tinsukia, Dibrugarh, Sibsagar, Jorhat)*	430	436	404

Source: Annual Health Survey, Relevant Years

5.2.1.3 Life Expectancy and Adult Mortality

Expectation of life at birth is one of the most widely used indicators to summarise population health status largely because of its ability to provide a snapshot of the prevailing mortality and health scenario in a population. It has, therefore, been a core component of HDI since the beginning.

Life expectancy at birth has been steadily improving in the state. During 2002-10 life expectancy at birth in the state increased from 59 years (58.6 years for males and 59.3 years for females) to 62 years (61 years for males and 63.2 years for females). While this denotes considerable improvement in the overall health status in the state, it needs to be noted it is also the lowest among the Indian states; and considered separately by males and females, at a near-equal level with states such as Uttar Pradesh, Madhya Pradesh and Orissa, known to have poor health indicators in general. In fact, the mortality disadvantage of an average Assamese continues over the life-course – age specific life expectancy being relatively lower at all levels compared to other states. Life expectancy in the range of 60-70 is also suggestive of higher inequalities characterised by a negatively skewed distribution in general.

Other measures of mortality, such as death rates or age-specific death rates also present a similar scenario in the state. Although death rates have steadily fallen in the last decades from 8.0 in 2003 to 7.9 in 2012, the rate continues to be above the national level of (that is,7.0).

5.2.2 Health Status and Burden on Diseases: *Through the Lens of Social Determinants*

While levels, trends and patterns of mortality in a population provide important snapshots of the prevalent general health conditions, a proper assessment of the population health status requires careful scrutiny of the burden of diseases, the relative contribution of different diseases into it, and prevailing levels of morbidity or ill-health. Better still is to have some information based on broad-based health measures that goes beyond conventional disease surveillance or morbidity statistics.

Several national-level datasets such as the NFHS and the District Level Household Survey (DLHS), morbidity and health care surveys

undertaken by the NSSO, the India Human Development Survey (IHDS) conducted by the National Council of Applied Economics and Research (NCAER), and the two surveys by the World Health Organization (WHO) – the World Health Survey (India) during 2003 and its follow-up named as Survey on Ageing and Adult Health (SAGE) in 2009-10 – contain information on Assam's health scenario, which allows some amount of analysis albeit with a number of limitations[10]. Given this, the Assam HDR survey was designed and conducted to address some of these shortcomings and this section largely draws on the survey data.

5.2.2.1 Self-Assessed Health

While objective measures such as presence or absence of any ailments or functional limitations serve as important indicators of health status, subjective measures are also considered to be equally important in the health status in a population. In fact, subjective measures, often based on Self-Assessed Health (SAH) status either in absolute terms or relative to the community or peer-groups, are considered as an indicator of physical well-being. Such measures not only embrace physical, psychological and social aspects of health, but also provide a good account of functional ability, life satisfaction, family factors, etc. Moreover, they are also sensitive to variations in objective health[11].

As is evident from Table 5.3, a majority (84 percent) reported their current health status as 'good' while about 10per.cent rated their health as 'poor'. If compared roughly with the WHO-SAGE survey (2009) results, similar patterns are evident: 83percent considered their health as either 'good' or 'moderate', but with a slightly higher proportion rating their health as 'bad' or 'very bad' (14percent)[12].

It is interesting to note that the proportion of respondents rating their health as 'poor' is the highest in the flood-affected areas (19percent), followed by those in the border areas (11percent), while the least is reported in the hilly areas (8percent). The proportion of people rating their health as 'good' or 'poor', however, does not change across the MPCE quintiles while a rating of 'excellent' demonstrates a weak yet gradual increase along with improvement in the household economic status (Table 5.3). The gradient is more pronounced along educational attainment of the respondents, with the proportion rating their current health as 'poor' among illiterates (13percent) being more than twice that of those with at least college-level education (6percent). In terms of demographics, females are found to be having a marginally higher reported 'poor' health status, while the tendency denoting poorer health status, in general, increases progressively with age.

The HDR survey also collected information on two other dimensions of health perceptions, closely related to health-related functionality aspects of life. These include whether the respondent's current physical health prevents her/him from doing things which she/he 'feels like doing', and another on satisfaction with the ability to carry out daily activities. The two have been combined to derive a simple additive 'index of self-rated physical functionality'.

It was found that only about 4percent of the respondents have 'poor' physical functionality. Although no differentials in functionality levels has been observed between males and females,

[10] The most common limitation is the small sample size preventing robust estimation of parameters at various levels of disaggregation.
[11] See Zimmer, Z., Natividad, J., Lin, H.S., Chayovan, N. (2000).
[12] WHO-SAGE (2009) used a five point scale ranging from 'very good' to 'very bad'. The HDR survey, however, has used a three point scale.

Table 5.3: Self-assessed health status by select background characteristics

Background Characteristics		Excellent	Good	Poor
Place of Residence	Rural	5.9	83.4	10.7
	Urban	4.5	86.5	9.0
Age Groups	15-24	7.5	86.3	6.2
	25-34	7.7	86.5	5.8
	35-44	6.4	86.7	6.9
	45-54	4.7	85.3	10.0
	55-64	3.7	79.2	17.2
	65+	3.2	71.3	25.5
MPCE Quintile	1st	3.3	86.1	10.6
	2nd	5.2	84.1	10.7
	3rd	6.2	84.7	9.2
	4th	6.4	82.5	11.0
	5th	7.3	82.1	10.6
Educational Level	Illiterate	3.4	83.2	13.3
	Less than Primary	4.2	83.2	12.5
	Completed Primary	5.9	83.3	10.7
	Secondary	6.6	86.2	7.2
	Higher Secondary	8.8	84.7	6.5
	College	9.9	83.6	6.4
Geophysical Diversity Categories	Char	4.6	87.5	7.9
	Flood-affected	6.3	74.8	18.9
	Hill	1.2	93.7	5.0
	Tea-garden	6.2	84.6	9.3
	Border	5.4	83.5	11.2
	Multiple diversities	2.8	83.9	13.3
	General	10.1	82.2	7.8
Total		5.7	83.9	10.4

Source: HDR Survey (2013)

it is expectedly higher in the ages 55-64 years (5percent) and among the elderly (65 years and above; 8percent). There is some evidence that the functionality ratings are better among those with better education, or higher incomes. In the hills, a relatively higher extent of self-rated functionality difficulty has been reported. However, across the other spatial diversities, the variations were found to be rather insignificant.

5.2.2.2 Morbidity and Burden of Diseases

NSSO (60th Round, 2004-05) data reveal that per 1,000,82 persons in rural Assam and 83 in urban Assam reported suffering from diseases during the 15 days preceding the survey. Using a common reference period of 12 months, the HDR survey (2013) finds a prevalence rate of short-term common morbidities as 125 per

1,000 persons for the state, with 129 persons in rural and 99 persons in urban areas reporting any illness during the reference period. With some indirect adjustments[13], however, it appears that self-reported (which also includes proxy reporting by the respondent on behalf of other household members) morbidity levels in Assam have been on a declining trend over the last decade.

It is, however, important to observe how morbidity or incidence of ill-health is clustered spatially and socio-economically, and how the risks of falling sick correlate with wider social determinants of health. Given a 30-day reference period for short-term morbidities and 12 months for chronic morbidities, it could be found that the prevalence of short-term ailments is higher among females, and follows the classic J-shaped curve across age-groups, with a higher morbidity burden at the younger and older ages, and lower in the middle ages. Education appears to be strongly associated with reported levels of morbidity;illiterates (54/'000) or those with less than primary-level education (45/'000) have more than twice the level of morbidity as compared to their counterparts with post-secondary (24/'000) or college education (21/'000). However, the economic gradient is found to be rather irregular;nevertheless it appears that the poorest families are more likely to have a higher morbidity burden than richer households (Table 5.4).

Table 5.4: Prevalence of self-reported morbidity by background characteristics

Background attributes		Self-Reported Proportion of Ailing Persons (PAP)/'000	
		Short-term morbidity	Chronic Morbidity
Age-groups	0-14	63.2	
	15-24	30.6	8.5
	25-34	31.8	20.6
	35-44	40.2	49.7
	45-54	47.6	91.8
	55-64	53.6	149.7
	65+	51.1	220.4
Sex	Male	40.8	42.9
	Female	51.1	42.6
Educational level	Illiterate	54.0	81.6
	Less than Primary	45.1	67.0
	Completed Primary	40.8	57.3
	Secondary	31.8	46.1
	Higher Secondary	23.6	33.0
	College	21.1	66.3

[13] It was possible from the HDR survey to indirectly compute morbidity prevalence estimates with reference periods comparable to the NSSO survey conducted nearly a decade back, using information collected on the 'onset of the illness'. However, considering the onset period of 'within 15 days', similar to the reference period used in the NSSO survey, leads to much lower morbidity levels for the state overall (24/'000 persons), as well as in urban (11 /'000 persons) and rural (26/'000 persons) areas. It should be noted that these estimates exclude chronic ailments. Even if we add currently ailing individuals for chronic ailments, the 'combined' morbidity prevalence – closest in spirit to the NSSO estimates – yields a prevalence of 59 ailing persons overall, and 69 for urban areas and 57 for rural Assam which is indicative of a modest decline.

Background attributes		Self-Reported Proportion of Ailing Persons (PAP)/'000	
		Short-term morbidity	Chronic Morbidity
Religion	Hindu	42.6	44.9
	Muslim	42.6	44.9
	Christian	50.6	40.5
	Others	67.0	25.6
		33.1	26.5
Social Group	SC	40.4	45.9
	ST	50.9	26.8
	OBC	48.8	48.0
	General	43.5	44.0
Activity status	Cultivator	42.3	54.2
	Wage-labour	35.7	41.0
	Self-employed	26.1	66.7
	Salaried	19.8	55.9
	Others	45.3	33.3
MPCE quintiles	Lowest	42.2	17.5
	Lower-middle	56.8	32.3
	Middle	50.4	37.7
	Upper-middle	42.9	51.5
	Highest	35.5	82.3
Source of drinking water	Piped water	31.0	
	Tube-well/covered wells	47.1	
	Unprotected sources	52.6	
Type of Toilet	Sanitary	42.9	
	Non-sanitary	44.4	
	Open defecation	60.1	
Household environment	Separate kitchen/animal sheds	43.5	
	No separate kitchen/ animal shed	51.8	
Place of residence & Geophysical Diversity categories	Urban	27.1	65.3
	Rural	48.9	39.0
	Char	46.7	28.7
	Flood-affected	35.8	55.0
	Hill	40.3	26.5
	Tea-garden	51.7	44.4
	Border	58.0	40.1
	Multiple diversities	52.6	37.0
	General	43.3	34.6
All Assam		45.8	42.7

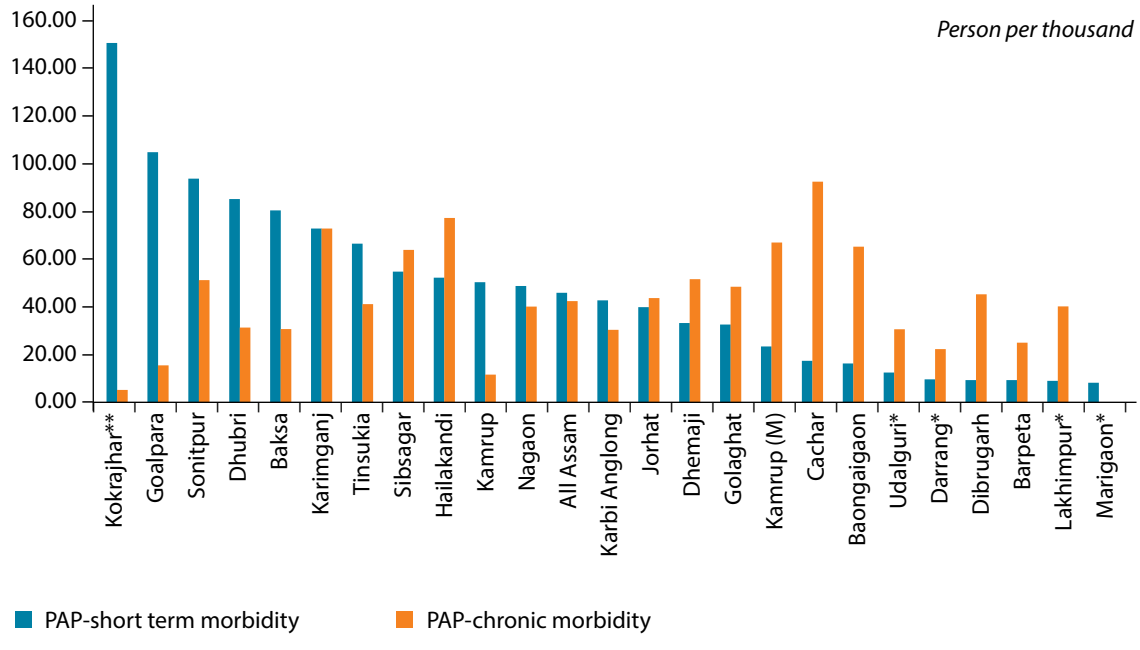
Source: HDR Survey (2013)

Apart from these social determinants, morbidity levels are significantly affected by wider dimensions of public health such as source of drinking water and type of toilet and sanitation practices, as well as the household environment. As is evident from Table 5.4, reported levels of acute illnesses are much higher in households relying on unprotected sources for drinking water, other than piped water. Similarly, highest reported levels of morbidity (60/'000) could be identified among households practicing open defecation. Further, morbidity levels tend to be much higher in households without having separate kitchens or animal-sheds. The findings from the survey data on self-reported morbidity in Assam thus clearly suggest that, although poverty itself may not result in ill-health, the socio-economic gradient evidently manifests through intermediate effects of education and living standards such as access to modern, improved sources of drinking water, sanitation and cleaner household environment– most definitively and significantly impacting the critical health *advantages* and *achievements* of individuals.

Table 5.4 also presents reported prevalence levels of chronic diseases, based on self-reported information on certain major chronic diseases[14]. Notably, the reported near equal levels of prevalence of both short-term and chronic ailments for the state as a whole (that is, the last row of the table) is indicative of a 'double-burden' of diseases– the epidemiological scenario where both infectious and communicable diseases (predominating short-term ailments) and non-communicable, lifestyle diseases (predominating chronic ailments) affect simultaneously.

Data of the HDR survey, interalia, allow some useful disaggregation highlighting the association between socio-economic factors and reported levels of chronic ailments. Firstly, unlike in the case for short-term morbidities, reported levels of chronic morbidities appear

Figure 5.5: District wise Prevalence of Short-term and Chronic Morbidities



** denotes figure based on 25-75 observations for short-term morbidities, ** denotes the same for chronic morbidities. Chirang and Dima Hasao are not included for very low sample sizes.*

[14] These include diabetes, angina/heart ailments/stroke, hypertension, arthritis/joint pains, cancer, asthma/COPD, and diseases of the kidney and liver.

to be higher amongst economically better-off sections; in fact, the proportion of people reporting chronic morbidities in the richest MPCE quintile is nearly five times more than in the poorest classes, which somewhat supports the long-held notion of chronic ailments being associated with affluence. The observed low prevalence of chronic morbidities amongst the lower MPCE quintiles may also be due to under-reporting since many of them remain undiagnosed. However, a rather irregular pattern is noticed in the prevalence of chronic morbidities with regard to educational levels, and also across type of economic activity. In terms of demographics, quite expectedly, the reported prevalence of the chronic morbidity progressively increases with age, but without any discernible sex bias.

Data on both short-term as well as chronic morbidities in the state reveal considerable variation in their prevalence levels across districts, and also across spatial diversity categories. This, in a way, highlights the unique vulnerabilities arising out of natural topographies and other environmental risks in the state. The highest levels of reported acute illnesses could be noticed in the hills and in the border areas (Table 5.4). It is, however, intriguing that the observed prevalence rate of short-term morbidity is low in the flood-affected regions. In the case of chronic ailments, on the other hand, the order is reversed with the highest prevalence to be found in the flood-prone areas. Overall, it is indicated that, while for rural Assam, acute, short-term ailments are much higher, in the case of urban areas, chronic ailments are almost twice more common. A resonance of such apparent complementarities in terms of the comparative prevalence of both these disease forms could be seen across districts (Figure 5.4).

Malaria is a major public health problem in Assam. Nearly a third of the state's population lives in malaria-endemic regions, with the state contributing to nearly 5 per cent of the total malaria cases in the country. Prolonged rainfall, high temperature and humidity prevailing throughout the year have been identified as major causes of such high incidence of malaria in the state[15]. Both *Plasmodium falciparum* and *Plasmodiumvivaxare* abundant, but the later – the killer protozoan – is responsible for nearly 60 percent of the cases. Data reveal that malaria is highly endemic in eight districts–Karbi Anglong, Dima Hasao, Goalpara, Hailakandi, and the BTAD districts of Kokrajhar, Chirang, Baksa and Udalguri – together accounting for nearly three-fourths of the total malaria cases in the state. According to the State Programme Implementation Plan (PIP) of the National Health Mission (NHM), during 2012-13[16], 629 sub-centres covering a population of about 3.3 million are in the highly endemic regions, with high concentrations in hilly or forest areas, or along the international borders. The Annual Parasite Incidence (API), defined as the number of confirmed cases per thousand of population was ≥2 in all but 10 districts of the state; in the eight districts mentioned above, API ranges within 4-11, denoting an excessively high incidence.

It may be noted that the recent and growing phenomenon of chloroquine resistance, similar to the experience in several other Southeast Asian countries, some of which border or are close to Assam, is emerging as a major concern[17]. Accordingly, in 2004, there was switch from chloroquine to sulfadoxine-pyrimethamine as the first line of therapy in districts with proven chloroquine resistance; a further switch to the artemisin combination therapy (ACT) took place in2007 as advocated by the National

[15] Dev, V., Dash, A.P., Khound, K. (2006). High-risk areas of malaria and prioritizing interventions in Assam, *Current Science,* 90(1), 10 January 2006.
[16] The latest PIP (2013-14) has not reported the NVDCP figures for malaria. On availability with the State Health Society, this can be updated.
[17] Dev, V., Sharma, V.P., Hojai, D. (2009). Malaria transmission and disease burden in Assam: challenges and opportunities, *Journal of Parasitic Disease*, (June & December 2009) 33(1&2):13–22.

Vector-Borne Disease Control Programme (NVDCP). It is expected, as supported by recent research[18], that following the introduction of ACT therapy gradually in most high API areas of the state and greater intensification of the two main personal control efforts indoor residual spraying (IRS) and long-lasting insecticidal nets (LLIN), aided by better monitoring, reporting and overall strengthening of peripheral health facilities and building vector control awareness efforts, could lead to a gradual decline and better outcomes in the state.

It may, further, be noted that specific disease and health conditions have global and national importance given the persistent or emerging challengesrelating to them. These include non-communicable diseases as well as risk-factors such as hypertension, diabetes, and their accompanying public health risks such as smoking, alcohol consumption and physical activity. Common childhood illnesses such as diarrhoea and pneumonia/acute respiratory infections also add a considerable burden of acute illnesses impacting health 'advantages' and 'achievements' of people. The next section deals with some of these aspects.

5.2.2.3 Common Non-communicable Diseases: Hypertension and Diabetes

Non-Communicable Diseases (NCDs) are the major cause of mortality globally, including in low- and middle-income countries. Over the years, India is witnessing a consistent rise in the incidence of NCDs with a corresponding impact on mortality together with wider economic consequences in treatment, rehabilitation, productivity losses and disability[19]. Furthermore, NCDs have ceased to be predominantly 'diseases of affluence' with growing evidence in support of significant, if not higher, risks among the poor and other disadvantaged socio-economic status groups[20].

It has been observed that hypertension is a major NCD in terms of its prevalence and mortality impacts, as well as other fatal health consequences such as stroke, diabetes, and coronary heart diseases. In India, hypertension is a leading NCD risk and estimated to be responsible for nearly 10percent of all deaths[21]. Adult hypertension prevalence has risen steadily over the past three decades from 5percent to between 20-40percent in urban areas and 12-17percent in rural areas. Based on blood-pressure measurement data, the prevalence in Assam is found to be 19percent[22], slightly above than the national average of 18percent. Interestingly, a higher prevalence of hypertension can be seen in rural Assam (20 percent, standard error 0.013) as compared to urban areas (13 percent, standard error 0.022). Females are found to be marginally higher hypertensive than males in Assam, and the proportion of hypertensive adults rapidly increases with age – a quarter (25percent) in those aged 46-60 years, nearly a third (32percent) in the age-group 61-75 years, and more than half (55percent) in the older ages of 75+ in the state are diagnosed to have high blood pressure(WHO-SAGE, 2009). However, no clear socio-economic gradient – either in terms of the standard MPCE groups or educational levels – is evident in the prevalence of hypertension. The AHS, on the other hand, reports the prevalence of hypertension in the state at 3,999 per 100,000 individuals.

[18] Yadav, K., Dhiman, S., Rabha, B., et al (2014).Socio-economic determinants for malaria transmission risk in an endemic primary health centre in Assam, India, *Infectious Diseases of Poverty,* 3:19 (2014)
[19] See Thakur, J. S., et. al. (2011) as well as Engelgau, M., Karan, A., Mahal, A. (2012).
[20] See, for example, Vellakkal S., et al. (2013).
[21] Patel, V., et al. (2011).
[22] Following the methodology suggested by Lloyd-Sherlock, et al. (2014), the reported figures for hypertension were calculated based on a level of systolic blood pressure >=140 mm of Hg, and a diastolic blood pressure >=90 mm of Hg, taking the mean of the last two readings (reading # 2 and #3) as provided in the unit record data of WHO-SAGE individual-level data file for India.

The HDR survey too attempted to elicit responses on any diagnosed incidence of hypertension. Accordingly, the prevalence rate of hypertension is found to be 10 per 1,000 persons in the state as a whole. The rate, however, is found to be 20 per 1,000 persons in urban areas.

Besides hypertension, the AHS Report (2012-13) also indicates 935 persons per 100,000 in Assam have symptoms of diabetes. According to the WHO-SAGE data, less than 2percent of individuals in Assam (3percent in urban and 1.2percent in rural areas) had reported to be diagnosed with diabetes (or high blood sugar levels). Epidemiological data on diabetes, unfortunately, are rare. Further, it has been observed that undiagnosed diabetes, similar to hypertension, could be substantial. Evidence also suggests that the pattern of diabetes onset has witnessed a change in recent years, affecting more younger people and children; clearly, comprehensive screening programmes for early detection of the disease should be of high priority, followed by provision of the required healthcare services at the primary level.

In this direction, a notable attempt in Assam under the NHM and the aegis of the National Program on Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases and Stroke has been to initiate screening for chronic diseases at the sub-centre level, for the adult population aged 30 and above, in five pilot districts -- Kamrup, Jorhat, Sivasagar, Dibrugarh and Lakhimpur -- under Phase I. Reportedly, male Multi-Purpose Workers have been trained, diagnostic kits provided, and screenings have started since January 2012. According to this facility-based NCD screening system data, nearly 2.2 million screenings have been conducted in the first two-and a-half years of the programme; as the most recent estimates suggest, about 7percent of the people getting themselves screened under the programme were suspected of having diabetes, and about 9percentof having hypertension, with some variation cross districts.

5.2.2.4 Childhood Illness: Diarrhoea and Acute Respiratory Infections

Evidence suggests that Assam marks an incomplete epidemiological transition, featured by near-equal predominance of both chronic, non-communicable diseases, on the one hand, and infectious, communicable diseases, on the other. Common childhood illnesses such as diarrhoea, pneumonia and other infections still prevail in the state exerting a disproportionate burden on the population, in general, and those marginalised, in particular.

About a decade ago, 7percent of under-fives in Assam reportedly had symptoms of Acute Respiratory Infections (ARIs), 14percent had other unspecified fevers, and 8percent suffered from diarrhoea (NFHS 3, 2005-06). About a couple of years later, another large-scale survey –DLHS-RCH III (2007-08), with a much larger sample of children, estimated 12percent of children having ARI symptoms, but only 4percent suffering from diarrhoea. A higher prevalence of both these childhood morbidities was noticed in the districts of Karimganj, Dhemaji, Cachar, Hailakandi, Sonitpur and Dhubri. None of these surveys, however, could find any regular pattern in terms of conventional vulnerability profiles such as social groups, education or wealth. The mother's education was indicating a weak relation though.

The next set of results and estimates on these illnesses follow from the recent rounds of the AHS. However, unlike DLHS, this survey included information not only for children but for all household members. Nevertheless, the estimates give some idea about the most recent disease burden of these common illnesses.

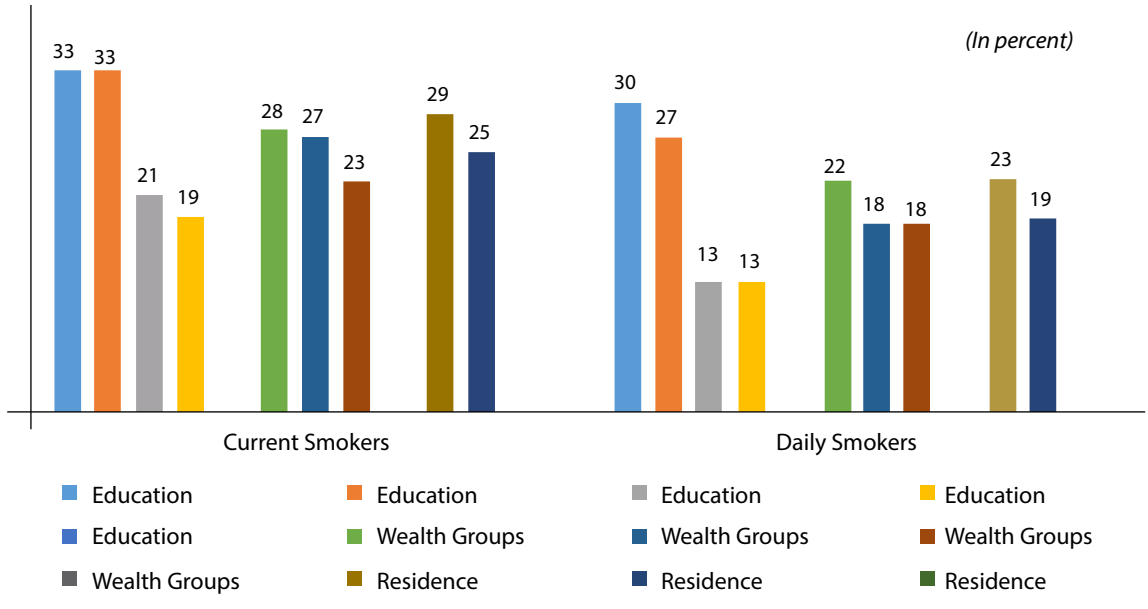
According to the latest round (2012-13), ARI prevalence in Assam, on the whole, has been estimated at about 5percent, prevalence of diarrhoea at around 1percent, and unspecified fevers at about 4 percent. Among the districts, a higher prevalence of ARI was reported for Nagaon (17percent), Hailakandi (12percent), and Jorhat (11percent); for diarrhoea the higher prevalence districts include Hailakandi (4percent), Cachar (3percent), and Karimganj (3percent).

5.2.2.5 Risk Factors and Preventive Health Behaviours

There has been a wide acknowledgement in the recent past that, faced with the growing, and highly varied burden of diseases – more particularly among the poor and vulnerable groups – relying on curative care is most unlikely to be effective, efficient as well as sustainable. The axis of focus of the health system's response to both persistent and emerging disease risks is gradually shifting worldwide towards preventive health behaviours and modifiable risk factors. These include a broad spectrum of risky health behaviours – smoking, alcohol consumption, dietary habits, physical activity and lifestyle, use of improved toilets and proper treatment and storage of drinking water, hand-washing and waste-disposal. This section outlines major contour of these aspects.

According to the Global Adult Tobacco Survey (GATS, 2009-10) in India, more than a third of adults in Assam (39percent) were found to be current tobacco users[23], with 29percent being daily users. Among males, the proportion of tobacco-users is very high at 53percent (against the national average of 48percent - the north-east average being 57percent), and also among the females (25percent, as compared to the national average of 20percent, the north-east average is 31percent). However, a quarter

Figure 5.6: Socio-economic differentials in smoking, males



Source: Calculated from GATS data.

[23] Notably, among the 14 states having a higher level of tobacco consumption than the national average (35 per cent), eight are from the north-east, with the country's highest level reported in Mizoram (67 per cent). Assam, in fact, has the lowest prevalence in the north-east.

(25percent) of the population uses smokeless tobacco, with the proportion of smokers relatively low (7percent only smokers, and 8percent using both forms of tobacco).

In view of the growing emergence and spread of NCDs, there is now an increasing acceptance about the association of NCD risks with lifestyles, and particularly physical activity habits. Little or no physical activity coupled with largely sedentary occupations is considered to be one of the major risk factors for increasing vulnerability to a wide array of NCDs[24]. The WHO recommends at least 30 minutes of moderate to brisk physical activity such as running, walking, biking, exercises, sports each day, or about 150 minutes per week[25]. In India, population-based estimates on physical activity patterns remain very rare, with the WHO-SAGE survey being a possible exception. According to a summary measure of physical activity developed from the data[26], a little more than a fourth (27percent) of the individuals interviewed in the seven states were found to be engaging in heavy/vigorous physical activity and less than a third (32percent) engaged in moderate forms of such activities. In Assam, the proportion of individuals found to be engaged in little or no physical activity is the highest (51percent) among the seven states included in the survey, with 30percent engaging themselves in moderate forms of physical activity, and 19percent with vigorous forms. Along expected lines, physical activity habits appear to be stronger and more intense in rural rather than in urban areas, with 20percent of the individuals in rural areas as compared to only 8percent in urban areas found to carry out heavy physical activity; in urban areas, moderate physical activities are generally preferred. Physical activity patterns in Assam also seemed to change with education and incomes: Notwithstanding this, even those with less education or income are found to have a similar sedentary lifestyle hinting at a growing risk of clustering for NCDs among them as well.

The HDR survey offers data on the last of the risk factors related to a set of health and sanitation behaviours[27]. The data raise concern for two types of habits: washing hands with soap after defecating, and pouring water from storage containers using ladles (and avoiding direct contact of bare hands with water). About a quarter (26percent) of the respondents does not practice hand-washing using soaps after defecating, and 30percent does not use ladles while pouring water (Table 5.5). So far as the socio-economic gradients are concerned, it is found that more than three out of every five individuals with little or no education or formal schooling do not use soaps after defecation (which is most likely in the open), and do not follow appropriate hygiene while drinking water, both of which clearly increases health risks. Clearly, the road to ensure safe, improved basic behaviours of hygiene and sanitation remains long, and there is a strong felt need which goes on to emphasise the engineering of crucial behavioural change in the state.

5.2.3 Nutritional Status of Children in Assam

Besides the issues of early childhood health and survival outcomes, a key component of human development relates to nutritional

[24] See, for example, Lee, I.M., Shiroma, E.J., Lobelo, F., et al. (2012). Physical inactivity is considered as the fourth leading risk factor for global mortality (6 percent of global deaths), and is estimated to be the main cause for approximately 21-25 percent of breast and colon cancers, 27 percent of diabetes and approximately 30 percent of thechaemic heart disease burden (http://www.who.int/dietphysicalactivity/pa/en/)

[25] Global Strategy on Diet, Physical Activity and Health, WHO (http://www.who.int/dietphysicalactivity/factsheet_adults/en/). These standards are for adults aged 18-64 years.

[26] This 'Index of Physical Activity' combines information on three dimensions: use of bicycles or walking for at least 10 minutes for transport and engaging in any sports, fitness, or leisure/recreational activities (of vigorous or moderate intensity). For the former, time spent per week was also taken into consideration. This 'index' excludes physical activity as a part of normal daily 'work' or occupation. The three categories used are derived using cut-points from an additive score derived from combining the answers above. Detailed results are available on request.

[27] These include: washing hands before eating, washing hands with soap after defecating, keeping food and uncooked rations covered, washing food before cooking, and pouring water from containers using ladles.

Table 5.5: Health and sanitation behavioural practices in Assam, across selected socioeconomic attributes

Characteristics	Wash hands before meals	Wash hands with soap after defecating	Keep cooked food in covered containers	Store rations in closed containers	Wash food before cooking	Pour drinking water using ladles
Residence						
Rural	97.5	70.4	94.9	89.2	98.0	69.1
Urban	98.9	90.6	97.1	96.0	98.6	80.6
Education						
Illiterate	96.4	63.7	93.0	86.3	97.3	60.5
Less than Primary	97.1	67.5	93.5	86.6	98.3	63.4
Completed primary	97.8	74.3	95.8	90.5	98.0	72.6
Secondary	98.8	80.0	96.2	93.3	98.2	78.5
Higher Secondary	98.8	84.0	97.7	95.4	99.1	79.4
College and above	99.6	91.0	99.0	96.9	99.6	85.8
MPCE quintiles						
Lowest	97.0	64.5	91.7	86.0	96.7	61.8
Lower-middle	96.8	66.7	94.1	87.5	97.6	65.3
Middle	98.1	70.7	95.7	89.1	98.5	70.7
Upper-middle	97.9	76.5	96.6	92.6	98.6	75.1
Highest	98.8	89.3	98.0	95.9	98.9	81.6
Overall	**97.7**	**73.5**	**95.2**	**90.2**	**98.0**	**70.1**

Source: HDR Survey, 2013.

status of children. Globally, India happens to be one of the worst performers in reducing childhood undernutrition, and contributes a major proportion to the global burden of undernourished children. More importantly, and unlike most other indicators of population, health and development, child undernutrition levels in India and across most states exhibit a sluggish trend of improvement over the past decade, raising concerns. There is also the question of the apparent association between undernutrition and poverty or improvement in health services and programmes.

For a country with child undernutrition levels of India's magnitude, it is surprising that the country still lacks in creating a robust data system to track the situation of child undernutrition. The last nationally representative figures date back to about a decade –to that of the NFHS 3 in 2005-06, although there has been smaller, micro-level estimates based on small-scale surveys.

One of the major focuses of the HDR survey, 2013, was to conduct anthropometric measurements for pre-school children (0-6 years) across all districts, and derive estimates for child undernutrition status, with suitable disaggregation. Accordingly, based on the survey data, three common anthropometric indicators – height-for-age (HAZ), weight-

Table 5.6: Child undernutrition in Assam and districts, 2013 (% children aged 0-59 months)

Districts	Stunting	Underweight	Wasting
Baksa	51.5	38.1	16.1
Barpeta	82.1	28.4	5.6
Bongaigaon	44.1	39.7	18.4
Cachar	49.1	38.1	21.3
Chirang	19.3	17.7	8.8
Darrang	54.5	39.1	13.9
Dhemaji	47.5	46.9	25.7
Dhubri	58.8	47.1	19.2
Dibrugarh	37.0	35.2	13.8
Goalpara	77.9	48.8	15.7
Golaghat	56.3	36.1	13.9
Hailakandi	55.5	62.0	29.2
Jorhat	50.0	21.0	10.0
Kamrup	50.9	31.9	13.9
Kamrup Metropolitan	32.1	19.2	10.7
Karbi Anglong	36.9	31.6	4.9
Karimganj	50.8	48.6	31.1
Kokrajhar	55.1	34.6	14.4
Lakhimpur	44.4	35.4	18.5
Marigaon	74.2	29.9	10.6
Nagaon	67.0	42.6	17.6
Nalbari	47.5	28.9	13.1
Sibsagar	49.2	27.1	10.8
Sonitpur	47.1	34.5	22.3
Tinsukia	48.8	36.5	18.6
Udalguri	50.2	38.7	16.7
Total	**53.9**	**37.4**	**16.9**

Source: HDR Survey, 2013.

for-age (WAZ), and weight-for-height (WHZ) – were calculated[28]. Of these indicators, HAZ is used to denote stunting, or low height for age, considered as an indicator of chronic forms of undernutrition; WHZ, or lower weight corresponding to height, stands for wasting, or more acute or current forms of undernutrition; the last indicator, WAZ, or low weight for age, denoted underweight, and implies both acute and chronic forms of undernutrition. Estimates for the three undernutrition indicators, for all districts, are presented in Table 5.6.

The estimate indicates that, in the state, 54 percent children are in the condition of stunting and 17 percent are wasting and 37 percent children are underweight[29]. The emerging pattern of child undernutrition in the state clearly indicates an extremely worrying scenario. These results are quite contrary to

[28] The calculation of these three anthropometric indicators were done using the raw height (in centimeter) and weight (in kg) data collected during the survey. To calculate the indicators from the raw data, the STATA macro provided by WHO ('igrowup_standard') has been used. Details on the macro and how the indicators are calculated are available from the WHO Child Growth Standards http://www.who.int/childgrowth/software/en/. While the (0-5 years) sample initially comprised 16,998 children, after adjusting for missing information on age, or height/weight, and excluding cases having values outside the prescribed WHO ranges for each of the indicators, the computations were based on 12,716 cases for HAZ, 12,153 cases for WHZ, and 15,449 for WAZ.

[29] It may be noted that the HDR survey estimates are based on a nearly 10-fold higher sample than NFHS 3, and hence the results are robust enough.

Table 5.7: Nutritional status of children in Assam, selected characteristics

Attributes	Stunting	Wasting	Underweight
Sex			
Male	55.0	17.7	39.0
Female	52.9	16.1	35.7
Age Groups			
0-12	53.5	19.4	48.7
13-24	58.5	18.7	40.5
25-36	56.4	18.4	38.0
37-48	50.3	17.8	32.6
49-60	48.9	15.3	28.2
Residence			
Rural	55.0	17.1	38.2
Urban	44.3	15.6	30.4
Geophysical Diversity Categories			
Char	61.8	14.7	37.9
Flood-affected	49.7	17.3	33.7
Hill	36.6	4.9	28.3
Tea-garden	46.8	18.2	33.6
Border	47.4	22.3	39.8
Multiple diversities	55.1	24.6	45.8
General	66.1	12.6	37.7
MPCE Quintiles			
1st	57.8	16.1	39.3
2nd	55.4	17.4	38.4
3rd	52.7	16.4	36.6
4th	50.9	17.8	36.5
5th	41.2	15.6	29.8

Source: HDR Survey, 2013.

the reduction in poverty, improvements in education as well as considerable expansion of health and other social services across the state.

As for the districts in the state, the proportion of underweight children, which we may consider as a summary indicator of child undernutrition, is very high in the districts of Hailakandi, Goalpara, Karimganj, Dhubri, Dhemaji, Nagaon, Bongaigaon and Cachar, where two out of every five children in the age-group of 0-5 years are underweight. Even for other districts, the scenario is far from encouraging: in 10 other districts at least a third of the children are underweight. The overall scenario appears to be relatively better in Chirang, Kamrup Metro, Jorhat, Sibsagar, Nalbari, Karbi Anglong, Dibrugarh, Lakhimpur and Tinsukia.

A considerable variation in the proportion of undernourished children could also be noticed across other geographical diversity categories, and other socio-economic parameters (Table 5.7). Adverse nutritional outcomes are higher among male children, and lower among older children. In fact, it is noted with great concern that nearly half the infants (below 1 year) are underweight, likely indicating an impact of maternal undernutrition leading to low birth-weights. Expectedly, all three forms of nutritional

indicators indicate a higher burden in rural areas, but even urban levels are substantial. In the same vein, it is noted that, although the difference in proportion of undernourished children is considerable between the two extremes of economic status denoted by the lowest and highest MPCE quintile, average levels of undernutrition are considerable even among the wealthiest; three children in 10, in the top most quintile are found to be underweight, signalling factors other than income, education and living standards to be playing a significant role in shaping nutritional outcomes among children in Assam, underlying areas for further deep probing.

5.3 Coverage of Health and Nutrition Services and Equity in Access

In line with the renewed global commitment to ensure 'Health for All', there has been a marked move in the national health policy towards Universal Health Coverage (UHC). Evidently, UHC embodies a vision to ensure the availability and accessibility of health services at affordable costs, which, in turn, lead to health outcomes that are equitable across income groups, social status, occupations/ livelihoods, religion and ethnicity, or any other disaggregation. The underlying objective is to improve health outcomes across population groups, reduce financial risks associated with ill-health, and ensure equity in access. The UHC vision in India proposes that every citizen be entitled to essential primary, secondary and tertiary healthcare services, guaranteed by the state[30]. Within this vision, the government is mandated to act as not only the provider of health and related services, but also the guarantor and enabler. In this context, Assam appears to be uniquely poised with several pioneering steps, capped by the promulgation of the Public Health Act 2011.

5.3.1 Availability and Adequacy of Health Services in Assam

5.3.1.1 Government Health Facilities

The health system in Assam is organised in a similar manner as in the rest of India. Typically, the government healthcare system is organised in hierarchically, starting with the Sub-Health Centres sequentially leading to a network of Primary Health Centres (PHCs) and Block Primary Health Centres (BPHCs), Community Health Centres (CHCs), and the District Hospitals (DHs). The CHCs and DHs constitute the secondary level of healthcare services, with medical college hospitals, regional centres and other specialty hospitals bringing up the tertiary level. The system also comprises informal medical care providers with little or no formal knowledge and training. In urban areas, self-medication tends to be rife with drug-stores and pharmacies often assuming the role of a dispensing chemist. The *pluralist* system is completed by both qualified as well as unqualified practitioners in traditional systems of medicine such as *unani* and *ayurveda* as well as homeopathy.

Assam currently has 5,736 public health institutions, comprising six medical colleges, 25 DHs, 13 sub-divisional hospitals (at the level of CHCs), 108 CHCs, 975 PHCs and 4,609 Sub-Health Centres (Table 5.8). Among these facilities, in 2014, there were 1,088 hospitals with 7,504 beds in rural areas of the state, and 49 hospitals in urban areas with 5,877 beds, thereby leading to a population per

[30] Recommendations of the High-Level Expert Group (HLEG) on Universal Health Coverage, 2011

Table 5.8: Public health infrastructure in Assam

District	Medical College	DH	SDCH	CHC	PHC	Sub-Health Centre	Total No. of Health Institutions
Barpeta	1	1	1	6	50	264	323
Baksa	0	1	0	4	39	157	201
Bongaigaon	0	1	0	2	30	57	90
Cachar	1	1	0	1	30	270	303
Chirang	0	1	0	2	25	83	111
Darrang	0	1	0	4	30	170	205
Dhemaji	0	1	0	3	21	98	123
Dhubri	0	1	1	6	43	246	297
Dibrugarh	1	0	0	5	25	231	262
Goalpara	0	1	0	2	41	151	195
Golaghat	0	1	1	4	40	144	190
Hailakandi	0	1	0	2	12	105	120
Jorhat	1	0	2	4	42	144	193
Kamrup(metro)	2	1	0	3	25	51	82
Kamrup	0	1	1	9	70	280	361
Karbi Anglong	0	1	1	5	47	152	206
Karimganj	0	1	0	2	27	221	251
Kokrajhar	0	1	1	4	45	159	210
Lakhimpur	0	1	1	5	28	156	191
Marigaon	0	1	0	2	33	123	159
Nagaon	0	1	0	11	74	357	443
Nalbari	0	1	0	7	45	121	174
Dima Hasao	0	1	0	2	11	65	79
Sibsagar	0	1	2	2	42	219	266
Sonitpur	0	1	2	3	53	274	333
Tinsukia	0	1	0	5	23	164	193
Udalguri	0	1	0	3	24	147	175
Assam	6	25	13	108	975	4,609	5,736

Source: State Health Society, National Health Mission, Assam.

hospital figure of 27,545, with one hospital bed available for an average of 2,341 individuals of the state[31]. This indicates considerable progress in a short time-span of four years by the state government in adding more beds to existing facilities, as in 2010 each government hospitals served a population of 19,486, with one bed per 3,911 individuals.

Some additional insights on the adequacy of the available health facilities in the public sector could be gleaned from Rural Health Statistics in India – 2012. According to this report, only about half the PHCs (52percent) in Assam have at least four beds – a requirement under the Indian Public Health Standards and the National Rural Health Mission (NRHM) – and 60percent of the CHCs have at least 30 beds. The national average remains considerably high at 67percent of the PHCs and 71percent of the CHCs having the recommended infrastructure in terms of availability of the beds[32]. Furthermore, there is a 21percent shortfall in the number of sub-centres and 54percentin CHCs in the state, as

[31] Ministry of Health and Family Welfare (2013).'Health Infrastructure' in National Health Profile – 2014, Central Bureau of Health Intelligence, Director-General of Health Services, Ministry of Health and Family Welfare, Government of India. Available online at http://www.cbhidghs.nic.in/writereaddata/mainlinkFile/Health%20Infrastructure-2013.pdf(accessed on 11 August 2014).

[32] R See Ministry of Health and Family Welfare(2012). Rural Health Statistics in India 2012. Available online at http://mohfw.nic.in/WriteReadData/l892s/8551027042RHS%202012.pdf (accessed on 11 August 2014).

per the number required based on population coverage norms.

5.3.1.2 Health Human Resources

There are about 1,500 physicians available across the 975 PHCs in Assam, and 275 specialists posted in the 109 CHCs[33]. According to Rural Health Statistics 2012, of the 975 PHCs in Assam, 78 had four or more doctors, 102 had three, 379 had two, and 416 ran with only one doctor. However, in 373 of these PHCs, no female doctors were available. Moving up towards a higher facility level, against the 109 required positions of surgeons across the CHCs, only 24 positions were filled, leaving more than two-third of these facilities without the services of a surgeon. The scenario is marginally better in the case of obstetricians/gynaecologists; about two-third of the CHCs (60) have specialists. It may be noted that although such shortfalls may constitute a crucial handicap for Assam – more so because of the state is a high maternal mortality area – the state's figures are much better than the national average.

The scenario for other paramedical and technical staff, as well as health workers, at different levels of government health facilities in Assam presents a mixed picture. Across the 109 CHCs, 256 medical officers, 65 radiographers (a shortfall of 44 from the sanctioned positions), 1,303 pharmacists (a surplus of 46 positions), 1,243 lab technicians (a surplus of nearly 400 technicians) are in place (2012). Regarding nurses, against the sanctioned strength of 2,798 at the combined PHC and CHC levels, 2,795 nurses are in position. At lower levels of health facilities, and for the cadre of health workers, a considerable surplus manpower, against the recommended and sanctioned strength except for male health workers, is in place. An important achievement for the health administration in the state has been to have a strong Information Technology (IT)-supported health management information system to keep track of the manpower situation at the district level, with a constantly updated database.

Assam has also been a pioneering case in the country to roll out a unique programme to address the critical gap of qualified, trained physicians at the village or sub-centre level, which often forces people to resort to treatment from alternative, informal sources. Backed by the Assam Rural Health Regulatory Authority Act, 2004, the government decided to train educated youth from rural areas with a sandwich training programme to impart basic skills and knowledge on primary healthcare. There are about 400such trained youth already working in the villages. This has huge potential for emerging as a solution to the chronic lament regarding inadequate coverage of formal healthcare at the grassroots.

5.3.2 Service Utilization Patterns and Barriers to Access

5.3.2.1 Health Service Usage and Choice of Health Care Providers

The pattern of usage for different types of healthcare providers – public health facilities, private physicians, clinics and hospitals, untrained medical practitioners, drug stores, traditional healers – provides a good understanding about healthcare utilisation patterns in a community, with the underlying reasons useful in assessing any barriers to access, or 'forced choices', if any. In India, the system is marked by a predominance of the private sector for outpatient care, and that of

[33] Ministry of Health and Family Welfare(2013).'Human Resources in Health Sector' in National Health Profile – 2013, Central Bureau of Health Intelligence, Director-General of Health Services, Ministry of Health and Family Welfare, Govt. of India. Available online at http://www.cbhidghs.nic.in/writereaddata/mainlinkFile/Human%20Resources%20in%20Health%20Sector-2013.pdf (accessed on 11 August 2014).

public hospitals for inpatient medical care. Again, it is a well-acknowledged fact that for outpatient, non-hospitalised health service usage, the primary point of care across vast swathes of rural areas and also among low-income urban areas, are mostly unqualified, informal practitioners[34]. Moreover, a sizeable volume of research unequivocally argues that healthcare utilisation in India –both preventive and curative– is characterised by a marked variation in service usage or myriad inequalities[35].

a) Outpatient Care Utilisation

The HDR survey (2013) collected data on recent health service use, separately for short-term and chronic illnesses, under outpatient care and hospitalisation episodes. For short-term illnesses, 56percent of ailing individuals used government health facilities and 27percent private physicians and clinics for treatment, while another 16percent relied on informal healthcare providers or pharmacies/self-medication (Table 5.9).

Table 5.9: Type of healthcare provider for short-term and chronic morbidities

District	Short-term Morbidities			Chronic Morbidities	
	Informal Practitioners/ Drug Stores	Govt. facilities	Private physicians/ Clinics	Govt. facilities	Private physicians/ Clinics
Baksa	60.4	26.1	13.5	50.6	42.2
Barpeta	11.5	18.9	69.0	67.1	29.8
Bongaigaon	3.2	59.6	35.7	56.0	39.7
Cachar	32.9	30.1	35.8	28.8	59.6
Darrang	12.5	75.0	12.2	77.1	-
Dhemaji	17.1	38.4	44.4	50.9	43.1
Dhubri	8.9	66.3	24.9	42.2	50.7
Dibrugarh	5.0	82.4	12.6	57.5	39.7
Goalpara	5.6	89.3	5.1	85.7	-
Golaghat	7.2	25.3	67.5	64.9	30.8
Hailakandi	21.6	59.8	18.6	63.1	35.2
Jorhat	7.7	68.6	22.3	57.0	41.2
Kamrup	4.7	72.0	23.3	62.4	-
Kamrup Metro	11.0	28.7	60.2	19.7	76.5
Karbi Anglong	6.8	73.2	19.8	55.1	35.9
Karimganj	30.6	40.4	27.2	40.9	55.8
Kokrajhar	21.6	70.5	7.9	-	-
Lakhimpur	9.4	66.2	24.4	46.8	46.0
Nagaon	11.8	72.6	15.6	50.1	47.4
Nalbari	2.3	50.0	47.8	43.2	54.9
Sibsagar	12.0	63.3	23.6	64.7	31.0
Sonitpur	6.9	70.1	22.9	59.1	37.0
Tinsukia	11.4	47.9	40.6	36.3	56.1
Udalguri	24.0	65.9	9.4	62.0	36.0
Total	15.7	56.6	27.3	50.6	42.2

Source: HDR Survey, 2013.

[34] Bloom, G., Kanjilal, B., Peters, D.H., (2008). Regulating health care markets in India and China, Health Affairs, 27(4), pp. 952-963.
[35] See, for example, Balarajan, Y., Selvaraj, Subramanian, S. (2011). Health care and equity in India, Lancet, February 5, 377 (9764), pp. 505-515. Also, Prinja, S., Kanavos, P., Kumar, R. (2012). Health care inequities in north India: Role of public sector in universalizing health care, Indian J Med Res, 136, September 2012, pp. 421-431; Mahal A., Yazbeck A.S., Peters D.H., Ramana G.N.V. (2001). The poor and health service use in India. Washington, DC: The World Bank; Levesque, J-F, Haddad, S., Narayana, D., Fournier, P. (2006). Outpatient care utilization in urban Kerala, India. Health Policy Planning2006, pp. 289-301.

A strong economic gradient, highlighting higher usage of public facilities, is evident among the poorer economic classes; about two-thirds of the ailing individuals from the two poorest quintiles (67percent and 66percent) reported use of public facilities as against about every alternate individual (50percent) in the fourth quintile and about a third in the richest class (35percent). A converse trend is evident for private care providers. In urban areas, the service mix appears evenly split between public and private facilities (44percent and 45percent), but the share of the former was higher in rural areas (58percent, with 25percent using private services). A considerable variation in the use of public facilities could be noticed across districts (Table 5.9).

Table 5.10 shows the disaggregation across the spatial diversity categories. As seen earlier, in more vulnerable areas such as flood-affected areas or in Chars, with higher illness burdens, a mixed utilisation pattern with a relatively higher usage of public health facilities could be noted. However, close to one in every five ailing persons in border areas or in flood-affected areas resorted to informal providers, which suggests unmet needs in these vulnerable pockets.

For chronic ailments requiring outpatient care, the usage patterns were broadly similar but with a tendency towards higher private care usage. Among the spatial diversity categories, in all areas except the Chars, usage of private physicians has been evident, particularly in the border areas. In urban areas, more than two-third of the cases of chronic illnesses are treated by private providers;even in rural areas, two out of every five individuals suffering from chronic ailments visit private providers. However, in terms of economic capacities, a clear rich-poor divide is evident in the service usage pattern.

In short, patterns evident from the HDR survey data for outpatient care reveal considerable reliance on government health facilities in Assam, more among the poorer socio-economic groups and in rural areas. Notably, while some degree of preference for informal providers could be seen for common, short-term ailments, formal private physicians were preferred for chronic ailments. Apparently, the utilisation pattern seems quite progressive.

The HDR survey also allows assessment of the reasons for choice of healthcare providers. The results are revealing, and reinforce established facts: users of public facilities for outpatient care do so because of lower costs of treatment, while their counterparts opting for private care instead are more influenced by strong perceptions of better quality of treatment

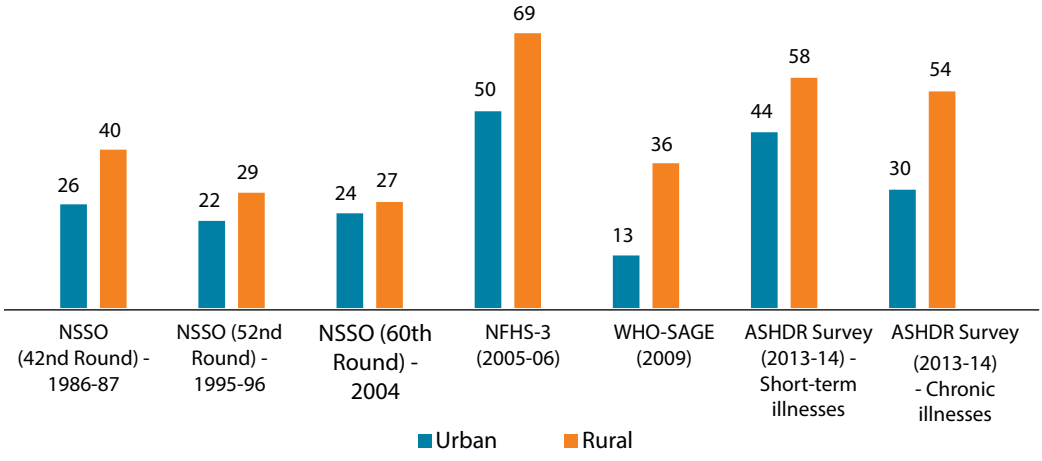
Table 5.10: Type of healthcare provider by spatial diversity categories

Diversity Category	Short-term Morbidities			Chronic Morbidities		
	Informal Practitioners/ Drug Stores	Govt. facilities	Private physicians/ Clinics	Informal Practitioners/ Drug Stores	Govt. facilities	Private physicians/ Clinics
Char	9.7	59.6	30.4	3.4	62.0	34.6
Flood-affected	19.7	62.6	17.5	6.3	56.8	36.9
Hill	7.0	77.0	16.0	6.7	59.3	34.0
Tea-garden	10.8	64.3	24.4	4.9	60.2	34.9
Border	19.7	56.6	23.1	5.3	48.8	45.9
Multiple diversities	10.5	60.1	29.5	6.7	49.3	44.1
General	26.5	46.1	27.1	4.6	49.6	45.9

Source: HDR Survey, 2013.

Figure 5.7: Utilisation of government health facilities for outpatient care in Assam

(In percent)

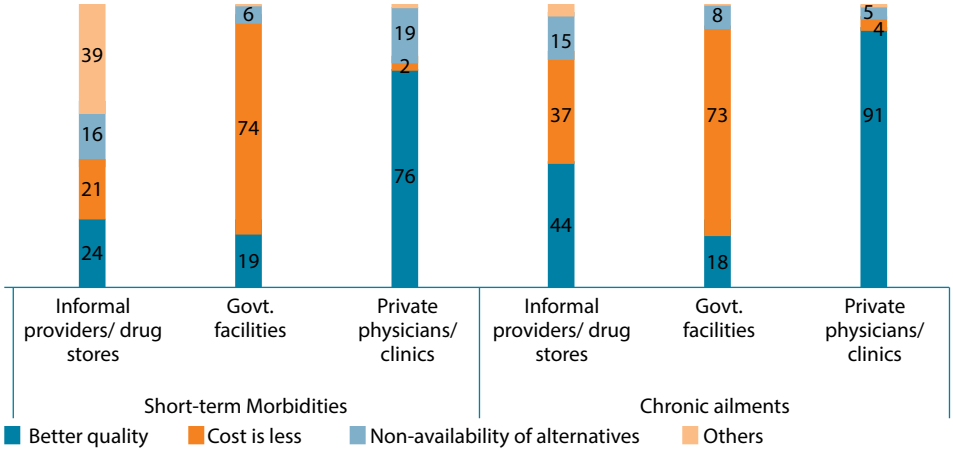


being available from private providers. For users of the third type of healthcare provider – the informal practitioners and drug stores – there appears to be a near-equal split across both quality and cost concerns with less than a fifth stating having no other alternative as the main reason to explain their treatment-seeking behaviour (Figure 5.8).

b) Hospitalisation

The HDR survey data further reveal that hospitalisation in Assam is predominantly in public hospitals with only about 11percent being admitted in private hospitals. However, utilisation patterns are suggestive of a likely 'crowding-out' of the poor by the wealthier groups from accessing public hospitals. Usage of public hospitals in the two bottom MPCE quintiles (88percent for the lowest quintile, and 86percent in the lower-middle group) is lower than the two highest quintiles (92percent in the fourth, 89percent in the richest quintile). Such a pattern is suggestive of inequity in inpatient care in Assam, which contradicts the principle of benefit incidence of public services in high-

Figure 5.8: Reasons for healthcare provider choices for outpatient care in Assam



cost medical care such as hospitalisation to be oriented more towards the poor. Also, as is reviewed in the following section, such inequities can unsettle the desired benefits and impact of public hospital-based financial risk protection schemes. The data also suggest that, while use of and reliance on public hospitals for inpatient stays has been consistently high across all geographical diversity areas of the state, it is found to be lowest in the case of the Charareas, most likely due to seasonal inaccessibility and other barriers to access, which needs to be adequately addressed, again for equity concerns.

5.3.2.2 Health Service Utilisation for Maternal and Child Health Care

The chapter began by highlighting high MMR and IMR in the state. In view of such a high-burden setting, the scenario of Maternal and Child Health (MCH) care in the state and uptake of services being offered as a part of government programmes, remains a key source of assessment, and is a useful metric to monitor progress in ensuring universal access to services.

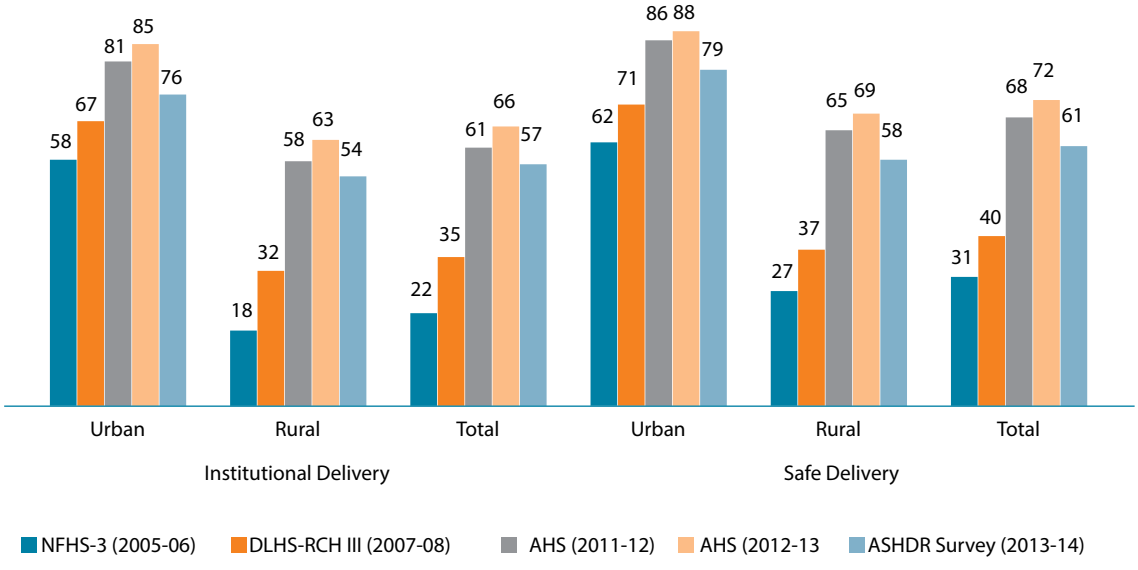
a) Institutional Delivery

Assam had been lagging in terms of coverage of institutional deliveries for pregnant women. Nearly decade-old estimates from the NFHS-3 (2005-06) had placed Assam among five states with lowest coverage of deliveries in health facilities. However, the state made consistent progress in terms of increasing coverage of institutional deliveries as well as safe deliveries (that is, deliveries at institutions plus those attended by any skilled health personnel) (Figure 5.9).

Notwithstanding this, the HDR survey indicates that nearly half of pregnant women in the state (43percent overall, and 46percent in rural areas) continue to deliver their babies at home[36], thus constituting a significant proportion of out-of-coverage women, with potential risk of adverse

Figure 5.9: Trends in delivery care coverage in Assam (2005-14)

(In percent)



[36] Based on pregnancy histories for 15,823 childbirths occurring to 10,281 women in five years (2008-09 to 2013-14) in the state.

health and survival outcomes. Apart from urban-rural and inter-district variations in the proportion of in-facility deliveries, a differential likelihood of accessing institutional facilities for childbirth could be noticed across the diverse spatial categories. The HDR data reveal that the institutional delivery rate is extremely low in the hills (24percent) and also in the Char regions (48 percent) with accessibility appearing to be a major bottleneck. The proportion of institutional deliveries is also lower in border areas (58percent), and in areas with multiple geophysical diversities (53percent), but found to be better in tea garden areas (70percent). A finding that emerges from the analysis is the profound importance of mother's education;a woman with secondary-level education or above is nearly twice as likely to deliver her babies in health facilities rather than at home.

From the perspective of the 'continuum of care' for MCH services, inadequate and inequitable coverage of institutional care for childbirth could be traced to gaps in ensuring equitable and universal coverage of Ante-Natal Care (ANC) services and screening during pregnancy or, for that matter, establishing a formal contact of the pregnant woman with the health system. For the common service indicator for ANC, Assam's performance is deplorable at best. As per AHS (2012-13) figures, less than one in every five women (18percent) in Assam receives full ANC check-ups, with even a little more than one in every four women (27percent) in urban areas receiving such services. Clearly, a significant scaling-up of ANC coverage among pregnant women should constitute the core strategy to establish the much-valued contact with the women by the health system, and influence deliveries being conducted in health facilities. The recently launched nationwide Mother and Child Tracking System can form a useful basis for such continuous screening and contact, as a strong commitment towards ensuring universal coverage of MCH services in the state.

b) Child Immunisation

The other key indicator of MCH care utilisation and coverage is immunisation of children against vaccine-preventable illnesses. However, similar to delivery care, Assam's performance in extending universal immunisation coverage is far from encouraging. In 2005-06, Assam had the lowest levels of full immunisation (31percent) – children aged 12-23 months receiving all recommended dosages of vaccines – in the country (IIPS 2008). The scenario somewhat improved within a couple of years, corresponding to the initial years of the NRHM, as the DLHS-RCH III (2007-08) indicates that nearly half the children received all vaccinations, with a higher reported level among children with better-educated mothers, or from wealthier households (IIPS &MoH&FW 2010). The more recent AHS data indicate that full immunisation coverage in Assam had climbed up to 64percent in 2012-13.

5.3.2.3Utilisation of Anganwadi Centres and Quality of Services

In view of the observation made earlier in this chapter on the high burden of child undernutrition in Assam, it is imperative to assess the role of public interventions – the foremost being the Anganwadi Centres (AWCs) under the Integrated Child Development Services (ICDS) scheme – which aims at mitigating all risks through proper care, provision of supplementary nutrition, use of behaviour change communications, and ensuring proper medical care and rehabilitation for the severely malnourished children.

According to the HDR survey data, nearly three-fourths of the households having children have enrolled their wards at the local AWC. The enrolment patterns also appear to be equitable, with the proportion of children enrolled being higher in households with lower incomes.

Notably, enrolment rates were much lower in districts in which undernutrition rates were found to be high. These include Karimganj (54percent) and Dhubri (64percent), apart from Nalbari (67percent), Cachar (68percent) and Bongaigaon (69percent). Those who have not enrolled children in the AWCs cite poor quality of services and non-functional centres as the main reasons.

Respondents or care-givers to the children were asked in the HDR survey about their perceptions on a few aspects of services their children have received from the AWCs, based on their observations during visits to the AWCs during three months prior to the survey. Regarding the overall quality of services, 51percentratedthem as good quality, 46percentaverage and only about 2percentas bad. Similarly, most children (88percent) reportedly received hot, cooked food as supplementary nutrition or as take-home rations, and three-quarters of the respondents reported having received an explanation about the growth charts of their children. However, it is evident that, in terms of providing key behavioural messages such as food to be given to the children – in terms of both quality and quantity – and appropriate to the child's age, identifying danger signs of undernutrition, or hygienic practices to be followed while cooking/preparing meals, not enough is being done. Only about 65percent received all the relevant messages, while nearly a fifth (18percent) received none. This remains a largely neglected dimension of the ICDS programme, and it may be noted that being the only programmatic response against child undernutrition, this aspect of behavioural changes must be accorded high importance as a crucial strategy to address the issue.

5.4 Financing Healthcare and Financial Risk Protection against Health Shocks

Besides ensuring equitable access to and coverage of healthcare services, a core aspect of health system responsiveness is to reduce barriers to financial accessibility and extension of adequate, effective risk protection against the financial impact arising from illness. This section deals with the major components of health financing in Assam, and assesses the adequacy of financial risk protection mechanisms among the poor, in particular. A useful starting point is to examine the government spending pattern on health and healthcare services in the state.

5.4.1 Public Spending on Health and Healthcare Services

Public spending on health and related services in Assam accrues from two major sources—directly from the state government and as support from the central government for centrally-sponsored schemes or national programmes such as the various schemes nested under the NHM umbrella.

Based on the details of revenue and capital expenditure provided by the Reserve Bank of India (RBI), outlays on medical and public health and family welfare, as a percentage of the state's total social sector budgetary expenditure, reveal a decline from 16percent in 2008-09 to 11percent in 2012-13, including other related sectors such as drinking water and sanitation, and nutrition from 27percent to 17percent in the state. Similarly, as a proportion of the state's total development sector outlay, the

state government's expenditure on health has also fallen from 9percent to about 7percent[37]. A comparative account of state expenditure patterns over the years provided by the RBI also indicates a similar trend in public spending on medical and public health and family welfare in Assam. Since 2000-01, the share of this sector as a ratio to the state's aggregate expenditure averaged around 4.2percent, primarily due to three consecutive spike years from 2008-11, where the outlays were over 5percent.

A major component of public expenditure in the health sector in the recent years has been the flow of funds to the states under the NRHM. Funds are directed by the centre to the State Health Society, with the state contributing to 15percent of the annual approved budget. Funds under NRHM are mostly linked with specific sub-sectors within the health sector such as reproductive and child health, child immunisation, infrastructure and maintenance and a flexi-pool of funds. An analysis of the NRHM funds flowing to Assam during five years shows that the annual outlays have increased between 2009-10 to 2013-14 by a modest 27percent (including the state's shares) - from INR 10.03 billion in 2009-10 to INR 12.73 billion in 2013-14.

The absence of a regular system of National Health Accounts (NHA) in India prevents any comparisons of the relative role of public financingvis-à-vis private, mostly out-of-pocket spending on health and healthcare services. The most recent NHA published in 2009 pertain to data till 2004-05, when the last National Health Survey (containing private health expenditure data) was conducted by the NSSO(60th Round). According to this report, per capita public expenditure in Assam was 162 as of 2004-05, with private expenditure on health being much higher at 612[38]. Recently, the Ministry of Health and Family Welfare, Government of India, had provided some estimates of the per capita 'health expenditure', according to which Assam's was at INR 471, as compared to the national average of INR 503[39].

5.4.2 Private Spending on Health and Healthcare Services

In India, the dominant mode of healthcare financing is private, and largely borne out of pocket. For the poor, evidence suggests 'distress financing' of healthcare in the wake of unforeseen – and often hefty – expenditures on medical treatment, and resort to informal credit or, at times, usurious credit from moneylenders, or selling of assets. Such risky means of financing healthcare can wreak havoc on consumption flows and lead to wider welfare outcomes: dropouts from schools, postponement of marriage and other social obligations are not uncommon among the poor.

According to the HDR survey, households in Assam spend about INR 4,517 on an average annually on medical care, with the average for in-patient care going up to INR23,784, and that for outpatient consultations being INR1,898. Considerable variations exist across districts, with expenditures tending to be high in the upper Assam districts (Table 5.11).

Adjusting healthcare expenditures for the levels of aggregate consumption expenditure, and non-food consumption expenditure across the households, is more insightful in order to compare their differentials across socio-economic groups, and across geographic regions. An analysis of the HDR data indicates

[37] Based on RBI's annual publication, State Finances: A Study of Budgets. Available online at http://www.rbi.org.in/scripts/AnnualPublications.aspx?head=State+Finances+%3a+A+Study+of+Budgets
[38] Health Finance Indicators, 2013: National Health Profile 2013. See http://cbhidghs.nic.in/writereaddata/mainlinkFile/Health%20Finance%20Indicators-2013.pdf
[39] http://pib.nic.in/newsite/erelease.aspx?relid=56240.(Accessed 15 August 2014).

Table 5.11: Household healthcare expenditure in Assam and districts (INR)

Districts	In-patient care Expenditure	Out-patient care Expenditure	Aggregate Healthcare Expenditure
Baksa	33,670	2,020	4,789
Barpeta	24,313	1,093	1,218
Bongaigaon	27,160	2,375	6,344
Cachar	16,681	2,190	4,406
Darrang	22,342	926	3,204
Dhemaji	29,412	2,236	9,722
Dhubri	18,131	1186	2,494
Dibrugarh	22,627	2165	7,285
Goalpara	13,200	1154	1,377
Golaghat	15,500	1787	4,487
Hailakandi	18,944	2156	7,002
Jorhat	21,131	1,614	4,127
Kamrup	29,476	2,820	4,755
Kamrup (M)	45,375	4,182	12,585
Karbi Anglong	9,385	2,153	2,934
Karimganj	16,459	1,655	2,719
Kokrajhar	72,967	827	1,847
Lakhimpur	29,014	3,378	17,075
Marigaon	18,300	964	2,733
Nagaon	30,846	1,380	3,554
Nalbari	13793	3,256	5,796
Sibsagar	28928	2,239	7,622
Sonitpur	22525	3,571	5,878
Tinsukia	12,694	2,175	3,940
Udalguri	11,768	1,251	3,133
Total	23,784	1,898	4,517

Source: HDR Survey, 2013.

that, on an average, people in Assam spend about 13percent of the annual earnings on medical care, with slightly higher proportional outlays noticed in rural (14percent) as compared to urban (11percent) areas. However, across the MPCE quintiles, proportional healthcare expenditures were seen to fall slowly with an increase in income, but rising up to the highest level at the richest quintile. According to the geophysical regions, no significant differentials could be observed, except that it tends to be high in tea-garden and border areas (about 15percent in each case).

It is also revealed that cutting across income classes, the dominant form of financing cost of healthcare in Assam is out of pocket (Table 5.12). However, for about a fifth of cases, with a marginally higher incidence among the poorest, borrowing from friends and neighbours could

Table 5.12: Sources of financing household healthcare expenditures (in %)

Sources of Financing	MPCE Quintiles					All
	1st	2nd	3rd	4th	5th	
Self-income	70.2	70.5	72.2	72.2	71.9	71.4
Borrowings from relatives/neighbours	20.3	19.5	18.0	18.6	18.9	19.0
Loans from moneylenders	7.8	7.3	7.5	7.1	6.9	7.3
Financial support from Panchayati Raj Institutions under Illness Assistance Fund	0.1	0.1	0.1	0.1	0.1	0.1
Sell/pawning assets	0.8	0.8	0.7	0.8	0.4	0.7
Loans/advances from employers/Self Help Groups	1.0	1.9	1.5	1.2	1.9	1.5

Source: HDR Survey, 2013.

be seen, with less than 10percent resorting to borrowing from moneylenders.

The flagship national health insurance programme for the poor – the Rashtriya Swasthya Bima Yojana (RSBY) – is yet to witness a full-fledged roll-out in the state, with the programme being in its first year of launch in most districts. Echoing such concerns, the HDR survey found that while about 8percent of households were aware about their enrolment eligibility under RSBY, only about half of these families has valid RSBY 'Smart Cards'. Apart from RSBY, the state government had started a health insurance programme of its own – *Mukhya Mantri Jiban Jyoti Bima Asoni* – where eligible persons (annual incomes less than INR 200,000, and not employed in the public or formal private sector) shall be able to claim financial assistance both for medical treatment and in case of injury caused due to accidents as per the prescribed norms. The scheme is implemented by the Government of Assam through a partnership with ICICI Lombard General Insurance Company, with a sum assured for each person INR50,000 in case of accidental death and INR25,000 for any health-related eventuality. However, indications of some bottlenecks preventing the desired reach of the scheme to the beneficiaries is also apparent from the results of the HDR survey: while about 27percent of the respondents were aware about the scheme, less than 3 percent had received any benefits.

The above findings lead to a few emerging facts regarding private healthcare financing in Assam. Firstly, formal means of financial risk protection is grossly inadequate in its coverage, particularly among the poor in the state. Costs of treatment are predominantly met through self-income or past savings, with some forced to resort to other risky means such as loans from moneylenders. This out-of-pocket financed healthcare financing system is contradictory to the notions of universal coverage. More importantly, longer-term consequences of meeting healthcare costs with own income or savings have the risk of disrupting other consumptions as noted earlier, and other core human development aspects such as education or economic well-being.

Secondly, existing evidence does not suggest visible inequity in healthcare expenditures, with proportional expenditure on healthcare out of aggregate consumption expenditure being near-equal across socio-economic and regional clusters. This could be an issue if healthcare consumption itself is inequitable with the poor and otherwise vulnerable populations disproportionately using fewer health services

than required, given the 'need' or burden of diseases or ill-health.

5.5 Summing up

This chapter has discussed at length the current health and nutritional status of the state's population and brought out disparities in terms of socio-economic classes, regions and the unique geophysical diversities of the state, which have a strong impact on shaping livelihoods of the population in these clusters. Recent trends and performance in terms of the key indicators of health outcomes and health service coverage have also been examined. Drawing on data from a large number of sources, and combining official data with household survey data, the scenario of present and emerging challenges for the health system, and gaps in service provision, has been mapped. Lastly, the few notable innovations and achievements in Assam, which have strong potential to significantly improve the overall performance and responsiveness of the health system and address the unique challenges faced by the state have been showcased. Some of the major findings highlighted in this chapter are as follows:

The persistence of high levels of infant mortality, with slower rates of decline as compared to the national average, is posing a major challenge to the state. Very high levels of IMR noted in some districts, call for specific assessments of causes for such high risks. Notably, Assam's unique feature of higher post-neonatal mortality as opposed to the general pattern of higher infant deaths clustered in the first month of birth, indicates the predominance of exogenous risks and influences of living standards and household environments.

Assam has the highest levels of maternal mortality nationally, and one of the highest levels globally in specific regions such as the Upper Assam districts. While official policy documents and PIPs reiterate the state's commitment to reduce avoidable deaths and high-risk pregnancies through a slew of measures combining pregnancy screening, emergency transportation and strengthening of first referral units to provide emergency obstetric care, gaps remain. While inadequate demand for maternal healthcare – reflected in very low rates of ante-natal care-seeking behaviour and persisting low levels of institutional deliveries in some regions – has been a major barrier to increase the health system's coverage in this high-priority area, comprehensive strengthening of the reproductive and child health programme in the state remains yet to be achieved.

The scenario of burden of diseases in the state, and its differentials across socio-economic groups and geographic regions, indicates that Assam is uniquely poised in the midst of an epidemiological transition with the co-existence of both communicable and non-communicable diseases. However, while the former are more prevalent among the lower-income groups, the wealthier groups are found to suffer from very high prevalence of NCDs. Notably, in areas such as those affected by floods and in tea-garden areas, a high prevalence of NCDs could be observed. The chapter has also noted a high, growing prevalence of chronic conditions such as hypertension and diabetes, denoting higher risks for a host of NCDs; that such conditions are spreading at an equally strong pace in rural areas and among lower income groups, places tough challenges on the health system to respond effectively and efficiently, in order to smoothen both physiological and economic impacts of these health conditions with long-term consequences. In this connection, the strong influence of health behaviours such as smoking, diets and physical activity habits is noted, with huge ground to be covered

in changing unhealthy behaviours in a comprehensive, prevention-oriented NCD management strategy.

Child undernutrition levels in Assam signify a cause of concern, and evidence little progress in the last decade. More than a third of the children in the state remain underweight, with very high levels of underweight children identified in Hailakandi, Goalpara, Karimganj, Dhubri, Dhemaji, Nagaon, Bongaigaon and Cachar. On a significant note, the results from the nutrition survey conducted as a part of the HDR exercise find a high burden of childhood undernutrition even in urban areas, and economically better-off households. Given that use of ICDS services is near-satisfactory, the likely gaps exist in influencing behaviours related to infant feeding, diets and other care practices as well as frequency of childhood illnesses.

The utilisation pattern of health services in the state reveals modestly high reliance on public health services for outpatient care, and very high for hospitalisation. Notably, for treatment of chronic conditions and NCDs – for which the state had embarked upon a large-scale ambitious programme of screening at both the population and primary care levels – use of the private sector was high. Reliance on government health facilities is found to be higher in the Chars, flood-affected and tea garden areas, while in border areas private physicians enjoyed a higher usage.

A major area of concern, however, is the lack of formal, institutional insurance and risk-protection mechanisms extending the much-required coverage against health shocks and illnesses, which can be costly and, hence, difficult to be financed solely out of pocket. Although, the survey results do not indicate a higher, disproportionate financial burden arising out of illnesses among the poor, risks of consumption shortfalls and wider human development concerns cannot be ruled out. Coverage of both national as well as state-specific health insurance schemes happen to be low, with a huge scope for scaling-up coverage and encouraging use for priority groups.

6 Gender Dimensions of Human Development

From Differentials to Inequalities

6.1 Introduction

Gender is a primary marker of social and economic stratification as well as myriad exclusions. However, differences in choices made by women and men and, consequently, observed differences in levels of achievements are not always reflective of unequal opportunities faced by them. While trying to examine the gender differentials in achievements, the differential outcomes emanating from differences in personal preferences have to be distinguished from those resulting from a more fundamental denial of opportunities for making choices.[1] Understanding the gender dimension of human development, thus, needs to focus fundamentally on *inequalities* rather than the apparent *differentials*.

Typically, the question of gender equality within the human development framework is addressed by means of the Gender Development Index (GDI) and the Gender Inequality Index (GII). The GDI captures the gap in achievement levels of women and men in three basic dimensions of human development – health, education and income – while the GII provides a measure of inequalities in opportunities among women and men that have a bearing on their ultimate well-being. This chapter aims to highlight some important aspects of underlying gender inequality in the state besides presenting the two indices.

6.2 Gender in Assam - A Background

Although Assam has been eulogised as a society where women enjoy a better position compared to the rest of Indian societies, the historical evidence on the social structures prevalent during pre-Ahom rule, that is, before the 12th century, is, indeed, limited. However, later writings of historians indicate that the tribal way of life was preeminent in Assam Valley during pre-Ahom rule where shifting cultivation was a way of life and women and men were equal partners in economic and social affairs. It was the advent of wet rice cultivation during Ahom rule that brought about changes from a 'shifting' to 'settled' form of agriculture based on the pike system. The shift impacted the pattern of land distribution and had far-reaching repercussions on access to productive resources of women and men in the society[2]. Later, under British colonial rule, social processes in Assam witnessed even stronger re-configurations[3]. In short, while the tribal and hill people continued with their semi-nomadic life, people in the valley gradually became accustomed to an agrarian set up where a growing predominance of occupational rights over agricultural land marginalised the position of women in society. The social formations that prevailed during Ahom rule restrained some of the appalling Hindu practices such as *'sati', infanticide, 'kulinism'* and dowry system in the Brahmaputra Valley. Unlike in other states or regions in India, the caste system could not get a stronghold in the Brahmaputra Valley, perhaps because of the tribal influence and also due to the emergence of neo-Vaishnavism. Though the caste Hindu societies in the valley were exposed to the growing influences of Brahminism since Ahom rule, the practices of child marriage and prohibition of widow remarriage practices did not gain a firm footing in the state. Social practices such as widow remarriage and divorce were permitted among certain communities and marriage by consent of mutual partners was prevalent among the tribal communities of Kacharis, Tiwas and

[1] Kabeer, N. (1999).
[2] See Guha, A. (1980).
[3] See Guha, A. (1967).

other plains tribals in Assam. Nevertheless, the prevalence of the caste system was far stronger in Surma Valley (present day Barak Valley) as it had been largely a part of East Bengal.

The economic well-being of women in the state was determined by contemporary social processes. Unlike in the Surma Valley, women from indigenous Hindu cultivator families in the Brahmaputra Valley, except in the districts of Goalpara and Kamrup, worked regularly in the fields[4]. Though women in the Brahmaputra Valley worked hard in the fields with their male counterparts, especially during transplanting and harvesting, their work went unrecognised as economic activity.[5] However, women were paid workers on tea plantations. Although, women's work continued to be an integral part of the production processes in Assam, the colonial definition of work left a long-lasting impact on society. Recognition of certain activities of women such as spinning and weaving, rice pounding and husking as economic activities while excluding a host of other activities performed by women, particularly those in agriculture, the colonial classification of 'work' constituted elements of gender stereotyping. The question of gender differential and inequality in Assam has to be contextualised within this historical process of social change in the state.

6.3 Women and their Well-being

Differential achievements of men and women often go beyond their biological differences. Individual beliefs, values and perceptions, together with social structures, shape gender-specific roles in society which may limit the freedom of individuals in making choices. This conditions the most elementary ground of inequality in society. The inequality arising out of such conditions is reflected in a range of activities and related levels of achievements attained by men and women on a daily basis or in their lives as a whole.

The freedom to lead a long, healthy and productive life is one of the fundamental requirements of human development. This necessitates a set of entitlements that ensures the survival as well as certain basic minimum quality of life for individuals. These entitlements are represented by a few summary indicators. Among them, life expectancy, sex ratio, fertility and mortality rates are considered as the most fundamental. It is well recognised that women's education and work, autonomy in making reproductive choices and their relative status in the family and community have significant influence on these indicators.

6.3.1 Female Life Expectancy at Birth

In India, both male and female life expectancies at birth have been witnessing steady improvements over the years. The female life expectancy in the country has remained above that of males for quite some time (2002-10) – both for rural and urban areas. A similar trend is also observed in Assam (Table 6.1), even though the female life expectancy at birth continues to be one of the lowest among the major states in India. It is also seen that the rate of increase in the female life expectancy (in percentage term) between 2002-06 to 2006-10 – total, rural and urban – has been more than those of the country's. Notwithstanding this, female life expectancy for rural areas in Assam is the lowest in the country.

[4] Report of the Assam Provincial Banking Enquiry Committee, 1929-30.
[5] Census 1931, for instance, considered them only as 'helpers' and hence, 'dependents' (Census of India, 1931, Assam Part-1 Report, p.122).

Table 6.1: Life expectancy at birth by gender, rural-urban

Place	Year	Total			Rural			Urban		
		Total	Male	Female	Total	Male	Female	Total	Male	Female
Assam	2002-06	58.9	58.6	59.3	57.9	57.7	58.3	67.6	67.1	68.3
	2006-10	61.9	61.0	63.2	61.0	60.2	62.1	68.8	66.9	71.1
India	2002-06	63.5	62.6	64.2	62.1	61.2	62.7	68.8	67.1	70.0
	2006-10	66.1	64.6	67.7	64.9	63.5	66.5	69.6	68.0	71.4

Source: SRS, Registrar General of India, Abridged Life Tables, Various Years.

Table 6.2: Sex ratio in Assam and India (2001-11)

Year	All Population			ST Population			SC Population		
	Total	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban
2001 (Assam)	932	940	878	972	974	929	935	936	929
2011 (Assam)	958	960	946	985	984	996	948	945	963
2001 (India)	933	946	900	978	981	944	936	937	927
2011 (India)	943	949	929	990	991	980	945	945	946

Source: Census 2001, 2011, Registrar General of India.

Higher life expectancy at birth for females reflects better survival conditions for women across all ages (that is, age specific mortality pattern), which indirectly improves the sex ratio for the population in general.

6.3.2 Overall Sex Ratio

The sex ratio is often taken to be an indicator of women's health, nutrition and survival status. The sex ratio in Assam has shown a significant improvement over the last one decade (2001-11) especially in the urban areas which can be partly attributed to improvement in female life expectancy (Table 6.2). There has also been a significant improvement in the overall sex ratios for the ST and SC population even though the sex ratios for STs and SCs in rural areas are lower than the national average. Despite the sex ratio for the STs in the state being higher than the total sex ratio in the state, in the two ST majority districts of Dima Hasao (70.9 percent ST population, Census 2011) and Karbi Anglong (56.3 percent ST population, Census 2011), the sex ratio is not only lower than the ST state average but also less than the total sex ratio in the state.

There has been, however, a significant variation in sex ratios across districts. The sex ratio as per Census 2011 has been found to be worryingly low in Dima Hasao. The HDR survey estimates the sex ratio for the state at 950. The sex ratio in rural areas is found to be953 against that of urban at929. The HDR data estimate sex ratios for Dima Hasao, Kokrajhar, Chirang at particularly low levels (Table 6A.1, Statistical Appendix).

6.2.3 Child Sex Ratio

Even though the overall sex ratio in the state has improved during the last decade, the child (0-6 years) sex ratio during the same period

Table 6.3: Child sex ratios (0-6) in Assam and India (2001-2011)

Place	2001			2011		
	Total	Rural	Urban	Total	Rural	Urban
Assam	965	967	943	962	964	944
India	927	934	906	914	919	902

Source: Census 2001, 2011, Registrar General of India.

has seen a decline[6]. Given the overall decline in the share of child population in the state from 16.87 percent in 2001 to 14.86 percent in the year 2011, the decline in the sex ratio from 965 (2001) to 962 (2011) reflects that all is not well for the girl child in Assam. There are significant variations across districts and six districts --Kamrup (M) (946), Dhemaji (950), Cachar (954), Hailakandi (954), Kokrajhar(954) and Marigaon (956)-- have child sex ratio less than the sex ratio for the total population in the state (Table 6A.2, Statistical Appendix).

The decrease in the sex ratio in this age group has a cascading effect on the population over a period of time which contributes to a gradual decrease in total sex ratio. Migration, which significantly influences the total sex ratio, has but a negligible influence on the child sex ratio. On the contrary, factors that influence the child sex ratio include fertility rates and survival rates for children.

The HDR survey data estimates the child sex ratio in the state at 947. The child sex ratio in urban areas (932) has been found to be lower than that of rural areas (948). The sex ratios of Dima Hasao, Kokrajhar, Kamrup (M) and Chirang have been found to be lower than 900. In terms of the child sex ratio, Dima Hasao (579) and Kokrajhar (735) present a worrisome scenario (Table A5.2, Statistical Appendix). Survey data also reveal that the sex ratio among Muslims (933) is found to be much lower than that of Hindus (957). Sex ratios in the hills (909) and in Char areas (933) are found to be lower than other categories of spatial diversity. It was also found that there is an age group-wise variation in sex ratios.

6.2.4 Fertility Rate for the Women in Assam

The fertility rate in Assam has shown a gradual decline over the years. The SRS (2013) data show that the Total Fertility Rate (TFR) in the state is at par with the national level, the TFR for rural (2.4) and urban (1.5) areas in the state is lower than the all India figure for rural (2.5) and urban (1.8) areas. This decline in the fertility rate is also a contributory reason for a decrease in the share of child population in the state.

It is a well-known fact that fertility decreases with higher levels of educational attainment for women, as women with higher capability have greater opportunities for work participation which, in turn, brings about a change in the fertility behaviour of women. The TFR exhibits a clear gradient with the level of education both in the country and the state (Table 6.4).

As per the SRS data, there is also a significant variation in the fertility rates among rural and urban females besides their educational status. The fertility rate for urban literates is 1.5 and for rural areas it is just below the replacement rate. The decrease in the fertility rate below the

[6] Sex ratio at birth (that is, at 0 age) in India is 910 and 954 in Assam as per Census 2011, single age population data.

Table 6.4: Total fertility rate Assam and India (2013)

Place	Illiterate	Literate							
		Total literate	Without any formal education	Below primary	Primary	Middle	Class X	Class XII	Graduate and above
INDIA									
Total	3.1	2.1	3.2	2.8	2.5	2.2	1.8	1.6	1.7
Rural	3.2	2.3	3.3	2.9	2.6	2.3	2.0	1.7	1.8
Urban	2.5	1.7	2.7	2.4	2.0	1.8	1.6	1.4	1.6
ASSAM									
Total	3.7	2.0	3.4	2.6	2.6	2.2	1.7	1.2	1.1
Rural	3.7	2.1	3.6	2.7	2.6	2.3	1.7	1.3	1.1
Urban	2.1	1.5	1.1	1.9	2.1	1.7	1.4	1.0	1.1

Source: SRS, Abridged Table; 2013.

Table 6.5: Indirectly estimated TFR: Assam

	TFR
Assam	2.0
Rural	2.2
Urban	1.4
Religion	
Hindu	1.7
Muslim	2.9
Christian	1.8
Diversity Criteria	
Char	2.8
Flood	2.0
Hills	1.8
Tea	1.8
Border	2.1
Multiple	2.5
General	2.0

Source: HDR Survey, Assam (2013).

replacement rate is also likely to have an adverse impact on the future population composition and workforce participation rate in the state, especially for women.

The estimated TFR[7] from the HDR data brings out further divides in fertility. It indicates that TFR – which is the average number of children a woman can expect to have in her life given

[7] Method relied on Hauer M., Baker J., Brown, W. (2013). Indirect Estimates of Total Fertility Rate Using Child Woman/Ratio: A Comparison with the Bogue-Palmore Method. PLoS ONE 8(6): e67226. doi:10.1371/journal.pone.0067226.

the current pattern of fertility – tends to be on a higher side in rural areas, particularly in the Char areas and among Muslims (Table 6.5).

As far as the age-specific fertility schedule is concerned, the highest fertility rates for both Assam and India have been found in the age cohort of 20-24 years. However, the age-specific marital fertility schedule indicates that highest marital fertility in Assam is recorded in the teen age cohort of 15-19 years while that in the country happens to be the 20-24 age cohorts (SRS, 2013).

The issue of early marriage and teenage motherhood has also been highlighted by the AHS2012-13. The report shows that 7.4 percent of women in the state reported that they got married before the age of 18 and most of them become mothers quite early. Girls in the age group 15-19 are still adolescents and their physical capability to bear children is fragile.

The HDR survey makes the gender bias more conspicuous in the incidence of early marriage in the state. While about 20 percent of boys get married by 24 years, the proportion is as high as 75 percent for girls (Table 6.6). The percentage of girls getting married within the age group of 15-19 years is higher in rural areas, the Chars in particular and also among Muslims, and gradually declines with the level of education (Table 6.7). The incidence of early marriage among females is the highest in the district of Dhubri. Of the state's total married women in the age group 15-19, eight districts share more than 50 percent. Two districts -- Dhubri and Nagaon -- share the highest percentage with 11.2 percent each (Table 6A.3.4, Statistical Appendix).

Early marriage and teenage motherhood indicate that quite a considerable number of females are deprived of their fair chance to complete education beyond secondary or higher secondary levels. This also increases the risk of child mortality and malnutrition together with maternal mortality in the state. The high incidence of teenage marriage coupled with high teenage pregnancy among females thus poses a major challenge for the well-being of women in the state. It is, thus, obvious that immediate attention is required to bring down the adolescent fertility rate in the state and continuation of girls' education, at least up to the higher secondary level, should occupy policy priority.

While the fertility rate shows the average number of children born to a woman, it is more important to understand women's control over their fertility behaviour. The AHS (2012-13) data on family planning methods currently used by

Table 6.6: Age group-wise married men and women (as % within age cohorts)

Age	Male	Female
15 - 19	1.5	14.6
20 - 24	18.8	60.2
25 - 29	52.8	81.8
30 - 34	76.9	89.5
35 - 39	89.9	91.2
40 - 44	94.5	87.9
45 - 49	95.4	84.9
Total	55.4	70.2

Source: HDR Survey, 2013.

Table 6.7: Married women in 15-19 age group by different categories (in %)

Categories	Percent Women
Rural	15.6
Urban	7.6
Religion	
Hindu	11.1
Muslim	23.3
Christian	8.6
Buddhist	7.5
Social Category	
SC	12.9
ST	12.1
OBC	12.8
General	17.1
Spatial Diversity	
Char	25.3
Flood Affected	13.5
Hills	11.6
Tea Garden	11.4
Border	15.9
Multiple Diversities	16.2
General	13.5
Education level	
Illiterate	38.5
Up to Middle	34.4
Up to Higher Secondary	33.7
Above Higher Secondary	20.0

Source: HDR Survey, 2013.

both men and women in respect of currently married women (15-49) points towards the gendered dimension in control over fertility and sexual behaviour. The data reveal that while 13 percent of females have undergone sterilisation and the percentage for males is only 0.2. Besides, only 3.0 percent of males use condoms but 18.3 percent women consume pills and 1.3 percent women have used Copper-T to restrict unwanted pregnancy. The data are clearly indicative of male preference and control of sexual and fertility behaviour of women.

6.2.5 Maternal Mortality

The grievous scenario of maternal mortality in the state has already been highlighted in the preceding chapter (chapter 5). Several factors contribute to high maternal mortality in the state. As has been pointed out, early marriage and teenage motherhood are possibly two significant contributing factors of the high maternal mortality burden in the state. The other proximate factor could be the prevalence of anaemia among women.

Anaemia has been a major cause of concern in the state for quite some time. Successive rounds of NFHS(I, II and III) have shown that about three-fourth of the women in the state are anaemic. Anaemia is more pronounced among women in the age group of 15-19 years which reflects the high risk associated with teenage motherhood in the state. Anaemic condition of mothers also lead to low birth-weight of children and AHS-2012-13 results indicate that of 66 percent new borns who were weighed at birth, a little over quarter (about 23 percent) of the children weighed less than 2.5 kg at birth with no rural-urban differences.

Therefore, early marriage and pregnancy coupled with anaemic condition stand as a major challenge to the physical and overall well -being of females in the state; low educational attainment of females has compounded the problem further.

6.2.6 Child Mortality and Vulnerability of Girl Child

Assam has the highest IMR in the country along with Madhya Pradesh. The female IMR in the state is also the highest (55) in the country along with Madhya Pradesh. Besides, there is also a wide rural urban difference in IMR for both males and females[8] in the state and female IMR for rural Assam is the highest for rural areas across different districts. Also the age-specific death rate for females below one year of age in rural Assam (60) is higher than her male (57.1) counterpart but, in urban areas, for male children (32.7) it is higher than female children (31.7). However, one must appreciate the fact that IMR in general and among girls has come down substantially over a 10-year period (2002 -13) (Table 6.8). The decline in IMR in the state has largely been made possible due to intervention of the NRHM especially through improvement in institutional delivery, ANC and immunisation coverage.

Along with the IMR, the U5MR also continues to be very high in the state particularly in rural areas. The female to male ratio in under-five mortality in the state is 1.01 while it is 1.14 at the national level (Table 6.9).

Table 6.8: Infant mortality rate Assam and India

State	2000			2010			2013		
	Persons	Males	Females	Persons	Males	Females	Persons	Males	Females
Assam	74.5	65.9	82.9	58	56	60	54	53	55
India	67.8	66.8	68.9	47	46	49	40	39	42

Source: SRS, 2013.

Table 6.9: Under five mortality rate by gender, Assam and India

Place	Total			Rural			Urban		
	Total	Male	Female	Total	Male	Female	Total	Male	Female
India (2012)*	52	49	56	58	54	62	32	31	34
Assam (2013)**	71	71	72	77	77	78	36	34	39

Source: **AHS, 2011 (Updated series 2012-2013) and *SRS, 2012.

[8] IMR (rural): 56, IMR (rural female):58, IMR (rural male):55; IMR (urban): 32, IMR (urban female): 32, IMR (urban male): 31. SRS, 2013; Registrar General of India, 2013.

6.2.7 Child Nutrition

It has been held that one of the primary reasons for increased risk of child mortality is the low birth-weight of the new born. The proportion of babies with birth weight of less than 2.5 kg to the total number of babies born shows that Assam ranks third from the bottom among states in India with almost a quarter of the new borns weighing less than 2.5 kg[9]. Also the proportion of still births in Assam is second highest (2.61) in the country next to Odisha (2.62)[10].

The NFHS successive rounds indicate a worsening of malnourishment among children in Assam. Undernutrition among female children has serious implications for the overall demography and health status of the people in the state. As malnourishment becomes structurally embedded with more female children being malnourished, the chances of poor reproductive health with the probability of higher maternal mortality and infant and child mortality are also likely to be high.

The present report reveals (Chapter 5) that there has been a considerably high prevalence of undernutrition among children in the state. However, a comparative status on the estimates of undernutrition for male and female children shows that higher proportions of male children compared to their female counterparts suffered from chronic undernutrition (indicated by being underweight) in the state. Notwithstanding this, the wider coverage of Reproductive and Child Health (RCH) under the NRHM and an increase in general awareness on child health, especially for the girl child through the Accredited Social Health Activist (ASHA) campaign in the state, the overall situation of child health and nutrition needs serious introspection.

6.3 General Morbidity and Gender Patterns

The HDR survey also hints at a gendered pattern in morbidity in the state. While the incidence of short-term morbidity is more common among females than males, so far as chronic morbidities are concerned, the prevalence

Table 6.10: Prevalence of chronic morbidities (% individuals reporting cases)

Diseases	Male	Female
Diabetes	62.16	37.84
Heart Problems	56.31	43.69
Hypertension	47.70	52.30
Arthritis/Joint Pain	43.48	56.52
Cancer	65.56	34.44
COPD	55.31	44.69
Kidney Problems	57.53	42.47
Liver	52.45	47.55
Others	53.12	46.88

Source: HDR Survey, 2013.

[9] *Source:* Ministry of Health, Government of India, State-wise Performance of Selected Indicators, Financial Year 2012-13, State wise Status, October 2012.
[10] *Ibid.*

rate is higher in male. A recent study on out-of-pocket expenditure on health also found that females have a higher incidence of short-term morbidity compared to males in the state with the reported short-term morbidity being higher in rural areas[11].

Table 6.10 presents the morbidity profile of males and females in the state. The profile reflects the overall lifestyle of women. Significantly, bone-related diseases such as arthritis and joint pain are more common among women from the minority concentrated, flood prone districts of Cachar, Karimganj, Dhubri, Nagaon along with the tea district of Tinsukia while hypertension has been more common among women in Kamrup, Nagaon, Sonitpur, Sibsagar, Nalbari, Jorhat and Dibrugarh, which incidentally have a higher share of urban population.

The overall health scenario in the state suffers from visible deficiencies in various dimensions of RCH and inadequate nutritional support to mothers and children. These impacts overall human development in the state, both individual and social.

6.4 Women and Educational Outcome

It is an undeniable fact that access to education is most elementary for making informed choices, participating in political and economic processes, using new technologies and protecting oneself against exploitation. An important underlying cause in the gendered differentials in outcomes, especially in respect of access to resources and decision making, emanates from differences in the levels of education among males and females. The foregoing chapters sufficiently underline the criticality of education in enhancing capability and, hence, human development.

The fact that the female literacy in Assam has made significant improvement over 2001-11, leading to a closing of the gender gap in the literacy rate in the state has been already pointed out in Chapter 4 of the report. The declining gender parity in enrolment as age progresses has also been highlighted.

So far as female literacy is concerned, the HDR survey data offer a useful insight. They reveal that, of the total illiterates, 61.63 percent are female and a quarter of the female illiterates come from the border areas, 20 percent belong to the Char areas and 14 percent are from the tea blocks. This points to both physical and socio-cultural factors impacting literacy outcome of females.

The HDR survey also shows that currently 3.6 percent of female children as against 3.9 percent of male children in the age group 6-14 years are either dropouts from school or have never enrolled for elementary education. The discontinuation in studies is even sharper when we take the entire span of school years (6-16 years) and the HDR survey (2013) revealed that 6.45 percent of children[12] in the age group 6-16 years are currently out of school, of which females account for 43 percent and males constitute 57 percent. There are also subtle gendered elements in the reasons for children remaining out of school. The need to support the family by earning and disinterest in studies are the two primary reasons for children remaining out of school but, significantly, more female children were disinterested in studies compared to male children. Besides, while a majority (11 percent) of female dropouts left school "to work at home", a majority (26 percent) of male dropouts had to "work for supplementing the family income". Moreover, fewer females in the state aspire for technical and professional education and discontinuation

[11] Out-of-Pocket Expenditure on Health for Assam OKDISCD, August 2014.
[12] There are a total of 44,023 children in the age group 6-16 years and, of them, 2,839are currently out of school.

of education by females becomes largely prominent from the secondary level itself. This discontinuation of education by females leaves girls with fewer opportunities to find gainful opportunities of employment.

On the whole, the distinct difference in educational outcomes of males and females is possibly best summarised in the difference of between MYS of both the sexes. The HDR survey estimates MYS for males at 6.97 years against 5.32 years for females. This simply means that whereas males, on the average, gets an opportunity to receive education till Class VII (upper primary level), the opportunity for females, on the average, is limited to Class V(primary level) in the state. This gap in educational outcome has a distinct bearing on labour market outcomes of females.

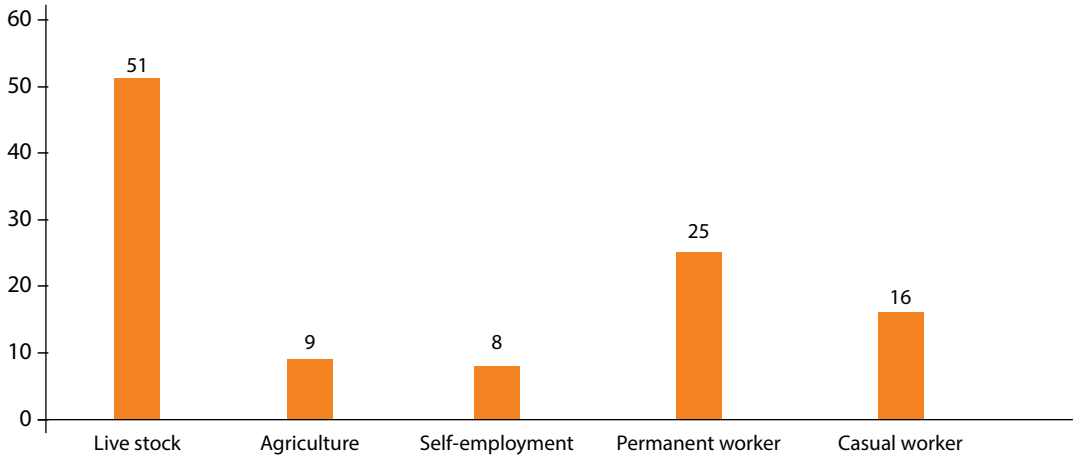
6.5 Women and Work

Relative disadvantages of women in the labour market marked by a low female work participation rate and labour force participation rate together with a substantially high female unemployment rate have already been stressed upon in the report (Chapter 3). The participation of women in the workforce, the quality of work allotted to them and their contribution to the GDP are indicators of the extent of their being mainstreamed into the economy[13]. Bringing women into economic spheres in terms of increasing their participation in the production process is vital not only for economic growth in general but also for individual capability enhancement.

The HDR survey offers a synoptic view of women's work in the state. It is found that, of the total only about 15 percent of women belong to the labour force and 85 percent remain outside the labour force. Of those in the labour force, only 17 percent are employed, leading to a high rate of female unemployment of 38.3 percent in the state. The profile of women's work as a proportion of those employed in the state obtained from the HDR survey is given in Figure 6.1.

Women typically tend to be employed in low-paid, low-earning, casual work with either

Figure 6.1: Profile of women's work in Assam (in %)



Source: HDR Survey, 2013.

[13] XII Five Year Plan Report of the Working Group on Women's Agency and Empowerment, Ministry of Women and Child Development, Government of India.

Table 6.11: Differential learning of male and female

	Median Earning (INR)		Mean Earning (INR)	
	Male	Female	Male	Female
Total	2,000.0	0.0	4,250.7	1,746.8
Activity Status				
Agriculture & Allied	0.0	0.0	239.5	189.3
Agricultural Labourer	3,400.0	2,000.0	3,122.4	2,117.0
Daily Wage Earner	4,000.0	2,000.0	3,897.1	2,192.0
Petty Business/Self-employed	5,000.0	2,000.0	6,919.6	3,455.7
Trade/Business	6,000.0	3,000.0	9,081.7	5,898.2
Salaried Service (Regular)	18,000.0	3,500.0	19,937.8	11,785.5
Salaried but casual	4,000.0	1,800.0	5,533.8	4,179.2
Others	0.0	0.0	1,600.7	743.2

Source: HDR Survey, 2013.

limited or no social security benefits. These factors inevitably lead to differential wages and income for females compared to males. The HDR survey provides information on differential income/earning of males and females (Table 6.11). The gap in male-female earning is pervasive across all occupations.

6.7 Women and Socio-political Participation

Just as access to and control over resources are viewed to be ways to mitigate the gendered differences across various spheres of social and economic lives of women, deepening the process of democratic decentralisation and political participation of women in the process of political decision making and governance is also perceived to be instrumental in eliminating gendered differences in society. However, in reality, effective women's participation in political decision making continues to be an unfinished agenda in the country.

The 73rd and 74th Amendments to the Constitution are important steps in deepening the process of democratic decentralisation in the country and statuorily recognising the grassroots institutions of governance as part of the formal structure of governance. The reservation of women in the grassroots institutions of governance undoubtedly brought more than one million women into the leadership role in the political process of the country. However, effective political empowerment still continues to be a distant goal.

In Assam, 33 percent reservation for women in Panchayati Raj Institutions preceded the 73rd and 74th Amendments, which has been subsequently and progressively increased to 50 percent. The percentage of elected women representatives in Assam in the state legislature is just a little over 10 percent. But, in practice, the actual exercise of power remains a challenge because women representatives are always expected to adjust and cooperate with the existing form of patriarchal domination[14]. Besides political participation, women's engagement in other social groupings and organisations also reflect the overall social space enjoyed by women in the state. Although direct participation in electoral politics for women in Assam continues to be low, they are almost equally participatory as men in social activities and are members of fairly diverse

[14] Sarmah, Bhupen; Rejuvenating Panchayati Raj; Ideology Indian State and Lessons from the Periphery, Akansha Publishing House, New Delhi, 2006.

Table 6.12: Percentage share of male and female elected representatives in Assam

Participation	Total Seats in the State	Total Women Contestants	Total Winners	Rate of Winning	% of Women Representative
16th Lok Sabha Election(2014)	14	16	2	12.5	14.29
15th Lok Sabha Election(2009)	14	11	2	18.2	14.29
13th State Legislative Election(2011)	126	85	14	16.5	11.11
14th State Legislative Election(2006)	126	70	13	18.6	10.32
PRIs	26,844	-	9,903	-	36.89

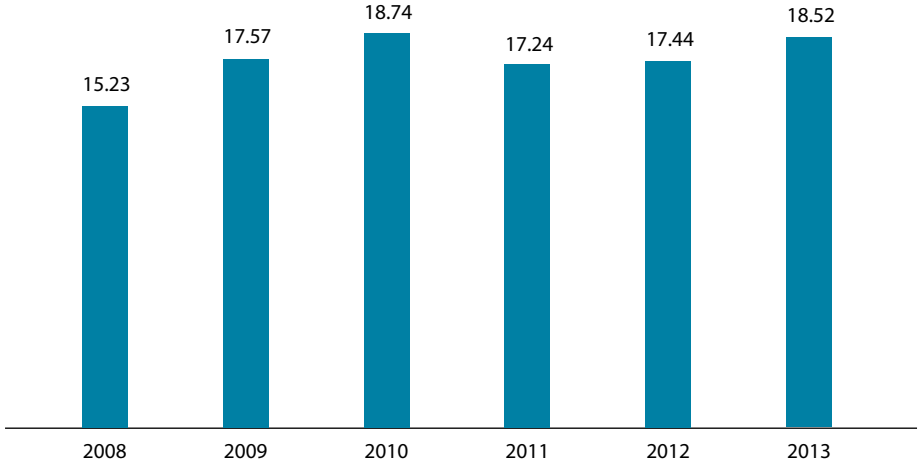
Source: Election Commission of India and State Election Commission, Assam.

groups and bodies such as Mahila Samity, Self Help Group, and caste-based and religious organisations (HDR survey, 2013). In fact, women have been found to be more active in Self Help Groups, religious organisations and caste-based organisations. The involvement of women in these groupings can be taken as a positive signal in the overall social and political situation in the state. Women's engagement in social and caste-based organisations can be more effective and appealing in addressing the issues of social exclusion based on caste and gendered differences.

6.8 Women and their Physical Security

Though Assam had been historically known to be a state where women never faced the threat of violence, yet, over the years, there has been an increase in incidence of violence on women (Figure 6.2). The state has witnessed an increase in incidences of rape, molestation, domestic violence, and dowry deaths (Table 6.13).

Figure 6.2: Percentage of reported cases of violence in Assam against women



Source: National Crime Information Bureau, New Delhi.

Table 6.13: Percentage of crimes against women in the total crimes in the state

Types of crime	2013	2012	2011	2010	2009	2008
Rape (Sec.376 IPC)	2.23	2.21	2.55	2.79	2.95	2.70
Kidnapping and Abduction (Sec.363-369,371-373 IPC)	4.47	4.33	4.78	4.49	3.78	3.35
Dowry deaths (Sec. 304B IPC)	0.20	0.18	0.18	0.28	0.31	0.19
Cruelty by husband or his relatives (Sec.498A IPC)	8.78	8.25	7.86	8.77	7.95	6.52
Assault on women with intent to outrage her modesty- Molestation (sec.354IPC)	2.64	2.37	1.79	2.27	2.43	2.39
Insult to the modesty of women-Sexual Harassment (Eve-teasing) (Sec.509IPC)	0.02	0.01	0.01	0.03	0.02	0.00
Importation of Girls from Foreign Country (Sec. 366B IPC)	0	0.003	0.003	0	0.002	0.000
Immoral Traffic(p) act, 1956	0.07	0.04	0.03	0.04	0.07	0.05
Indecent representation of women(P) act, 1986	0	0.004	0.001	0	0	0.004
Dowry Prohibition act,1961	0.11	0.05	0.03	0.06	0.07	0.02
Total	18.52	17.44	17.24	18.74	17.57	15.23
Total crimes in the State	86975	77682	66714	61668	55313	53333
Percentage of crimes against women	18.52	17.44	17.24	18.74	17.57	15.23

Source: National Crime Information Bureau, New Delhi.

Among all forms of violence, cruelty by the husband and his relatives is the highest among the types of violence against women in the state. The perpetuation of violence on women by the husband and his family reflects the patriarchal domination in social settings of the state. The data reveal that a majority of women do not perceive beating of their wife by a husband as an act of violence and 45 percent of women as against 25 percent men in Assam believed that men are justified in beating/ hitting their wives(NFHS 3, 2005-06). This brings the issue of "subjectivity of women" underlying women's sanction to certain patriarchal values that helps reinforcement and perpetuation of patriarchy itself in the society.

Women in Assam are vulnerable to marital violence and almost 40 percent ever married women in Assam suffered from physical violence of which 82 percent was by the husband. Besides, 15 percent of married women suffered from sexual violence. Besides marital violence, 18 percent girls in Assam in general have been reported to have experienced physical violence (NFHS 3, 2005-06).

Violence related to unmet demands for dowry is one of the common reasons for marital violence. Even though dowry in Assam is traditionally not practiced, incidences of dowry-related deaths have increased in recent times (Table 6.13). It may be seen that there has been more than a two-fold increase in rape and dowry cases in Assam during 2001-12 while cases of dowry-related death have increased almost three fold.

There has also been a discernible increase in registered cases of rape and abduction of women in the state. Another growing incidence of crime in Assam is witch hunting. Cases of witch hunting tend to exhibit a strong gender bias.

Box 6.1 Curious Cases of Witch Hunting

A `witch' or its Assamese translation `daini' in Assam is used to identify a male or female who is alleged to have magical powers that it uses to bring evil to the community. 'Witches' are, in most cases, women who alleged use their evil powers to harm others. In fact, however, many of those accused of witchcraft are simply vulnerable women and children, the elderly or the mentally ill, and are sometime victims of an accuser's personal grudge. In many cases, they are killed with impunity. Witch hunting is killing of a `witch', a superstitious evil practice quite common among the communities Rabha, Hajong, Mishing, Bodo, Adivasi, etc.

Once a woman(or man or a family) is `identified' and branded as a witch, she will be summoned before the whole community and process of her confirmation of as a witch will start. Generally, two methods are adopted in Assam. Firstly, if there is death of people in the village due to unknown diseases and a woman is suspected and later accepted by everyone as witch. Secondly, the woman branded as a witch is covered with a fish net and tortured brutally with the teeth of a pig. Sometime, anill person is also tortured in the same way to compel her or him to spell out the name of the witch. Usually, a sick person in his or her state of illness spells out the name of the person against whom he or she has a personal grudge. During such a practice of torture, the woman usually breaks down and accepts herself as witch to get stop the torture. Once confirmed, the woman is either killed or chased away from the village.

Box 6.2 Human Trafficking

The combination of poverty, ethnic conflict, unemployment, gender inequality (the low status of girl children), inadequate legislation and law enforcement enables trafficking in girls to thrive in the North East. It is a general practice of poor families to send their children work in wealthy families in urban or rural areas. Today, this practice has been exploited by traffickers to lure the children, especially girls, to supply to wealthy families looking for domestic labour. These children generally do not have access to any kind of education or freedom and work long hours in the poor unhygienic conditions with primarily no pay.

The practice of luring women and children in the name of providing domestic work in metro cities is growing, particularly in conflict-affected areas such as Bodoland Territorial Council, Assam. Over 100 girls were lured from the relief camps of Srirampur gate under Kokrajhar district of BTC, Assam, for domestic work in many parts of the country and outside of the country in Bhutan and Nepal. The growing number of girls working as bar or restaurant girls in many trans-border areas of the North East do so due to conflict, poverty and floods in addition to their aspiration for glamour. Many girls move to urban areas to earn, and then find themselves living in insecure areas and most are targets of exploitation, especially commercial sexual exploitation. In some cases, children's movement is facilitated, usually by a family friend, relative, acquaintance or distantly known person to the girls. Many such girls are kept in highly exploitative conditions of work (prostitution or domestic labour) suffering non-payment (or under payment) of wages, sexual and physical abuse, long hours and no days off in a year. Trafficked children frequently suffer rape, physical abuse, are not paid or underpaid by their exploiter.

Trafficking & HIV/AIDS, North East Report, Nedan Foundation, Kokrajhar.

6.9 Gender Aspects of Human Development

Gender inequality remains a major barrier to human development. A set of two gender indices were incorporated in the 1995 HDR – the Gender-related Development Index and the Gender Empowerment Measure – to gauge the extent of gender inequality at the global level. In the 2010 HDR, the new GII has been proposed. The new index combines educational attainment, economic and political participation, and reproductive health issues and makes an attempt to account for overlapping inequalities at the national level. Therefore, the GII is designed to capture women's disadvantage in three dimensions: empowerment, economic activity and reproductive health. The index reveals the loss in human development due to inequality between female and male achievements in these dimensions.

Measures of the disadvantages for women raise awareness of problems, permit monitoring of progress towards gender equity objectives and help keep governments accountable. In this light, the GII is designed to reveal the extent to which the realisation of a country's human development potential is curtailed by gender inequality, and provides empirical foundations for policy analysis and advocacy efforts[15].

6.9.1 Gender Inequality Index

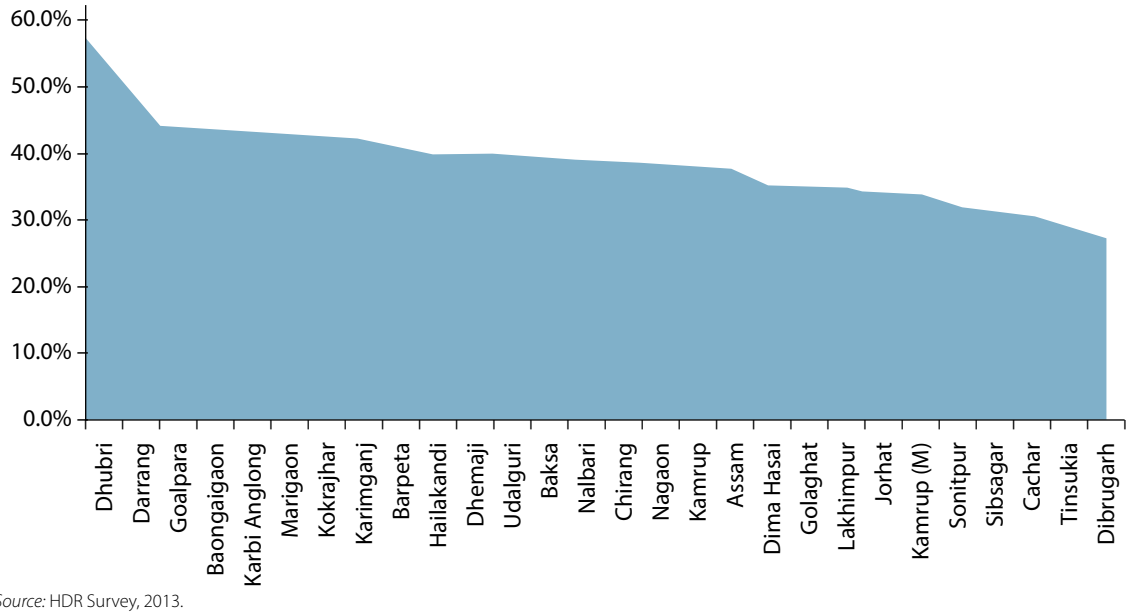
The GII for Assam as a whole is found to be0.375. This implies that, due to the existing level of gender disparity in the state, there is a loss of some 37 percent of potential human development. The maximum gender inequality is seen in the districts of Dhubri, Darrang, Goalpara and Bongaigaon (Figure 6.3). Most of the inequality is witnessed in the income front (Table 6A.4, Statistical Appendix).

6.9.2 Gender Development Index

The GDI is another measure of gender differentials in human development. The index value compares human development achievements – both dimensional and overall – of females with those of males. When both levels of development are at parity, the index value is unity. For greater disparity in achievements, the index value declines and approaches zero.

The GDI for Assam is found to be equal to 0.875 which reveals that achievement of women in

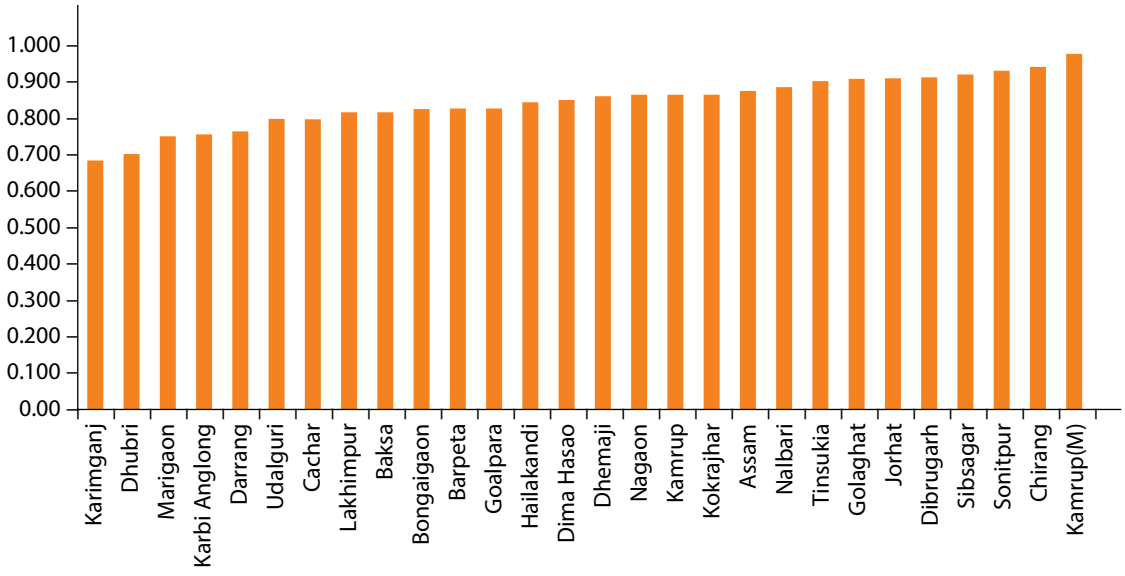
Figure 6.3: Loss of human development due to gender inequality across districts



Source: HDR Survey, 2013.

[15] See Gaye, et al. (2010).

Figure 6.4: GDI across districts



Source: HDR Survey, 2013.

the dimensions of human development taken together is less than that of men by about one-10th times. Most unequal gender development can be found in Karimganj, Dhubri, Marigaon, Darrang, Udalguri and Cachar. Contrarily, in Kamrup (M), Chirang, Sonitpur, Sibsagar, Dibrugarh and Jorhat, the gender disparity in human development is observed to be relatively equal (Figure 6.4, Table 6A.5, Statistical Appendix).

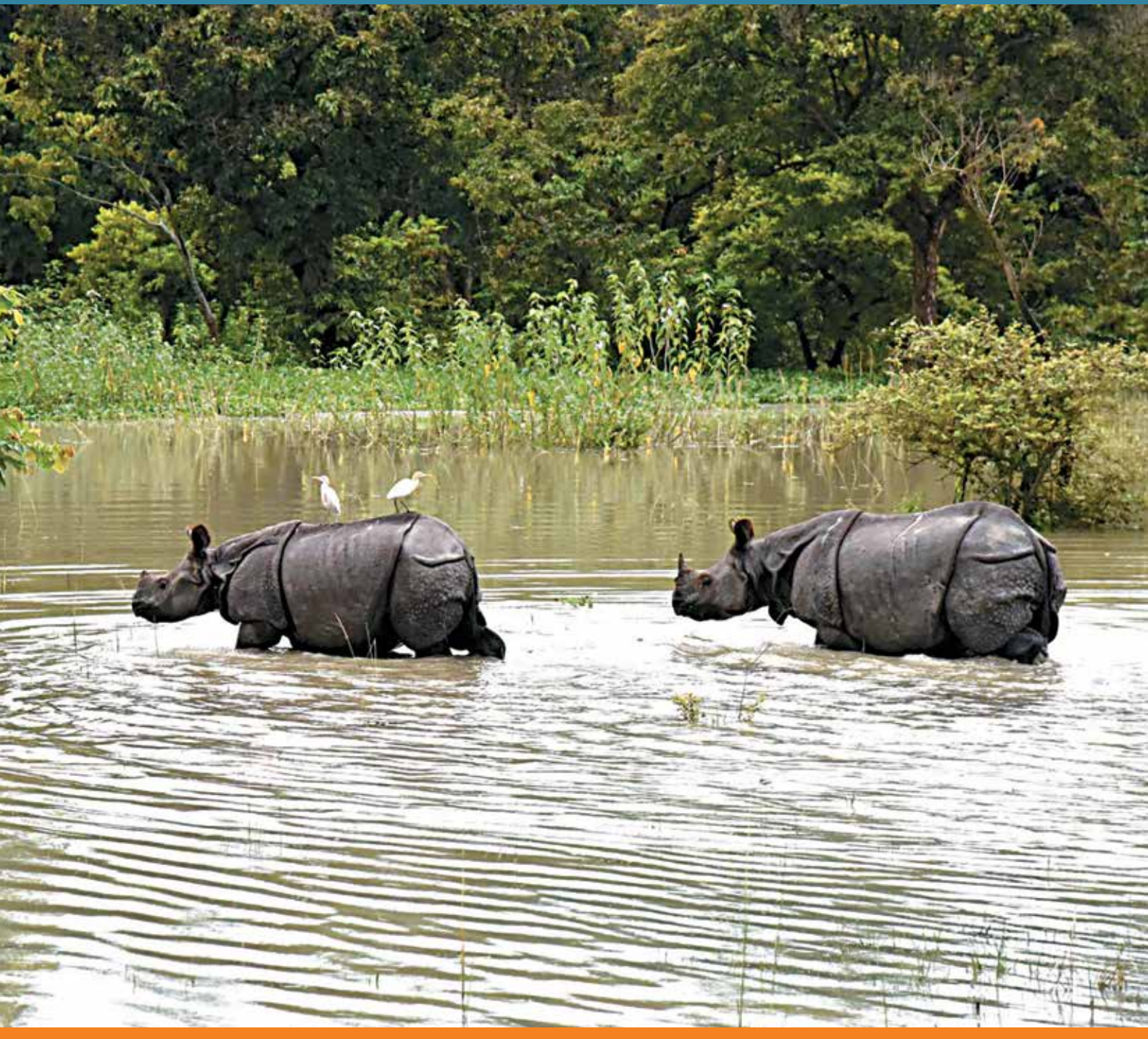
6.10 Summing Up

The gendered differences in social and economic well-being of women and their lives are a result of the coincidence of several phenomena. There is perceptible difference between males and females in Assam in their overall living conditions and social spaces enjoyed. The social and cultural practices greatly influence women's autonomy in the economic sphere as well and together these factors have also accentuated the differences between males and females in different spheres of life. The burden of a high percentage of teenage motherhood and associated high child mortality, especially of the girl child, pose serious challenge to the overall survival status of the young female and the female child. The situation is worse in minority and SC concentrated districts in the state. The higher incidence of teenage motherhood deprives the girl of her right to complete her education and find meaningful economic engagement. Female educational achievement continues to lag behind, particularly after the secondary level, and the norms of gendered roles in the domestic sphere and higher marital fertility among adolescent girls further accentuate her restriction in labour market participation. Females in Assam also have lower educational achievements in technical and vocational skills and this is a major challenge for women in the context of a rapidly urbanising economy with tertiarisation that demands higher technical and vocational skills. Women, consequently, are more disadvantaged in obtaining a gainful employment opportunity and the differences and disadvantages become more prominent across religious minority groups and the SC population and in areas with spatial attributes such as the Char and flood-affected areas. Employment of women is a necessity but as long as her work in the domestic sphere remains unrecognised and is considered as a private matter and a woman's responsibility, women will always continue to face conditions of extreme social and economic vulnerability beside threats of violence, both physical and psychological. Gendered inequality may not be costless in terms of its effects on society and overall well-being because such inequality is likely to contribute to social exclusion and marginalisation in an ethnically diverse state like Assam.

7

Environment and Sustainability

Negotiating Externalities, Ensuring Sustainability



7.1 Human Development, Environment and Vulnerabilities

Recent HDRs[1] have indicated that the main threat to maintaining progress in human development comes from increasingly evident unsustainable production and consumption patterns. In this context, along with the issue of use of exhaustible resources and clean energy[2], degradation of our land and forest resources[3] caused by excessive and unplanned development also come to the forefront of discussion. The issue of the trade-off between economic well-being and environmental sustainability is now apparent, but the changing environment, resultant on natural as well as anthropogenic factors, also creates constraints and impedes well-being of people. Exhaustion, degradation or deterioration of resources creates multiple forms of negative externalities[4], which limit or adversely affect the capabilities of the people to ensure their well-being.

Various HDRs prepared in the world, national and regional contexts have already started to address climate change and water scarcity issues[5]. The task is now how we shall account for environmental indicators (temperature, water availability, clean air, etc.) and assess them in a locality-specific context at a time series interval. Forest cover changes and use of unclean energy act as prime determining factors in the depletion and degradation of the quality of natural resources (land, water and air), cause ecological inequality or inequality in the distribution of social costs[6] or in deriving equal benefits from the environment in a living space - affecting the inherent capabilities of the people even in the short run. The economic outcomes that vary because of ecological inequality[7] would critically affect the 'means' to perform valued functionings such as providing education to children, thus hindering the human development process. This can, indeed, be particularly detrimental to human well-being in a state where public provisioning of basic services is grossly inadequate.

The argument that takes centre stage in a changing environment is that of weak sustainability of our resources or even irreversibility of our available resources[8]. No amount of man-made capital or provisioning would be adequate if natural resources are depleted beyond a critical point. This tends to intensify our interest in the valuation of environment and ecosystem services[9].

UNDP HDR 2007-08 had identified five key transmission mechanisms through which climate change (high variability in rainfall and temperature) could stall and then reverse the human development process. These are: agriculture production and food security, water

[1] For instance, the HDR2010 (UNDP, p.81).
[2] A large number of environmental problems are associated with the production and combustion of coal. The same is the case for petroleum. Numerous studies across the world have assessed the negative externalities caused by these two resources.
[3] Land and forest are non-exhaustible and renewable resources, and need effective working plans and regulations to sustain the returns.
[4] These are in the form of increases in air temperature, pollution, high water runoff on the surface and subsequent impacts of flood and erosion, crisis in water supply, health outcomes and fallouts would never end.
[5] Water scarcity is caused by poor rainfall as well as the inability of the land and failure of human beings to preserve it. Two factors -- unclean energy sources and forest degradation -- would explain a large part of our environmental crisis; forest degradation, for example, diminishes the soil's water retention capacity.
[6] See Torras (2006).
[7] For example, in the flood and sand deposition afflicted Dhemaji district of Assam, paddy yield (1,290 kg/hectare, 2009-10) is much lower than the state average of 1,765 kg/hectare. In such circumstances, the issues of resilience and adaptability of affected people become irrelevant because of repeated adversities caused by floods and irreversibility of the damages.
[8] Coarse sand depositions in the agriculture field and river erosion are some forms of weak sustainability and irreversibility of the damages done.
[9] This is needed because environmental resources offer a number of services for human well-being, which are ordinarily not accounted for in regular market transactions. As the benefits from environmental services and costs of depletions are not always immediately obvious or because they are not priced, they tend to be ignored with serious consequences for human health and well-being. See Haque, et al. (ed.) (2011), p2.

stress and water insecurity, rising sea levels and exposure to climate disasters (intensive storms and landslides), ecosystems and bio-diversity, and human health. It posits that climate change affects rainfall, temperature and water availability for agriculture. In a localised context, too, however, we can observe certain negative fallouts resultant on degradation of the environment and ecosystem leading to a climate change-like situation (decline in agriculture production, unavailability of potable water and poor health outcomes[10]), even though the climate does not show variations. Moreover, as mentioned earlier, excessive use and consumption of certain resources, even in a small locality, release pollutants to create substantial stress on the local level air quality and potable water.

This offers a useful backdrop to construct a few indicators and assess the prevailing environmental situation in Assam and link them to human development outcomes–an understanding on how environmental stress affects the capabilities of the people.

7.1.1 Environment and Capabilities

The capabilities achieved or possessed by the human being are, to a large extent, determined by the physical environment people live in. This is, however, only one part of the scenario(the case of environmental determinism[11] and adaptation). The other part of the explanation is that, even in the short run, the negative externalities created by the degradation of the environment reduce or limit the capabilities already possessed by human beings and subsequently affect the quality of life[12].

In this context the need for evaluating the environmental arrangements emerges; how the opportunities are set or constrained in a new environment and subsequently influence the activities of the people[13] and how people try to cop and finally adapt to the changed situation. People's capability to cope and adapt to the crisis is also determined by provisioning of certain basic services, appropriate regulations and governance of the state. There are ample cases where people struggle with persistent deprivation and then finally becoming accustomed to such situations, however, fail to attain the basic necessities of life and make a decent living. Life is so occupied with struggle that there is no space to sense whether the work being done is meaningful, remunerative and whether they have time for leisure or learning. Children who lose school days because of floods or are compelled to fetch water from long distances because of unavailability of quality water near their homes, miss the opportunities forever to make the best use of their opportunities which, in turn, prevents expansion of their capabilities in the long run.

Such situations are now very much prevalent in the state of Assam. Prior to a detailed analysis on the present status of the environment, a brief note on the environmental history of the state would help to understand the situation better.

7.2 A Brief Environmental History of Assam

Forest cover changes and loss of quality forests in Assam (and in the surrounding states), to a large extent, have shaped the present

[10] The rising temperature also creates disaster on the health front. Major killer diseases such as malaria and encephalitis now have expanded their coverage and take atoll where public provisioning of the healthcare system is poor in a developing country like India.
[11] A 19th and early 20th century approach to the study of geography that the physical environment affects and even causes human activities and culture.
[12] In flood-affected areas, people often cannot attend work and children miss school for several days during the year. Such circumstances create an uneven playing field, particularly for children.
[13] Outmigration for lower end jobs is one of the crisis indicators in this context. The argument or issue of resilience, however, is non-applicable in such circumstances if the changing environment displaces people, although temporarily.

ecology and ecosystem of the state[14]. In each forested region in India, the first era of massive deforestation occurred shortly after it was absorbed into the British Empire, at a time of transition in the area's political economy[15]. By 1947, India's forests were depleted not only by expanding crop production but also by commercial timber exploitation and plantation cropping for the world market[16]. The state of Assam saw the combined surge of tea plantations and immigrant peasant frontiersmen[17]. The tiny tribal population in the hills of the region, though engaged in shifting cultivation, did not pose a threat to the forests and ecology of the region as the market orientation of the colonial regime did. Records and studies indicate massive conversion of forested land in Assam, but we lack evaluation and data to show the extent to which the fallouts had led to a deterioration of the environmental indicators of the state or maintained them at the borderline. The effort of the British, however, was seen in adoption of working plans[18] for planned extraction of forest produce to sustain the ecology of the region.

The 20th century experienced massive growth of population in the state from a mere 3.3 million in 1901 to 26.7 million in 2001 and 31.2 million in 2011 which put tremendous pressure on its resources – land and forests. The ideas and issues involved in forest conservation started to take shape since the last quarter of the 19th century with the adoption of acts and regulations for the conservation by the colonial state[19]; positive fallouts of which, however, did not continue to the present times. Moreover, the World Wars helped to expand the activities centred on Assam's forest land and tea industry[20]. The great depression further hit the tea industry hard, forced the industry to fire many of its indentured workers. Many of the redundant workers squatted in adjacent government forests and used ('damaged'[21]) the forest and land to ensure their livelihood.

Overall, the combined interests of the tea planters, imported (indentured) workers, and immigrant farmers placed a heavy and escalating pressure on the forest of Assam[22]. Even though the effective use of land under the patronage of the colonial system continued, it is yet to be ascertained who is the ultimate beneficiary or loser in the present ecological system.

7.2.1 The Post-independence Scenario

The common perception is that the rising intensity of floods and river erosion in Assam is a direct repercussion of deforestation and construction of dams to tap the immense hydroelectric potential of the rivers in the sub-Himalayan belt of Arunachal Pradesh and Bhutan[23]. Two factors – flood and erosions (and sand deposition)–resulted in the effective loss of resources, compelling a section of peasant communities to forcefully assert their claim over state-owned forest lands[24]. The data on the encroachment of forest and vanishing forests and wetlands in the state largely reveal

[14] The high run-off of water from the neighbouring hills, particularly from Arunachal Pradesh and Bhutan, now carries coarse sand and changes the course of many tributaries of the River Brahmaputra – Jiadhal and Aie, to name a few. Consequently, the ecology and ecosystem in small pockets of the state of Assam are now severely affected. Moreover, there are cases of loss and destruction of rich wetlands of the state. The impacts and values of loss in economy and ecosystem services could be determined by micro case studies.
[15] Tucker (2012), p. 142.
[16] Ibid, p 168.
[17] Ibid, p 170.
[18] Saikia (2011), p157.
[19] Ibid, p12, p 83.
[20] Saikia 2011:189; Tucker 2012:172.
[21] As the word used by Tucker 2012: 172.
[22] Ibid, p 174.
[23] Gohain (2008).
[24] Saikia 2011:1.

this phenomenon. The conversion of forests and wetlands to agrarian and settlement zones has contributed to a vicious cycle of ecological crisis in the state[25].

The state, on the other hand, through acts and regulations (Wildlife Protection Act, 1972; Forest (Conservation) Act, 1980, etc.) continued to assert its authority over the forest, restricting people's access and dependence on it. Everyday requirements, namely, grazing, shifting cultivation, collection of firewood and Non-Timber Forest Products (NTFPs) or fishing inside the forest came under a regime of strict restrictions[26]. Regulations along with the degradation of forests and wetlands reduced people's access to common property resources, affecting their well-being. Access to such a pool of resources helps to generate employment (even in a sustainable manner) and fulfil household energy requirements. Well-being issues of many fringe villages of forests (and wetlands) to, a significant extent, depends on such access, when other opportunities are almost non-existent[27].

Moreover, there is clear evidence that unsustainable use and destruction of forest resources have robed people of sustainable jobs[28]. The Supreme Court of India's verdict in 1996 banning felling of trees induced a negative impact on livelihoods of a large section of people in the state as well. Hundreds of saw mills and plywood units in the state have been closed down since December 1996. There was a possibility that the resources could have been used in a sustainable manner with working plans of forests.

The issue of forests, though, comes into prominence in environmental debates in Assam; the state at present has more than 140,000 hectare (ha) of wetlands (more than 100,000 ha of beels and 39,000 ha of swamps; Economic Survey, Assam 2011-12) providing significant ecological and economic services. Till date, though, there is no tangible valuation of the services provided by the wetlands in the state; ecologists and environmental scientists are of the opinion that the value of a healthy wetland could be several times more productive than that of a forest of an equal size[29]. There is evidence that wetlands of the state are being squeezed and so are the ecological and economic benefits derived by the people dependent on them. The wetlands of the state are shrinking due to both natural and anthropogenic reasons. In addition to the massive amount of silt carried by the river and flood water, construction of dykes and embankments along the river banks also contributed to the deterioration of the water bodies. Now it is noticeable that rampant expansions of human settlements and industrial activities have created a disaster so far as the services of the wetlands are concerned. Studies indicate that anthropogenic stress on the wetlands leads to a depletion in fish fauna which result in a loss of direct and indirect benefits to society including livelihoods of the fishermen[30].

The sudden and intense pressure of population over space over the past one century and concomitant ecological crises resulting out of ineffective regulations and governance of different political regimes now have led to

[25] Along with a surge in this trend during colonial times that put the state on the borderline of ecological crisis (it is believed so), the present surge of anthropogenic activities (cutting down of forest for livelihood to conversion of land for tea smallholdings) along the fragile lower Himalayan zones and forested belts also aggravated the crisis of sustainability. Case studies report such incidences (Box 6.3), but detailed studies are required to assess the impacts in the micro environments.
[26] Saikia 2011: p. 309.
[27] Jodha (1990).
[28] Das 2012 a; p. 10.
[29] Opinion of Prof. P.C. Bhattacharrya; Call to protect wetlands of Assam, The Assam Tribune, 18 April 2012.
[30] Baishya and Bordoloi (2007).

conflicts of multiple forms. The poor peasantry (including people displaced by floods and erosion) now assert their claims over forests and other natural resources to make a living, which has created intense conflict with the state on settlements and evictions[31]. More compelling is the fact that there appear to be no effective plans and programmes to address the crises. The outcome anticipated from this scenario is that the poor would fail to access the basic necessities of life and, consequently, their opportunities to choose a valued life would, perhaps, be lost (see the case study on Matmora in this chapter).

Table 7.1 presents the changes of land use in the state in the past 30 years. The decline of areas under forest, barren land, uncultivated fallow and fallow reveal the pressure on land. The pressure on the land is also reflected by an increase in the net sown area along with the double cropped area (doubled cropped area in the state has increased by about 600,000 ha, from 754,000 ha in 1980-81 to 1349,380 ha in 2010-11). Considering that the uncultivated fallow and fallow lands are now put into agriculture uses – the decline in acreages under these two categories (146,397 ha) is still larger than the increase of net sown area (104,597 ha). The indication could be that a proportion of cultivable land was eroded, degraded and/or converted for non-agriculture uses[32]. This phenomenon is also supported by NSSO data, showing a decline in rural persons engaged in agriculture[33] from 86.4 percent in 1993-94 to 75.6 percent in 2009-10.

7.3 Prime Environmental Stressors in the State

7.3.1 Flood, Sand and River Erosion

a) Flood and the Damages

Admittedly, there are certain positive impacts of floods, if flood water deposits alluvial (silt) which nourishes agricultural fields. Damages caused by floods are, however, enormous with destruction of standing crops, houses and assets, loss of life and livelihood, and deposition of sandy layers over cultivable land, which outweigh all positive impacts.

Table 7.1: Land use changes in Assam

	1980-81	2010-11	Changes
Forest	1984,000	1853,260	-130,740
Land not available for cultivation	914,000	1217,503	303,503
Barren	1541,000	1408,042	-132,958
Uncultivated fallow	172,000	128,164	-43,836
Fallow	535,000	432,439	-102,561
Net sown area	2706,000	2810597	104,597

Source: Figures are in hectare. **Source – Statistical Handbook of Assam, 1984 and 2013.

[31] Invasion of anthropogenic activities into the forests has also induced conflict with animals, particularly elephants. The result is that from1980 to 2003 about 1,000 human lives were lost along with 370 elephants in Assam. Moreover, there are numerous cases of crop damage and economic loss. There are recommendations on creation and protection of the elephant habitats and corridors, prevention of encroachment and commercial exploitation of forest areas (Choudhury, 2004) but all have faced serious challenges with the rising pressure of population. On the other hand, families affected by conflict with animals (elephants), along with economic losses, face consequences of untreated psychiatric morbidity. A study (Jadhav and Barua, 2012) captured the hidden mental health dimensions of human-elephant conflicts. There is scope to argue that the trauma thus faced significantly affects the people's capability attainment process.

[32] Detailed studies are required on what the extent such changes in land use have induced ecological instability of the region.

[33] The rise is population and subsequent pressure on the land is, however, one of the many determinants of the shift of workforce from the agriculture sector.

The National Flood Commission of the Ministry of Water Resources had estimated the area vulnerable to floods in Assam at 31.50 lakh ha[34] against 335.06 lakh ha for the whole of India[35]. Assam thus accounts for 9.4 per cent of the total flood prone area of the country. The Flood Hazard Atlas of Assam, (ISRO, 2011) indicates that in nine districts, namely, Dhemaji, Lakhimpur, Jorhat, Sibsagar, Nagaon, Marigaon, Darrang, Nalbari and Barpeta, floods affect more than 40 percent of the geographical area. Floods displace(at least temporarily) about 6 million people of Assam's population[36]. Floods in the year 2012 had breached embankments in 53 locations. The recurrence of floods and erosion continues to be the major obstacle towards development of the largely agrarian economy of the state. Floods also washes away the nutrient rich top soil when the flood waters recede and it leaves behind many problems relating to health and reconstruction activities to put the livelihood systems back in motion.

Weibe (2006) had estimated flood damage in the state annually at INR 6,521 per ha during the period 1999-2005. The Government of Assam (2009)[37] estimated the annual flood damage at INR 14,590 per ha in the Dhemaji district, one of the most flood prone districts in the state. The annual compound growth rate of production of autumn paddy, rapeseed and mustard, sugarcane, jute, winter paddy and potato had declined significantly in the state, though summer paddy showed a high compound growth rate at 9.25 percent[38]. The flood, in the year 2004, affected 30 percent of the total geographical area and 15 percent of the gross cropped area; the value of crop loss was estimated at INR 3,747 million, one of the highest so far recorded in the state. The flood in the year 2000 affected 9.5 percent of the gross cropped area at an estimated loss of INR 1,735 million[39]. The state faces three to five waves of floods during the year with the peaks return with massive destruction from year to year – 1998, 2002, 2004, 2008, 2012 and 2013–being the most destructive[40].

A study conducted by OKDISCD[41] estimates the number of days all members of a household lost to reconstruct and clean the house, and days they were forced to remain absent from work and schools (Table 7.2). It emerges that people in flood-affected villages of Assam are compelled to spend, on an average, 25 days to clean and re-construct their homes, lose about 47 workdays and, more importantly, lose 45 days of schooling during the year. The cumulative implications on all fronts – from opportunity costs to capability deprivation – are, hence, well implied.

The present HDR survey reveals that in the districts of Barpeta, Marigaon, Goalpara, Dhemaji, Sibsagar, Lakhimpur, Jorhat, Hailakandi and Cachar more than 25 percent households reported an impact on their agriculture land because of floods. The survey data also reflect that the total annual income per ha from agriculture in the sample households of most of these districts –Marigaon (INR2,491), Goalpara (INR4,334), Dhemaji (INR1,257), Lakhimpur (INR1,420), Jorhat (INR2,023), Hailakandi (INR5,031) and Cachar (INR3,517) – is lower than the state average of INR6,205.

[34] The total geographical area of Assam is 78.5 lakh hectares and the net sown area is 28.1 lakh hectares (Government of Assam 2010-11). It indicates that all flood affected areas of the state are not cropped area. Flood Hazard Atlas of Assam, ISRO (2011) indicates about 9 percent of total geographical area of Assam is moderate to very highly affected by flood.
[35] Government of India (2011) Report of the Working Group on Flood Management and Region Specific Issues for XII Plan, Planning Commission, New Delhi
[36] Extracted from South Asian Network on Dams, River and People post June 15, 2013 on 2012 Assam Flood.
[37] Government of Assam (2009) Report on damage of flood released by the Dhemaji district administration for the year 2007-08, dhemaji.nic.in- extracted on 25/6/2009)
[38] Mandal R (2014)
[39] Mandal, R. (2010).
[40] Newspaper reportage and State Disaster Management Plan, Assam, Assam Disaster Management Authority, Government of Assam (undated).
[41] OKDISCD (2014). Non-structural measures of flood disasters mitigation in Assam, sponsored by the Indian Council of Social Science Research, New Delhi.

Table 7.2: Flood impact on attainment of capability in flood-affected villages

	Number of HH Visited in Flood Affected Villages	Average Days Spent to Re-construct and Clean the House	Average Workdays Lost	Average Schooldays Missed
Bongaigaon	60	23	40	23
Darrang	60	19	59	24
Dhemaji	60	36	51	53
Dhubri	30	24	90	57
Dibrugarh	30	23	57	55
Golaghat	30	7	13	18
Jorhat	40	26	32	39
Kamrup	30	30	50	41
Lakhimpur	60	38	51	51
Marigaon	60	26	38	56
Sibsagar	50	16	29	56
Sonitpur	30	32	63	79

Source: Field work 2013-14, OKDISCD study.

b) River Erosion

The Assam valley part of the Brahmaputra River has lost approximately 7.4 percent (4,000 km^2) of its land area because of river bank erosion and channel migration during recent history. River erosion wiped out more than 2,500 villages affecting nearly 500,000 people[42]. In addition to the River Brahmaputra, many of its tributaries too have created havoc by eroding their banks. The villagers who have lost land because of river erosion consider erosion as the prime environmental stressor. There are possibilities and ways to adapt to the conditions of recurrent floods, but with erosion of land people lose their resources forever and also their identity. There is no provisioning for the compensation for loss of land in such circumstances. It also places challenges on the state for resettlement of the people.

The Water Resources Department, Government of Assam, has identified 25 vulnerable and severe river bank erosion sites. The major erosion-affected areas are Rohmoria in Dibrugarh district (eroded areas 8,435 ha), Palasbari in Kamrup district (16,037 ha) and Matmora in Lakhimpur district (3,640 ha)[43]. Estimates of OKDISCD (2014) study reveal that in the villages along the Brahmaputra River of Lahorighat and Moirabari blocks of Marigaon district, households have lost, on an average, 15 big has (2 ha) of land because of erosion. The reported erosion was also found to be significant in Fekamari block of Dhubri district (average eroded area in the sampled households 11.1 bigha or 1.5 ha) and Kaliapani block of Janjimukh area of Jorhat district (7.6 bigha or 1 ha).

[42] Phukan, et al. (2012). River Bank Erosion and Restoration in the Brahmaputra River in India, *The Clarion*, 1 (1) 1, 1-7.
[43] Water Resource Department (2008). "North Eastern Integrated Flood and River Bank Erosion Management Project: Feasibility Study (PPTA, Phase II)" Unpublished report of Water Resources Department,

Box 7.1 River bank erosion and the externalities

Many villages along the Brahmaputra in the Kathani and Tulsibari Panchayats of Lahorighat Block in Marigaon district have lost all their land resources because of erosion and are forced to take shelter on the embankment. The present embankment too bears the threat of being eroded away, and has retreated by few km(reconstructed several times) in past few decades. The people in these villages basically have lost their identity and live in constant fear and anxiety. In the temporary hutments on the embankment, one could find only women, children and the elderly; the younger generation is forced to move out for jobs to distant places. In addition, some small tributaries of the Brahmaputra too have caused extensive damage. In past few years, Aie River in Bongaigaon district has caused massive bank erosion and the river itself is now shallower, causing extensive damage after every wave of floods. People are of the opinion that, once the main river channel becomes shallower, water currents place pressure on the banks leading to erosion. The issue of heavy sedimentation of the river beds in now widely reported across the state, particularly in the north bank of the Brahmaputra. The villagers at Nachanguri, Huramara, and BalarGudam have reported that the River Aie, over the years, has gone beyond control. Most households of BalarGudam village have lost their land and homes because of erosion. On whatever agriculture land is left with the villagers, it is not possible to plant winter paddy because of severe water logging problems. The problem of water logging, in many part of the flood-affected areas of the state, is now thought to be a result of the construction of the structure (embankment) along the river and not ensuring adequate channels to drain the water out.

Source: OKDISCD (2014).

c) Sand Deposition

The damage caused by deposition of a sandy layer in agriculture fields is not very common[44] but, once it happens, this damage is irreversible[45]. This factor finds little space in the discourse on the flood havoc and related policy prescriptions and mitigation plans in the flood ravaged state of Assam. The HDR survey (2013) finds that, in the district of Dhemaji, some 21.5 percent and a significant section of households in Lakhimpur, Goalpara and Marigaon districts reported sand deposition in agriculture fields (Table 7.3). In the Char blocks (13.34 percent) and in the blocks with multiple diversities (flood, Char and border, 23.5 percent), a significant section of the households reported sand deposition in their agriculture fields.

7.3.2 Deforestation and the Outcomes

The recorded forest cover of Assam in 2005 was 27,645 km^2 of which 1,444 km^2 (5.2 percent) was Very Dense Forest (VDF) and 11,387 km^2 (41.2 percent) was Moderately Dense Forest (MDF) and the rest was Open Forest (OF). The percentage of the total geographical area of the state under forest cover was 35.2 percent. Forest cover in the year 2013 though shows

[44] Reddy (2003).
[45] This statement is based on the observation of massive piling of sand in the paddy field in the Jiadhal basin of Dhemaji district and Aie and Beki river basin in Bongaigaon and Barpeta districts. In subsequent years, however, deposition of finer silts over the sandy layers could help to reclaim land to an extent and obtain some agriculture return.

Box 7.2 Sand deposition and poverty among farm households

Dhemaji district, once the rice bowl of Assam, is now transformed into a virtual desert due to sand deposition as a result of flooding from the Himalayan tributaries of the Brahmaputra River. Satellite imagery of 1999 reveals that over 11,247 ha have been rendered unproductive by sand deposition in the district. Further, between 1992 to 2004-05, the net sown area of the district decreased by 7,689 ha and fallow and uncultivated land has increased by more than 8,013 ha as reported in the statistical handbooks of Assam. These figures indicate that land degradation is significant in the district which has a total cultivable area of about 160,000 acres. A study has indicated that, in the sand deposited villages of Dhemaji district, paddy yield has declined by 1,900 kg to 2,500 kg per ha, monthly return from agriculture is estimated to be only INR 305. The decline in agricultural income has triggered large-scale migration of residents to distant places such the plywood factories and rubber plantations in Kerala and private security jobs in Tamil Nadu. State support for coping with the situation is found to be negligible; the average number of workdays people were granted under the Mahatma Gandhi Rural Employment Guarantee Scheme was just 14 days in the study villages as opposed to the stipulated provision of 100 days. The conditions of Dhemaji put into stark relief the need to strengthen the social security net of the state. Effective implementation of rural development and employment programmes might be one way to ameliorate the distress. State expenditure on the construction and reinforcement of embankments, which has been the main strategy to control floods, has not been beneficial because of frequent breaching. Any attempt to improve water management would be helpful to farmers. Sandy soil cannot retain water and assurance of water would improve yield.

Source: Extract from the study Das (2012b).

an increase by 26 km^2; the gain, however, is at the cost of MDF. The VDF though remained the same during the period, the MDF declined by 42 km^2 and there was a gain of OF by 68 km^2. The loss of quality forest has serious repercussions in the effort on climate change mitigation.

The HDR survey (2013) reveals that, in the districts of Lakhimpur (34.7 percent), Bongaigaon (21.6 percent), Dibrugarh (19.6 percent), Dima Hasao (18.2 percent), Karbi Anglong (14.7 percent), Chirang (11.4percent) and Golaghat (10.6 percent), more than 10 percent sample households have reported degradation of forests (Table 7.3). It shows that some of the districts with reported high forest degradation also have very high concentration of forest covers and tribal population. The district of Dima Hasao has forest coverage of 87.4percent of its total geographical area and 70.9 percent of the population of the district is tribal. Karbi Anglong district has 76.3percent forest coverage and 56.3 percent tribal population. The Forest Survey of India, 2014 also indicates that the tribal districts of Assam have lost 48 km^2 of forest during 2011-13.

Encroachment of forest area in Assam totalled 3,304km^2 as in February, 2013[46]. This represents 12 percent of recorded forest in Assam. In 2004, about 11 percent forest area in the state was encroached. Encroachment can be considered

[46] Lok Sabha question number 397, dated 22 April 2013.

as a better indicator than the change in forest cover to understand the crisis of deforestation and human development issues. Encroachment data would not only reflect loss of forest cover, but also the livelihood crises in a locality as well as inefficiency of the state to make effective and efficient use of the forest resource.[47]

About 26 percent households in the HDR survey (2013) found it relevant to answer the question whether their access to forest resources is now restricted. Among them, 38 percent households reported unrestricted access to the forest. Reported unrestricted access was found to be higher than the state average percentage in the districts of Darrang, Nalbari, Barpeta, Baksa, Dhemaji, Jorhat, Golaghat, Kamrup, Marigaon, Dhubri and Udalguri. These districts have a relatively low proportion of area under forest cover and the hill districts of Karbi Anglong and Dima Hasao, though, which have a much higher proportion of forest coverage to their geographical areas, did not reveal ample unrestricted access to the resource. About 74 percent respondents in Karbi Anglong and 91 percent in Dima Hasao reported that their access to forests is restricted. The explanation may be that, in the districts having higher concentration of forest, the conservation efforts of the state are more focussed.

Altogether 6,665 households (16.7 percent of the total covered for the survey) reported on the nature of restriction on access to forest resources. Among them 91 percent reported that it was of a formal nature. Altogether 67 percent households are of the opinion that the nature of restriction now has become more stringent. It is also revealed by the question on NTFP collection. Of the 10,564 households (26.4 percent) that found it relevant to answer the question on NTFP collection, about 40 percent said their access and collection of NTFP have decreased. Among districts that show significant decline in access are Lakhimpur, Sonitpur, Dibrugarh, Tinsukia, Bongaigaon, Cachar, Chirang and Dima Hasao; notably Chirang and Dima Hasao districts have a significant proportion of tribal populations. In the hill blocks of the state, about 46 percent households indicated a decline in the collection of NTFP. Forest degradation (reported by 43 percent households) was cited as the prime reason for a decline in NTFP collection. Stringent regulation (reported by 15 percent) though now has contributed to the decline in access; some positive developments such as a shift to other forms of works(18 percent) and alternative fuel (4 percent) also act as contributory factors.

7.3.4 Access to Clean Water and Air

The HDR survey (2013) reveals that about 53 percent households are satisfied with access to water in the state. The level of satisfaction is low in the flood-affected districts (Table 7.3). In the flood blocks, only 43 percent households reported satisfaction over access to water. In the flood-affected districts, people face a serious crisis over drinking water and, even when the flood water recedes, it leaves behind damage of water sources. Moreover, in the hill district of Karbi Anglong, only 36 percent households reported satisfaction on access to quality water. For the hill blocks as a whole, the level of satisfaction over water access is about 39 percent[48].

Regarding the water quality, altogether 33.7 percent households reported problems of excess iron and 8.8 percent reported turbidity

[47] Das (2011).
[48] A report of the Central Ground Water Board reveals the major groundwater problem in Dima Hasao district is higher concentration of iron in scattered pockets, with the possibility of treatment for domestic purposes. The report, however, emphasised the problem of approachability considering the road conditions and location of the habitations (Ground Water Information Booklet Technical Report Series: D No: 22/2008-09North Cachar Hills District, Assam Central Ground Water Board, North Eastern Region Ministry of Water Resources, Guwahati, November 2008).

Box 7.3 Deforestation and the outcomes

The villages of Udalguri district along the Bhutan border show massive deforestation. Interactions with the local people helped to ascertain a few reasons for this. It is relatively an easy way to ensure a living from selling logs, as the activity of cutting down trees does not require specific skills or capital investments. The people living along the belt are illiterate or have very low level of educational attainment. The impoverished villagers are used by the intermediaries to cut down the trees; the logs find a ready and remunerative market as well as illegal processing facilities in the locality. The expansion of small tea gardens in the district has also contributed to the vanishing forests. People have reported certain drastic changes in their locality in recent years. The two rivulets in the locality, Kaal and Chamrang, originating in the Bhutan Himalayas, run off with high velocity immediately after a heavy rainfall, but dry up soon after. There is no water in the rivulets during the off-monsoon period, which was not the case a decade earlier. Even during the monsoon, the area now experiences water scarcity in the agriculture fields. Moreover, the rivulets now carry sand and pebbles and deposit them in the paddy fields.

Source: Field interaction with the villagers, 2014.

in their water sources. The problem of arsenic is reported in some (0.3 percent) households. It may be that iron content and turbidity of water can be assessed by common knowledge, which is not so in the case of arsenic (see Box 7.4 on magnitude of the problem of arsenic in Assam). Problems of iron are found to be acute in the districts of Barpeta (77 percent), Nalbari (63.5 percent), Dhemaji and Marigaon (53 percent each) and Karbi Anglong (52 percent). The case of turbidity of water is prominent in the Barak valley districts of Cachar (22.3 percent), Hailakandi (46.4 percent) and Karimganj (24 percent) and in Nagaon district (17.6 percent). Spatial diversity wise data reveal iron concentration is higher in the Char (46.7 percent) and general blocks (45.4 percent). Turbidity is found mostly in flood (17.8 percent) and border blocks (12.7 percent).

Industrial pollution, however, has not emerged as a major issue in the state but, in some districts, people have started reporting degradation of land due to industrial pollutants. For example, in Kamrup, 6.1 percent and in Karbi Anglong 4.7 percent households have reported that industrial pollutants have degraded their paddy fields.

Air pollution and breathing problems, however, have emerged as major problems in the state. Altogether 21.2 percent households have reported experiencing air pollution in their localities. The higher proportion of households reporting air quality problems are found in Kamrup Metro (51 percent) while in Goalpara, Nalbari, Nagaon, Marigaon, Chirang, Karbi Anglong, Golaghat, Cachar and Sibsagar more than 25 percent households reported air pollution as a problem. The rising number of registered vehicles in the state in past decade can be considered as one of the prime causes. For instance, significant congestion of registered vehicles can be seen only in Kamrup Metro district (130 per 100 people as on 2011, the next district by rank is Sibsagar with 40 vehicles per 100 people). In addition to the vehicles, the rising number of registered industries along with population density and congestions could also explain the situation. Moreover, about 6.5

Box 7.4 Arsenic and fluoride contamination in Assam

Twenty out of 27 districts in groundwater-dependent Assam are arsenic and fluoride contaminated. Two separate reports – one tabled in the Assembly and the other following a survey – have established this. The Public Health Engineering Department Minister said that the arsenic content in the groundwater ranged between 50 parts per billion (ppb) and 996 ppb in 19 districts. This translates into 0.05-0.996 milligram (mg) of arsenic per litre (l) of water. The permissible limit for arsenic established by WHO is 0.01 mg/l.

Prolonged arsenic contamination is known to cause cancer and skin diseases besides affecting reproductive health. A survey report by the Northeast Institute of Science and Technology also established high fluoride content in the groundwater in six districts, five of which are also arsenic affected. These districts include Kamrup Metro, where Guwahati is situated. Groundwater in central Assam's Karbi Anglong was found to have a fluoride content of 15-20 mg/l while, in certain areas of Guwahati and its outskirts, it went up to 6.88 mg/l. The WHO permissible limit is 1.5 mg/l. Ingestion of 10-20 mg of fluoride per day for more than 10 years leads to crippling skeletal fluorosis, the report said. Inhabitants of at least half a dozen villages in Karbi Anglong district suffer from fluorosis in varying degrees.

Source: as reported in "Assam water contaminated with Arsenic, Fluoride"; The Hindustan Times, 14 March 2013.

percent households reported experiencing breathing problem in the state. The proportion of people reporting breathing problems is very high in the districts of Marigaon (33.2 percent), Kamrup Metro (20.7), Hailakandi (19.9), Udalguri (14.9) and Bongaigaon (14.1). The concentration of motor vehicles and industries could explain the problems in Kamrup Metro, Hailakandi and Bongaigaon districts, but explanations could be different for Udalguri (highly deforested) and Marigaon (flood affected) districts.

7.3.5 Unusual Weather and Rainfall Variability

About 42 percent households in the HDR survey (2013) feel that the weather of the state has become 'unusual'[49] in recent years. Such concern is higher in the districts of Hailakandi (72.9 percent households reported), Cachar (61 percent) and Baksa (62 percent), and low in the districts of Darrang (4 percent), Sibsagar (15 percent) and Udalguri (20 percent). The border districts of Hailakandi and Cachar are located in the southern part of the state and closer to the Tropic of Cancer, so warmer than the rest of the state. Block-wise data also reveal that reporting on unusual weather is higher in the border blocks (reported by 57 percent)

7.4 Concern for the Environment–is Poor Environmental Knowledge a Stressor on Sustainability?

As per the HDR survey (2013), about 78 percent households in the sample feel that the environment they live in is important for them. Such a feeling is high in the districts of Dibrugarh (94.1percent) and Kamrup

[49] Unusual weather was seen as change in time, duration of heat or rain cycle, intensity in rain or heat, etc.

Box 7.5 Failure to ensure environmental quality: Does technology adoption cost more than the health outcomes?

The residents of Bokajan in Karbi Anglong district reported lime dust from the Cement Corporation of India's Bokajan factory had polluted the environment and posed health hazards. According to the factory source, the existing dust control concept - electrostatic precipitator - would soon be upgraded at a cost of around INR7.5 crores and the new system might reduce the lime dust (Source: *The Telegraph*, 13 September 2010).

Pollution Control Board (PCB), Assam sources said that, in addition to the 570 brick kilns which are operating after obtaining its permission, there are an additional 5,000 brick kilns, many of them are illegal, operational in the state. Although some of these brick kilns have managed to get the 'no objection certificate' from the PCB, Assam, most of them are flouting environmental regulations mentioned in the Air (Pollution Control and Prevention) Act, 1981. The brick kilns should not be located close to water bodies or water sources, roads, hospitals, schools and human habitations. However, this rule has been violated in many instances. The brick kilns are highly resource and energy intensive as well as a polluting industry, which is mostly due to obsolete and traditional production techniques used in India. The clusters of brick kilns are a source of local air pollution affecting the population, agriculture and vegetation. The pollutants from the brick kilns are carbon dioxide, carbon monoxide, sulphur dioxide, nitrogen oxides and suspended particulate matter. Moreover, traditional brick manufacturing uses considerable land area and top soil.

Source: Extract from the article *"Brick Kilns Posing Serious Threats"*, The Sentinel, 23 December 2013.

Box 7.6 People need to be informed on extreme forms of hazards

In contemporary times, the cholinesterase test helps to determine, to a large extent, whether a worker is physically fit to apply pesticides. The action of cholinesterase inhibitors is insidious. By the time the symptoms appear, irreparable damage may already have been done to the health of the worker concerned. Therefore, it is now necessary to take advantage of medical research and use laboratory analysis of body fluids to determine the level of cholinesterase activity in the body. A study on pesticide appliers in tea plantations of Assam finds reported discomfort of muscular and body ache (in 57 percent workers), constant weakness (49 percent), headache (32 percent), chest pain (23 percent), respiratory problems (63 percent), eye irritation (15 percent), skin irritation (13 percent), excessive sweating, chapped hands; most of these symptoms could be because of overexposure to cholinesterase inhibitors.

Source: Das (2012 c).

Metro (92.4 percent), but poor in Udalguri (32.3percent) and Darrang(64.0percent). Altogether 53.6 percent households showed their concern for environmental degradation. This concern is high in Dibrugarh (89.5 percent) and Kamrup Metro (81.2 percent), but low in Marigaon (18.2percent), Barpeta (23.2 percent) and Udalguri (26.5 percent). About 49 percent

Table 7.3: Indicators of environmental stressors in state (%reporting HH)

Districts	Agri. Land Affected by Flood	Agri. Land Affected by Sand	Agri. Land Affected by Erosion	Agri. Land Affected by Industrial Pollutants	Forest Loss	Problem in Water	Facing Air Pollution
Baksa	7.2	5.9	4.3	0.2	0	41.6	13.1
Barpeta	54.3	7.1	15.2	0	0	78.5	3.2
Bongaigaon	11.8	4.7	5	2	21.6	44.4	18.2
Cachar	27.2	1.3	1.9	0.2	5.1	40.4	25.4
Chirang	22.4	5.4	2.4	3.5	11.4	29.2	27.9
Darrang	3.7	0.9	0.4	0	0	42.6	1.9
Dhemaji	37.2	21.5	8.2	1.1	0.5	64.3	17
Dhubri	23.2	9.7	11.8	0.4	0	35.3	14.2
Dibrugarh	8.9	4.9	1.5	0.4	19.6	31.3	3.3
Dima Hasao	0	0	0	0	18.2	6.3	2.2
Goalpara	39.7	15.5	12.6	0	0	8.9	47.2
Golaghat	7.6	1.6	2.1	0.2	10.6	31.7	26.9
Hailakandi	28.2	0.8	2.5	0.4	0.1	55.5	21.5
Jorhat	31.1	2.1	12.4	0.3	1.5	45.2	6.3
Kamrup	19.3	5.7	3.8	6.1	1.2	39.8	22.5
Kamrup M	2.4	0.3	0.5	2	1.8	40.6	50.7
Karbi Anglong	2.4	0.8	1.9	4.7	14.7	64.3	27.8
Karimganj	13.2	0.1	0.8	0.1	0.06	43	7.8
Kokrajhar	0.4	0.2	0.4	0	0.18	2.9	23.2
Lakhimpur	31.5	15.9	16.3	2	34.7	36.1	7
Marigaon	43.2	14.9	18.7	0.4	0.09	60.4	35.1
Nagaon	19.8	2	1.8	0.5	2.65	54.5	35.5
Nalbari	4.5	2.7	0.9	0.3	0	65.7	42.3
Sibsagar	34	2.2	1.6	0.3	0	53.3	28.2
Sonitpur	15.3	4.8	4.7	0.7	2.3	36.5	11.8
Tinsukia	8.2	2.3	1.1	0.2	1.06	35.3	20.8
Udalguri	0.7	0.2	1.1	0.2	0.09	42.6	18.8

Source: HDR Survey (2013).

people in the state feel responsible for the conservation of the environment. This feeling, however, varies significantly from the districts of Kamrup Metro (78 percent) and Jorhat (73 percent) to around 20 percent in the districts of Udalguri and Dhubri. About 67 percent people in the state feel that they would be very much happier if the environment around them was better. This concern is higher in the districts of Goalpara (86.8 percent) and Dibrugarh (87.4 percent) and very low in Marigaon (30.4percent) and Udalguri (32.2 percent).

Feelings on the importance of the environment (overall 76 percent rural respondents and 84 percent urban), concern for degradation (52 percent rural and 62 percent urban) and responsibility for conservation (47 percent rural and 57 percent urban) are found to be higher among urban residents.

The above responses of the people reflect ample variations on environmental knowledge and concern for a good environment. A large section of people, though, desire a good

environment and feel that it is important for their overall well-being; but, on the concern and responsibility fronts, their responses have taken an escapee mode. The indication is that a significant section of people in the state are unaware on the issues on environment or have poor environmental knowledge. Environmental concern is found to be poorest in the Char areas (38.4 percent) followed by flood-affected blocks (43.5 percent). The district of Udalguri reflecting poor environmental concern, though, falls in border areas and is free from floods.

Awareness and knowledge about environmental issues and factors leading to degradation of the environment limiting sustainability issues are extremely important. The state administration, in recent times, has organised awareness drives against the use of plastic bags and their negative externalities generated from choking of water channels to the problems created in solid waste management. It now appears that convenience, along with poor environmental knowledge of the citizens, has taken an upper hand over concern and responsibility to ensure a better environment. Such behaviours, which are avoidable, could take a heavy toll on the environment in the long run. In addition to such practices on the home front, people in general are aware on certain health hazards caused by emissions from industrial units. However, in certain cases, people are not informed or aware of outcomes of certain type of exposure. For example, a symptom or simple form of headache or muscle pain or skin irritation of workers engaged in pesticides application cannot be treated as general ailments, which is often done. The outcome is that the tea plantation workers along with the agriculture workers, which constitute a significant section of the workforce in Assam, are exposed to serious kinds of health hazards.

Recent developments on certain issues, however, reveal people's concern on the anticipated negative externalities of development initiatives of the state. There are reflections that anticipation on externalities generates enormous anxiety among people.

7.5 Anxieties over River Dams

The river valley projects planned and initiated by the state in the lower Himalayan belt surrounding Assam have been a bone of contention for the negative externalities generated in the Assam valley. One of the issues seriously debated over a decade is the Lower Subansiri Hydro Electric Project. The Subansiri river valley project was planned and initiated in the mid-1990s, primarily to address the issues of floods, erosion and resource utilisation problems in Assam. Accordingly there was a plan to extend the river valley projects to other mountainous Himalayan rivers in the northeast region. Later the focus of the project shifted to generation of hydro-electricity and, in 2000, it was handed over to the National Hydroelectric Power Corporation. It now appears that projects initiated in the region have ignored downstream impacts and try to concentrate on power generation. As indicated earlier, people have now started blaming the rising intensity of flash floods in the state on the upstream activities of the neighbouring hills. People's protests led to the formation of an Experts Committee by the Government of Assam in 2006 to look at the issues associated with the construction of the river dam on Subansiri.

In addition to the Lower Subansiri Project, flash floods caused by the Ranganadi Hydel Power Project since 2008 in the neighbouring valley of the Subansiri river (both in the Lakhimpur district) have become a cause of people's discontent on the state's approaches on large river dams for power generation and water resource management. The catastrophes created by flood waters (or water released) have led people to believe that large dams are

anti-people. Similar cases of flash floods are also reported from the excess water released from Kurisho Hydro Power Project in Bhutan and its downstream impacts in the districts of Bongaigaon and Barpeta. There is a feeling that transparency in approaches in the context of construction of the river dams could have made the situation avoidable[50].

The Expert Committee in its recommendations in 2010 suggested a thorough review and redesign of the 115-metre high dam for 2,000 megawatt (MW) of power generation on the Subansiri River. The report of the committee expressed reservations over the dam, saying it could adversely impact downstream areas. The report says that the spillway for releasing floodwaters has been designed incorrectly for a maximum discharge of 12,024 cubic metre per second (cumec), whereas the maximum discharge recorded on 11 July 1971 was more than 21,230 cumec. The recommendations also state that, if the present design parameters are followed, the dam will impact biodiversity and lead to siltation[51]. To minimise dam-induced flash floods, the report has recommended flood cushioning in the reservoir (Reduce Subansiri dam height: panel; *Down to Earth*, 31 July 2010).

It now appears that the state or the concerned authorities need to convince people on the technicalities and structural front that the dams have adequate flood cushioning to store extra water. This, however, has not been happening in the context of the state. The Expert Committee report and conviction of one section of people on the probable damages have led to an intensification of anti-dam protests.

The protest against dams was so intense that its construction had to be stopped in December 2011. As of November 2011, the dam had reached an elevation of 138 metre, just below the spillway elevation of 145 metre as it was designed. There is now an indication that the Ministry of Power, government of India, has gone slow on river dams projects on upstream Brahmaputra. It requires detailed and authentic studies on environment impact assessments to make decisions. The Ministry is also aware of the constraints of availability of space for storage of additional water and absorption of the shocks, land acquisition and rehabilitation issues and law and order problems[52].

Assam, at present, is experiencing an average peak power demand of 1,100 MW. This is more than twice what it was five years ago. Since no power generation project has been commissioned in recent times, the gap between demand and supply is widening. The total availability of power in the state is around 800 MW of which 540 MW is the allocation from the central sector power generation station and 260 MW is from own generation of the state[53]. Overall, power is needed to make improve the life of the people in the state. The concern raised, however, is that the gain from such initiatives could be less than what people would lose in the time to come.

7.6 Identifying Risk Zones of Environmental Vulnerability

Development outcomes on certain fronts are visible in the areas of floods, sand and river erosion. As discussed earlier, there is a drop in agricultural income in the flood-affected districts, loss of workdays and schooldays. Moreover, in the flood-affected blocks, just 8

[50] Extracts of newspapers on river dam and hydro-electricity powers in Assam(The Assam Tribune, 20 August 2011).
[51] Das (2012 b) indicates that the flood-affected Dhemaji district produces numerous indigenous varieties of paddy reflecting its rich bio-diversity. In the 15 villages covered in Das (2012 b) study, 13 indigenous varieties of paddy are recorded.
[52] Power Ministry to go slow on NE projects on upstream Brahamaputra, *The Assam Tribune*, 20August 2011.
[53] For a detailed note on the power supply situation, see the website of APDCL -www.apdcl.gov.in/.

percent of the total population has attained education beyond Class X, compared to the state average of 15.3 percent.

Information on SAPov reveals that, in the flood-affected district of Dhemaji, 20 percent households reported a worsening of their economic conditions in the past five years compared to the state average of 8.5 percent. In the three flood-affected districts of Barak valley (Cachar 13.5 percent, Hailakandi 19.3 percent and Karimganj 21.9 percent), a significant proportion of households reported a worsening of economic conditions. Block wise information reveals that, in the flood-affected and border blocks (the three districts of Barak valley share the national as well as international border), a very high proportion (24.4 percent) of people reported a worsening of their economic condition.

The household survey across the state captured responses on certain indications of the environmental crises and the data thus generated help us to construct an index of the vulnerability in the state. The information on the crisis of floods, sand deposition, river erosion, industrial pollutions, air pollution, access to potable water and deforestation presented in Table 7.3 are used to construct an index of environmental vulnerability[54], and the rank the most vulnerable districts in the state and their characteristics. The values of the index generated are presented in Table 7.4.

From the analysis, Marigaon has emerged as the most insecure district in the index. This district is severely affected by floods, erosion, sand deposition in the agriculture fields and has a crisis in accessing quality water. The situation is the same in the second ranked district of Dhemaji. Along with the flood havoc, access to quality water and air pollution has emerged as a crisis in the fourth ranked district of Sibsagar. However, in Nalbari (ranked third), access to quality water and air is the major form of crisis reported by the people. The thinly populated and hilly and forested district of Karbi Anglong is largely free from flood havoc and expected to enjoy good quality of air and water. The survey, however, did not indicate this (see Box 7.4 and 7.5).

The indicators used to construct the index could be influenced by many factors – natural, provisioning made by the state as well as how the state regulates the natural and provisioned public resources, that is, the various *process* aspects. Moreover, population growth, density of population, urban congestion, proportion of child and elderly population, level of educational attainment, access to health, water and sanitation facilities, average rainfall, proportion of flood hazards area, and forested area in the districts also influence the pattern of vulnerability in the districts[55].

The index put certain severely flood-affected districts of the state, namely, Barpeta, Darrang and Dhubri, in a better position. One explanation could be that the people in these lower Assam districts are more resilient to the adversities of floods. Changes in the cropping season and pattern is one part of this explanation (see section 7.6.3).

[54] The formula used to derive the HDI by the UNDP prior to 2010 is adopted to calculate the vulnerability index of the state. However, the weights given to the seven indicators are based on how the respondents during the household survey in the respective district perceived and reported on these crisis indicators (Table 7.2). Accordingly, access to quality water got the highest weight (0.4), followed by flood and air pollution (0.2 each) and sand, erosion, industrial pollution and degraded forest got weight of 0.05 each. It is a well-established fact that floods, industrial pollution, forest degradation all act as determinants in deterioration of water quality.

[55] Also see ASDMA (undated) State Disaster Management Plan, Assam, p45.

Table 7.4: Environmental vulnerability: ranking the districts

Rank	Districts	Index	Rank	Districts	Index
1	Marigaon	0.638	15	Dhubri	0.365
2	Dhemaji	0.555	16	Golaghat	0.309
3	Nalbari	0.526	17	Sonitpur	0.307
4	Sibsagar	0.512	18	Baksa	0.304
5	Karbi Anglong	0.506	19	Tinsukia	0.291
6	Nagaon	0.501	20	Karimganj	0.288
7	Hailakandi	0.475	21	Udalguri	0.287
8	Goalpara	0.433	22	Darrang	0.246
9	Cachar	0.412	23	Dibrugarh	0.236
10	Lakhimpur	0.410	24	Kamrup M	0.230
11	Bongaigaon	0.402	25	Kokrajhar	0.091
12	Jorhat	0.399	26	Barpeta	0.063
13	Chirang	0.392	27	Dima Hasao	0.046
14	Kamrup	0.376			

Source: Based on HDR survey (2013).

7.7 Mitigation Measures and their Effectiveness

There are inconclusive debates on how the environmental crisis faced by the state can be at least reduced, if not wholly mitigated. As is evident from earlier discussions, intense pressure of the population, vanishing forests and ineffectiveness on the part of the state to enforce regulations contributed to degradation of the overall environment leading to environmental vulnerabilities in districts with varying degrees (Table 7.4).

Forest re-generation is one of the options to mitigate environmental hazards. As indicated by the Department of Environment and Forest, Government of Assam, during the period 2003-04 to 2010-11, the state raised the forest cover in 52,499 ha (525 km^2) under the National Afforestation Programme involving a cost of INR 715.9 million. The categories of areas afforested primarily include aided naturally regenerated (31.4 percent), artificially regenerated (39.0 percent), bamboo plantations (15.5 percent) and mixed plantation of minor forest produce (11.1 percent). Studies are required to determine whether the extent of outcomes under the National Afforestation Programme is enough. Moreover, micro studies on the intervention areas would help to assess the benefits derived.

It is now well perceived that unplanned anthropogenic activities in some of the neighbouring hill states also have contributed to the ecological crisis of Assam. To regulate the externalities originated in the separate administrative space, support on regulatory measures from the central government is required. Moreover, it appears that control of pollution and hazardous elements released by vehicular traffic and industries is still not effective, despite the presence of provisioning through different acts and regulations.

Coming to specific interventions to mitigate the hazards of floods and erosion, the state's measures could take the following forms.

7.7.1 Structural Measures - Embankments, Dykes and Channelling

At present, the state has 449 embankments covering a stretch about 4,459 km. The Water Resource Department has already identified 3,340 km of embankments as vulnerable. After the massive flood in June and July 2012, the state government had placed a demand of INR 3,460 crores to the central government to raise and strengthen embankments across the state. This reveals the priority of the government on structural measures to manage the havoc of the floods. Exploration of information in the flood-affected districts of the state would reveal that, till date, the district administrations have spent millions of rupees annually in relief operations and mitigation plans. Mitigation plans mostly revolve around construction of embankments, which are often breached by the fury of floods[56]. In recent years, the rising magnitude of floods and the subsequent damage raise the question as to what extent embankments help to prevent and minimise flood damage. The embankment approach, however, has been intensely debated for several decades in the country[57], for its ineffectiveness and involvement of huge costs in construction and maintenance.

Box 7.7 New experiments with protection structures: Geo tube embankments in Matmara, Lakhimpur district

In recent years, international financial institutions have started recommending embankments as a way of solving problems caused by floods. The positive experiences[58] from Malaysia influenced the Asian Development Bank to suggest geo-tube embankments in severely flood-affected areas of Matmora. Altogether 146 geo-tubes were laid at Matmara in 2008 to strengthen a 5-km-stretch of the existing weakened dyke. However, in 2009, a completed 3.5 km stretch was swept away by the surging waters. The state, however, took the initiative to re-construct the embankment.

The rational for using geo-tubes to support embankments is that the soil available for earthen embankments on the northern bank Brahmaputra is basically sandy which lacks the required cohesion and stability, so cannot sustain flood water pressure. Contrary to this, the use of geo-tubes (soil in geo-tubes is made up of geo-textile materials with a fill height of 2.5 metres) provides sufficient strength and stability. The construction of the embankment has been completed at a cost of INR1,100 million (Economic Survey, Assam, 2010-11).

The people of Matmora, who had faced massive destruction from floods and sand deposition, now express some kind of relief because of the geo-tube embankment. Yet anxiety persists as the channels of the Brahmaputra have now come closer to the embankment and pose a threat. The river brings an enormous quantity of sand and silt; heavy siltation is one of the causes that prevents free flow of water, ultimately putting pressure on the river to carry water and strike the embankments.

Source: Filed Experience and Focus Group Discussion

[56] For examples, in the severely flood-affected district of Dhemaji in the state, till date, 40 embankments and dykes have been constructed and another six are sanctioned, all involved a whopping cost of INR 1,016.38 million (information acquired from the district administration in August 2009 by submitting an application under the Right to Information Act, 2005).
[57] Ray (1954).
[58] A pilot project of utilisation of geo-tubes as submerged dykes was undertaken in 2006 to protect shoreline erosion at many vulnerable sites along the Malaysian coast.

Contrary to such opinions on the ineffectiveness of embankments, on the political front, arguments and opinions, however, were different even in the 1950s. The chief minister of Assam too had remarked in September, 1954," We hope to take up immediately a scheme for running embankments along the Brahmaputra, from a point near the foothills to the point where it reaches the border of the state"[59]. The outcome of such perceptions is now obvious with the construction of embankments along most of the rivers in the state, changing the structure of the landscape[60]. Evidence and interactions with flood-affected people too reflect peoples' preference and confidence in embankment as a protective structure.

7.7.2 Non-structural Measures (People's Knowledge System- Living with Floods - Coping and Adaptation

Providing absolute protection to all flood-prone areas against all magnitudes of floods is neither practically possible nor economically viable[61]. The goal of the non-structural approach of flood disaster mitigation is to organise and enhance the existing coping mechanism and capacities of the local communities and minimise the losses to livelihood provisioning. Such an approach is inexpensive; costs involve largely dissemination of information on probable hazards, technology disseminations to cope and adapt with the situations, and on administration of the measures.

The Assam State Disaster Management Authority (ASDMA) is implementing the flood early warning scheme since 2009. The issue is to what extent the system of early warning helps in raising the efficacy of the state to manage the disaster and govern flood-affected spaces better with timely and concentrated effort? The data on loss of human lives indicate that there is reduction of flood-related deaths in Assam in recent times. A study by OKDISCD (2014) also finds an indication on this. However, people show their discontent on the approaches of the state administration on rescue operations and distribution of relief and mitigation measures. It is often reported that relief material never reaches on time when it is most needed. However, it seems that people are not prepared on their own (or incapable) to face the seasonal havoc, unless it is sudden[62]. We, however, see massive campaigns from ASDMA and the district administration to prepare people to face the fury of floods by taking/adopting certain precautionary measures.

7.7.3 Planning for Water Resources, Land Use and Cropping Pattern in Risk Zones

Most of the lower Assam districts adopted cultivation of summer paddy to compensate for the constraints and economic returns set by the floods. The proportion of area under summer paddy to total paddy in the state was 21.4 percent during 2012-13, an increase from 17.1 percent in 2002-03. The intensity of cultivation of summer paddy in the districts of Dhubri, Goalpara, Bongaigaon, Barpeta, Nalbari, Kamrup and Marigaon has increased in the past one decade[63]. It indicates a form of coping and use of land resources in an effective way. Such an approach is, however, not visible in the flood prone districts of upper Assam, except to an extent in Lakhimpur. The flood-prone districts of lower Assam now also show a surge of cultivation of horticulture crops.

Apart from paddy, adoption of high-value crops would also help to mitigate economic

[59] Ibid, p 1123.
[60] There are examples that many river valleys in the state of Assam are now shielded by huge embankments from the flowing rivers. There are cases that rainwater now gets trapped inside the embankments leading to deterioration in the characteristics and conditions of soil, and returns from agriculture (Box 6.1).
[61] Government of India (2011), see note 32.
[62] There are cases of certain unanticipated severe flood havoc in the state. These are sudden release of water by the river dams or reservoirs.
[63] Information extracted from the Statistical Handbook, Assam 2013 and 2004, Directorate of Economics and Statistics, Guwahati.

crisis in the flood-affected districts of the state. Area-specific cropping plans including identification of suitable crops and varieties, supply of seeds and inputs, soil and water management practices would help. The efforts of farmers, however, need to be supported by road connectivity to markets and provisioning of water sources during the off-monsoon period. The lower Assam districts largely depend on groundwater for Rabi crops. Most energy efficient motors, engines and pumps should help to economise conventional energy consumption in such endeavours.

7.8 Summing Up

The phenomenon of floods appears to be unavoidable in the state. However, farmers also welcome the floods as a traditional mechanism to upgrade their soil allowing silt deposition[64]. It appears that river bank erosion and sand deposition, and not the floods create more stress on the people. To mitigate the externalities of erosion, sand deposition and high run-off of water, certain parts of the state (and the hills of neighbouring states) would call for effective planning on land uses and even reversal of changes of the land use pattern. So long the negative externalities of irreversible damages such as erosion and sand casting continue or return at regular intervals, the initiatives of the people to adapt to the adversities get weakened. Mapping of the hazardous and risks-prone zones at micro administrative units (blocks) would help in order to initiate preventive measures. Overall, one would agree that afforestation in identified vulnerable zones would help to minimise negative impacts.

The state also needs to have long-term plans while planning for natural resource based as well as other economic activities, to ensure sustainability. Discontinuation or closure of economic units, whatever may be the reasons including of ineffective regulatory provisions related to environmental standards or exhaustion of resources, creates shocks among the involved people leading to serious impacts on their households[65]. Like the effects of devastating floods, such developments also erode the capabilities of the people. The need for a similar type of planning also applies in the context of access and use of NTFP, as the well-being of many households living in fringe villages of forests depends on how effective are the plans to ensure distributive justice and sustainability.

It has also emerged that poor environmental knowledge of the people places stress on the environment and development of the state. Segregation of waste at the household level into bio-degradable, non-degradable and toxic elements not only reduces the burden of the municipal authorities (quantum of manpower used to segregate the waste, finding of space for disposal or for re-cycling, etc.) in solid waste disposal, but also helps to keep the surroundings clean, with positive outcomes on health. The support or effort could come from the people, after an awareness drive. Otherwise, there emerges the need for imposition of stringent regulations.

Along with ensuring the effectiveness of regulatory measures, the state also needs to strengthen the provisioning of basic services on education and public health, and ensure that the regular livelihood activities and even schooldays of the children do not get affected amidst the crisis. Livelihood sustainability and a clean environment, so that there are no negative health outcomes, would ensure, sustain and raise the capability of the people in a space.

[64] For more on this, see section Mud Values in D'Souza, (2006) Drowned and Dammed: Colonial Capitalism and Flood Control in Eastern India, Oxford.
[65] The issue is that can a person engaged in a saw mill or cement factory or brick kiln be assured that her livelihood is secured for the next 30 years or such activities would sustain to the next generation?

8 Subjective Well-being

Processes are Critical to Outcome

8.1 Introduction: Why Subjective Well-being Matters

The foregoing chapters indicate that, for a holistic evaluation of 'development', it is also necessary to measure its subjective outcomes through the experiences of people and their communities. This can be carried out by measuring people's 'capability', which essentially aims at minimising critical deprivations of human life. The objective outcomes of development such as reducing income poverty, illiteracy, mortality and morbidity would still occupy the central theme in a development agenda but these should be considered to *constitute* the basic elements of the capability of individuals that expand their opportunities to choose a life they value. Thus, expanding the 'freedom' of the people to make diverse choices becomes the ultimate outcome or the 'ends' of development efforts.

The notion of 'freedom' embodied in capability has two connotations:(i) freedom from *within*, that is, individuals are to be freed from *internal limitations* due to basic deprivations in terms of ill health, ignorance and poverty to exercise choices over given opportunities; and (ii) freedom from limitations imposed by external conditions in exercising their choices. The first, that is, the 'opportunity aspect' of freedom relates to the level of achievement, while the second relates to the 'process aspect' of freedom, that is, *how* the realised level of well-being is actually achieved. A normative framework of evaluation must examine, not only the achievements, but it should also carefully assess the processes by which the achievements have been realised. In the capability approach, the first type of achievement – achievement without taking note of the processes involved is usually called 'culmination outcome'. The other type – achievements considered along with processes involved is formally called 'comprehensive outcome'.[1] The relation between these two aspects of freedom is of fundamental significance in a capability approach.

In this report, the idea of *subjective well-being* is wholly concerned with the *valuation of processes*. It is subjective because it takes note of *qualitative* aspects of various processes involved including governance and service delivery. The valuations of various processes – social, political, ecological and personal – have been attempted by considering people's level of *satisfaction* over them, where 'satisfaction' is taken to be reflective of the implicit preferences of people over the existing processes. If a person is unsatisfied with any aspect of the processes, it simply implies that the process under consideration is surely not of the kind that he or she would prefer and would, therefore, value. This is the general perspective about 'satisfaction' with which the present chapter attempts to analyse subjective well-being of the people of Assam.

In the light of the foregoing discussion, the present chapter attempts a clear value addition by emphasising 'comprehensive outcomes'. This emphasis on 'comprehensive outcome' enlarges the scope of analysis and also widens the perspective of the progress of development. For instance, while an increase in income is a definite achievement in the culmination sense, it can make a household worse off by reducing the time spent with family and friends. To 'enjoy a social life' is, of course, an important functioning of human life. Similarly, more work time can fetch more income but may well accompany

[1] See Sen (2002), particularly chapter 4 and chapter 21 on these aspects.

more distress, and probably less nutrition, particularly among children, when their parent's inability to spare time for them creates pressure points concerning nutrition and other essential forms of human nourishment. In this sense, by including the aspects of subjective well-being, the report extends its scope to the evaluation of 'comprehensive outcomes' instead of limiting itself to the usual evaluation of 'culmination outcomes'.

8.2 The Well-being Framework

Assam's well-being framework[2] combines eight domains related to various process aspects of personal, social, political, cultural and ecological lives of individuals. These domains are normatively selected and considered intrinsically important for both individuals and society as a whole. Each domain consists of a set of indicators, disaggregated into specific sets of variables or questions. The framework on the whole comprises eight domains and 94 variables based on personal, collective and relational questions (Table 8.1). Note that not all the 94 variables are shown in the table. This mix recognises that well-being consists of multiple, inter-connected and complementary factors, and that they work in two ways – row as well as column wise – as in the case of multidimensional poverty models.[3]

The domains and their indicators are assigned equal weights, because each is normatively considered to be equal in importance for subjective well-being. Note that this allowance is necessary to account for diversities which the report intends to highlight. Moreover, only qualitative aspects have been focused on in each of the domains, which are generally applicable to all individuals so as to capture subjective valuation of individuals.

8.3 Subjective Well-being Sufficiency: Identification and Aggregation

To identify those enjoying subjective well-being one has to rely on appropriate sufficiency cut-offs. The sufficiency cut-off or thresholds of subjective well-being used in the Assam well-being framework are based on the Alkire-Foster methodology[4]. This involves cut-offs at two levels – known as 'dual cut-offs'. The first level cut-off is applied to define 'sufficiency' for each individual variable representing the indicators of a domain shown in Table 8.1. Then an aggregative sufficiency cut-off is applied at the level of each domain, that is, cut-offs are applied both row wise and column wise. The second level cut-off is applied at the domain level, where sufficiency is defined as satisfaction in at least two-thirds of the variables for each domain.

Finally, at the aggregate level comprising all the eight domains, we look at the number of domains in which a person is satisfied. Depending on the number of domains (from 0 to 8) in which a person is satisfied, a Likert-type scale is devised denoting the specific levels of subjective well-being of individuals. Here, 'sufficiency' is not seen in absolute terms, rather it is viewed in terms of particular intensities of 'satisfaction' or 'dissatisfaction' across all domains.

As sufficiency is seen as *relative* in the present framework, instead of having only dichotomous

[2] The Assam well-being system draws on the Gross National Happiness system pioneered by Bhutan. There are differences but these are less significant than the similarities.
[3] See Alkire and Foster (2009).
[4] See Alkire and Foster (2009).

Table 8.1: Domains and indicators/variables of the Assam well-being framework

Domain	Indicator/Variable
Psychological and Emotional Well-being	Sense of satisfaction, meaning in life, social support, stress, non-material responsiveness, emotional experience, suicidal thought and attempt
Physical Health	Disability and activity limitations, healthy days and short-term activity limitation, clinic or hospital services satisfaction, barriers to satisfaction.
Education	Historical literacy, cultural literacy, civic literacy, ecological literacy, historical literacy, food and nutrition literacy, health literacy, indigenous knowledge, formal education.
Cultural Diversity and Resilience	Languages, core values, participation in community events, engagement with local customs and traditions, value changes
Community Vitality	Length of residence, volunteering, donations, sense of belonging, sense of trust, community vitality, family relationships, crime and safety.
Governance	Political participation, perceptions of: performances of government at national and local level, leadership performance, government institutions, electoral process, judicial independence, fairness, speediness and affordability, respect for fundamental human rights, perception of police, media freedom/independence, access and quality, trust in institutions and leaders, accountability, perception of corruption.
Ecological Diversity and Resilience	Transportation, climate change awareness, consumption of wild foods and firewood, quality of agricultural land and other inputs, agricultural constraints, agricultural predators.
Living Standards	Absolute income, debt, perception of relative income status, anticipation of financial security, food security, housing, in-kind income, assets ownership, household expenditure.

categories of 'satisfied' and 'dissatisfied', the specific levels of subjective well-being of individuals are classified as follows:

(i) Intensively dissatisfied, if a person remains dissatisfied in all domains;
(ii) Moderately dissatisfied, if a person is satisfied only up to any three domains;
(iii) Neither satisfied nor dissatisfied, if a person is satisfied in any four domains;
(iv) Moderately satisfied, if a person is satisfied in any five to seven domains;and
(v) Intensively satisfied, if a person is satisfied in all eight domains.

This also enables us in obtaining the *intensity*, that is, the *average* number of domains in which people experience 'satisfaction' or 'dissatisfaction'.

It is, therefore, evident that the Assam well-being framework marks a significant departure from the standard Alkire-Foster method. While the Alkire-Foster method provide an 'index' of

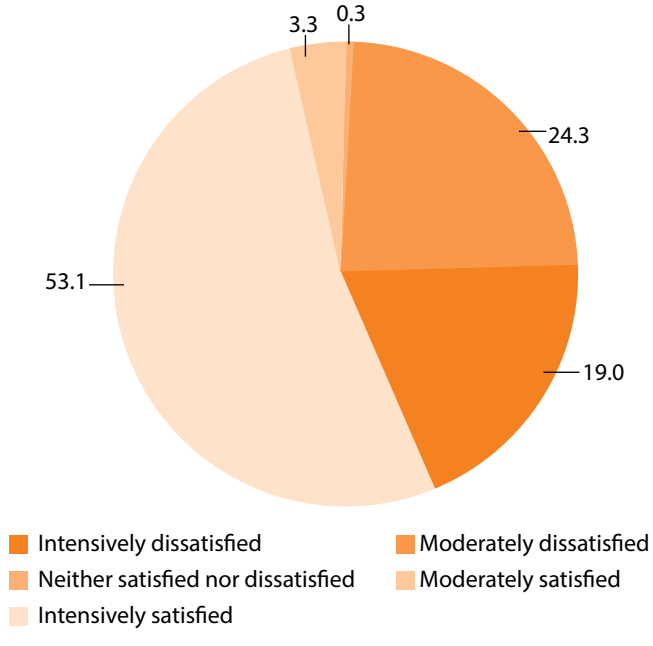
sufficiency or deprivation defined as a product of head count ratio and intensity, the Assam well-being framework gives a range of head counts and related intensities.[5] In the present framework, however, the status of subjective well-being at various levels of aggregation has been evaluated by the 'average number of domains' where people are found to be 'satisfied'.[6]

The Assam well-being framework allows *decomposability*. This means that the methodology permits mathematically breaking down the summary index according to specific characteristics of the population to offer valuable insights to policy makers. The results can be decomposed to various levels –district, rural-urban, sex, age-group, educational attainment, spatial diversity, and so on. Further, it is also possible to examine the domain-wise contribution to subjective well-being and its internal drivers for understanding the specific aspects of the process.

8.4 Key Results of Subjective Well-being Analysis

It is found that 56.4 percent of the people of Assam are enjoying subjective well-being – they are either 'moderately satisfied' or 'intensively satisfied'. This simply means that about half of the population in Assam finds most[7] of the process aspects 'satisfactory', that is, on average, they find the processes as they would prefer them to be. It is also seen that 24.6 percent of the people are not yet enjoying subjective well-being defined in this sense. The remaining 19 percent of the people are 'neither satisfied nor dissatisfied' (Figure 8.1). This last category stems from the Likert-type scale used in the framework. As mentioned, the scale has values ranging from 'intensively dissatisfied' to 'intensively satisfied', with a midpoint category of 'neither satisfied nor dissatisfied'. Likert-type scales acknowledge the fact the people's

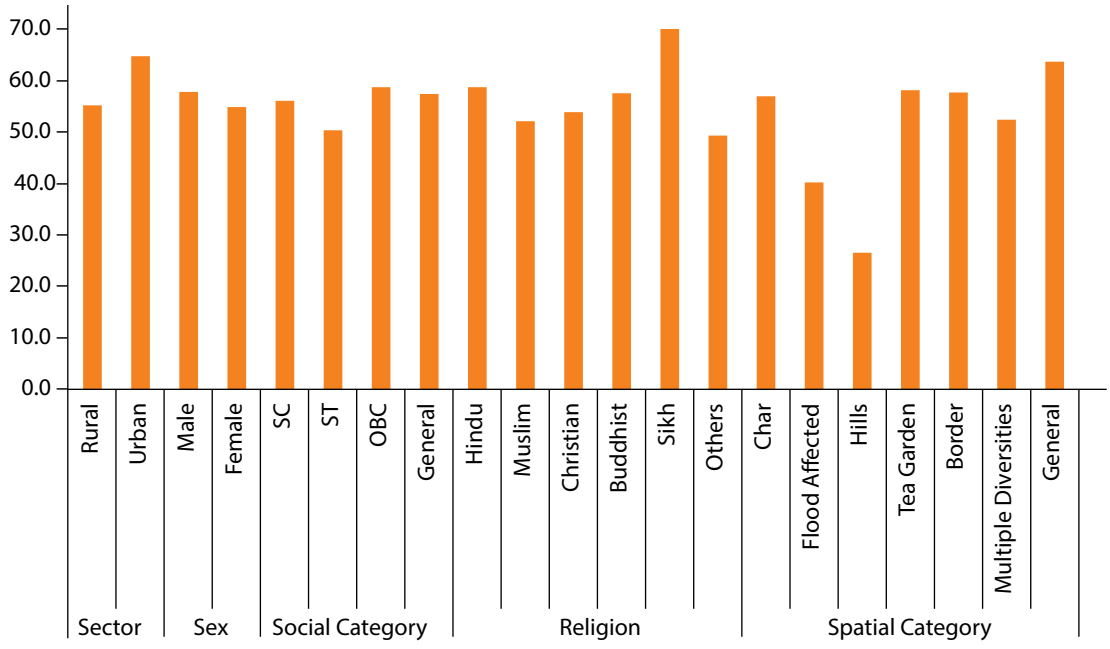
Figure 8.1: People enjoying subjective well-being in Assam (in %)



Source: HDR Survey, 2013.

[5] It is, thus, possible to obtain five indices of Alkire-Foster type, instead of one in the Assam well-being framework.
[6] The detailed method is provided in Technical Appendix 3.
[7] At least five out of eight domains.

Figure 8.2: People enjoying subjective well-being by diverse categories (%)



Source: HDR Survey, 2013.

attitudes are characteristically ambivalent. It is, therefore, essential to accommodate a scenario where a person is less than certain in some aspect of life. So, while the people who are satisfied in any four out of eight domains may be considered as not being satisfied in general, by the same logic they are not explicitly dissatisfied either.

The head count ratio of 'satisfied', comprising the 'moderately satisfied' and 'intensively satisfied', in rural areas is found to be less (54.9 percent) than that in the urban areas (64.7 percent). The percentage in the indecisive category ('neither satisfied nor dissatisfied') is found to be almost the same in both rural and urban areas (19.4 percent and 17.1 percent, respectively).

The gender difference in the level of overall satisfaction ('moderately satisfied' or 'intensively satisfied') is not that pronounced, with 57.4 percent of males and 54.6 percent females found to enjoy subjective well-being.

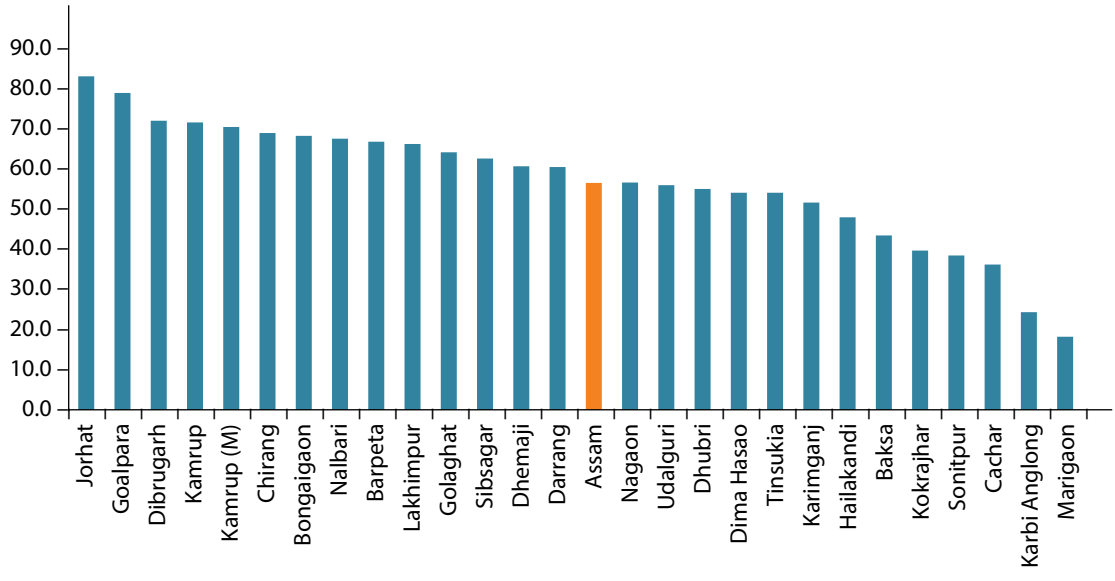
In terms of social categories, only the STs are found to have a lower head count ratio of satisfied people (50.4 percent). All other categories SC, OBCs and general castes have head count ratios that are very similar to the state average. In terms of religion, the head count of satisfied people is found to be lower among Muslims (52 percent) compared to that among Hindus (59 percent). Across the spatial diversity categories, the head count ratios of satisfied people are found to be rather low in the hills (26.3 percent) and flood-affected areas (39.9 percent).

At the district level, the highest head count of satisfied people is found in Jorhat (82.4 percent), followed by Goalpara (78.4 percent), Dibrugarh (71.5 percent), Kamrup (71.1 percent) and Kamrup Metro (70.0 percent). The lowest head count, on the other hand, is found in Marigaon (18.1 percent). The other three districts with lower head counts are Karbi Anglong (24.3 percent), Cachar (35.8 percent) and Sonitpur (38.3 percent) (Figure 8.3).

From the domain level analysis, it is observed that the key drivers of subjective well-being in Assam are *ecological stewardship* and *cultural vitality and diversity*. It could be found that, on the whole, about 86 percent of people are 'satisfied' in these domains. *Ecological stewardship* has special significance in the era of climate change. The ecology domain turning out to be a key driving force of well-being in the state suggests that people are mostly 'satisfied' with the environmental quality in general, and remain unaffected by adverse environmental consequences including unusual weather[8]. Besides, people have also shown a very high degree of concern for environmental protection and importance[9]. Due to the combination of all these positive aspects, the level of satisfaction in the ecology domain, in aggregate terms, has tended to be on the higher side.

The domain 'cultural vitality and diversity', on the other hand, points to the rich and diversified cultural heritage and legacy that people enjoy in the state. The value of and participation in cultural life have been considered important in people's lives. People perceive language and cultural identity as important aspects of life and continuation of these is equally significant[10]. Although, due to these positive aspects, the cultural domain, as a whole, exhibits high 'satisfaction', people seem to be quite dissatisfied with the way these aspects are being encouraged and nurtured by the government.[11] It may, however, be noted that there is a wide variation in the percentage of people 'satisfied' in the ecological and cultural domains (Figures 8.5 and 8.6). There are also differences among spatial categories. People in the hills are more satisfied in the ecology domain (92.7 percent) compared to the people in the Char areas (71.8 percent). In the flood-prone blocks, satisfaction in the culture domain is found to be the lowest (77 percent).

Figure 8.3: People enjoying subjective well-being across districts (in percent)



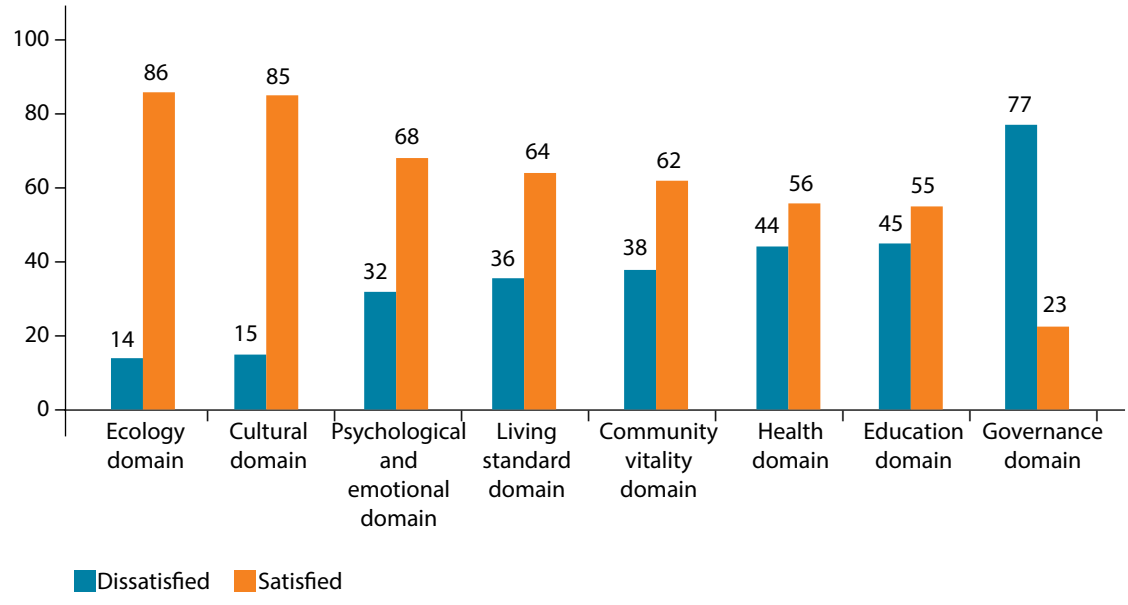
[8] It is found that about 80 percent of people in the state do not face adverse consequences of floods, erosion and sand deposition, about 53 percent people have access to clean and safe drinking water, about 78 percent people have access to clean air and about 60 percent people reported to have witnessed no unusual weather in the recent past.

[9] 77 percent of people realise the importance of environment in one's life, about 53 percent express concern for environmental degradation and 72 percent feel responsible for environmental protection.

[10] 87 percent of people feel that religious identity is important, 83 percent consider ethnic identity as important and 82 percent believe the continuation of cultural identity matters.

[11] 75 percent expressed their dissatisfaction over this issue.

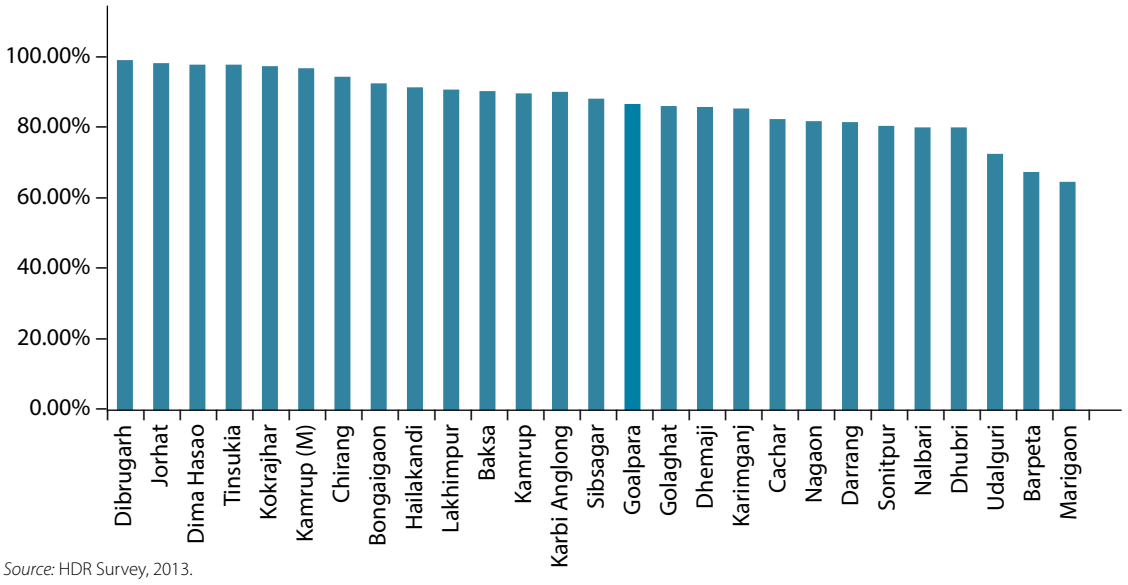
Figure 8.4: Drivers of well-being in Assam (% satisfied)



Source: HDR Survey, 2013.

Low satisfaction in the ecology domain in the districts of Marigaon, Barpeta and Udalguri (Figure 8.5) are caused mostly by adverse environmental impacts of floods and erosion[12]. Besides, reported experiences of unusual weather are also high in the two districts. Further, the concern for environmental degradation is found to be rather low in the districts. Only 18 percent in Marigaon and 23 percent of people in Barpeta have reportedly expressed concerns about the degrading environment. Notably, environmental concerns have been on the much higher side in the districts of Dibrugarh (89.5 percent), Jorhat (78.5 percent) and Tinsukia (79 percent).

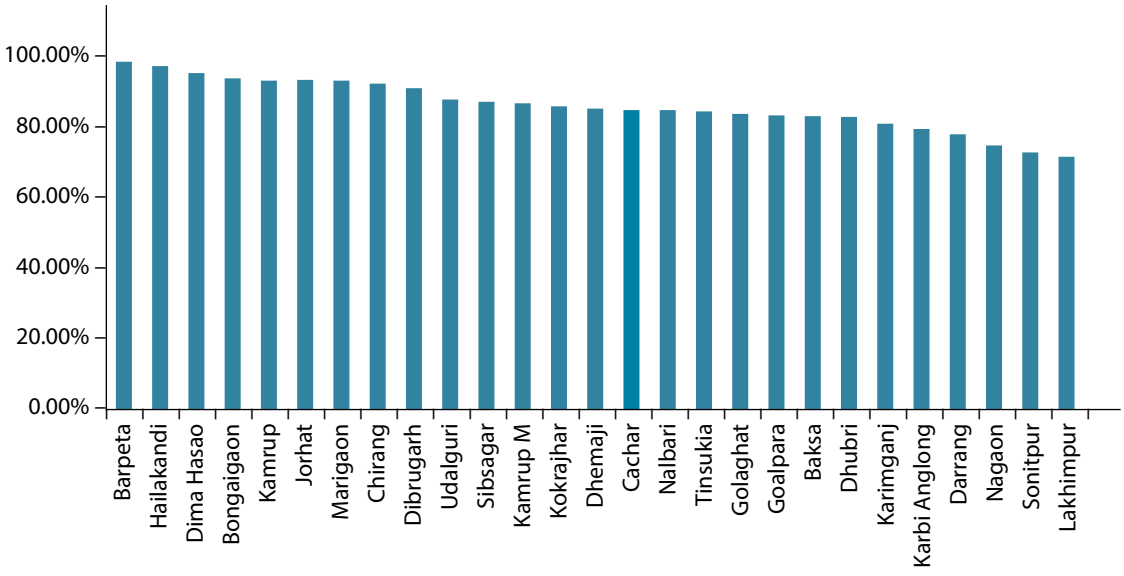
Figure 8.5: District-wise percentages of people satisfied in the domain of ecology



Source: HDR Survey, 2013.

[12] Only 45 percent in Barpeta and 58 percent in Marigaon are reported to have no adverse impact of floods.

Figure 8.6: District-wise percentages of people satisfied in the domain of culture



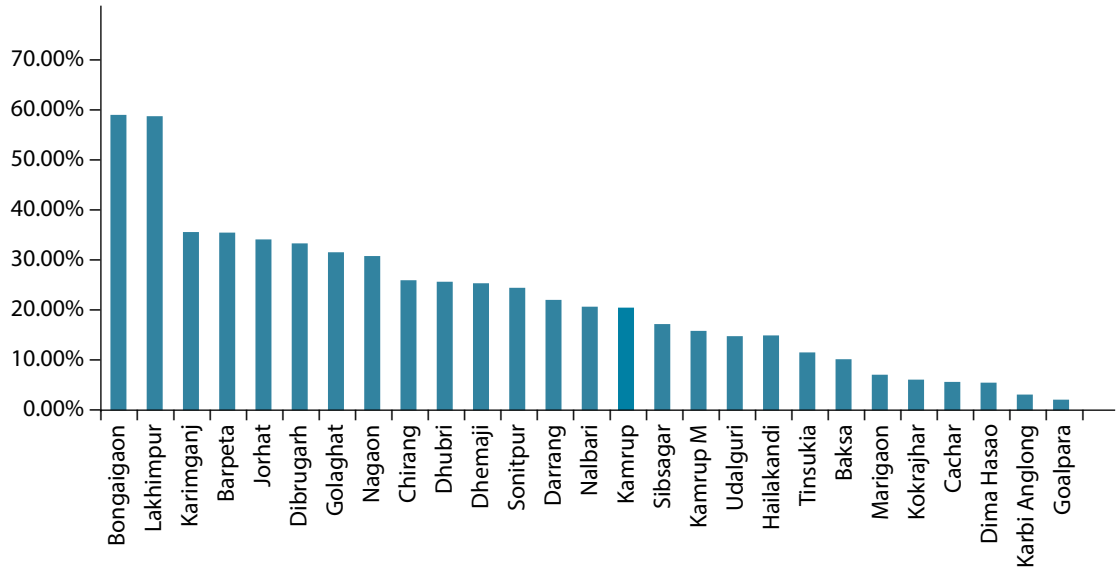
Source: HDR Survey, 2013.

On the cultural front, the level of satisfaction is found to range from 71 percent to 98 percent in the districts (Figure 8.6). Although high levels of satisfaction across the districts indicates pervasiveness of the importance of culture in the attainment of subjective well-being, relatively low levels of cultural satisfaction have been observed in Lakhimpur, Sonitpur, Nagaon and Darrang (Figure 8.6). A more detailed analysis reveals that people are mostly dissatisfied (about 75 percent) on account of the government's effort to preserve and promote cultural aspects, which people consider valuable and important for their well-being. Strikingly, it could also be found that flood-affected areas reportedly have lower satisfaction in the cultural domain (Table 8A.7, Statistical Appendix).

The three major downward pull factors of subjective well-being in the state are found to be governance, education and health (Figure 8.4). The issues related to governance in the state have surfaced quite sharply from the analysis. The level of satisfaction in the domain of governance has been low across all spatial categories with an abysmally low level of 2.6 percent in the hills (Table 8A.7, Statistical Appendix). Barring the districts of Bongaigaon and Lakhimpur, the maximum percentage of people satisfied in the governance domain is found to be only 35.7 percent. This implies that about two-thirds of the people in the state are dissatisfied with most of the key processes in governance. The percentage is really low in the districts of Goalpara (only 2 percent satisfied), Karbi Anglong (3 percent), Dima Hasao (5.2 percent), Cachar (5.6 percent), and Kokrajhar (only 6 percent). These awfully low levels of satisfaction suggest some serious problems with the critical processes of governance in these districts, in particular, and, perhaps, in the state in general (Figure 8.7).

The satisfaction in the *governance* domain was measured in terms of confidence in government, provisioning of social goods, social protection programmes, public safety

Figure 8.7: District-wise percentages of satisfied people in the governance domain



Source: HDR Survey, 2013.

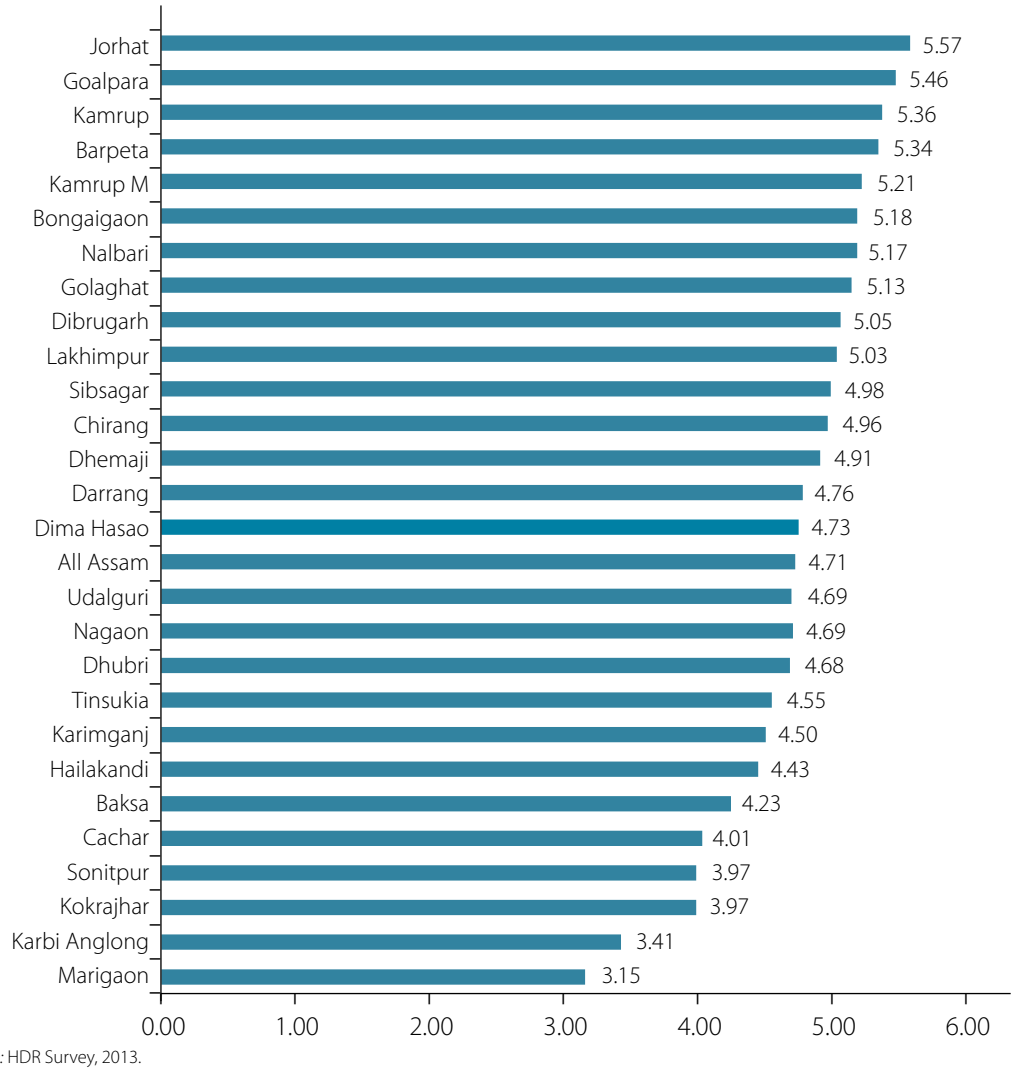
and security, observance of basic rights such as freedom of speech and corruption-free good governance. Besides, people's participation in various institutions and processes of governance, their responsibility towards fulfilment of citizens' obligations were also considered under the domain of governance. Accordingly, confidence in the government[13] in Goalpara is found to be extremely low (only 5.4 percent). Similarly, confidence in the government in Dima Hasao is just 31 percent. It is further seen that people are, indeed, grossly dissatisfied with provisioning of social goods. Except Bongaigaon (49.7 percent), in all other districts the percentage of satisfied people is extremely low (less than 25 percent). In 13 districts, the percentage is less than even 10 percent. In Goalpara, it is as low as 0.16 percent. Thus, it is evident that provisioning of social goods and service delivery is a major area of dissatisfaction expressed by people. As far as spatial diversities are concerned, governance is pervasively low across the categories, with the lowest in the hills (Table 8A.7, Statistical Appendix).

Satisfaction levels on *health* and *education* are found to be about 55 percent. Satisfaction in health is found to be the lowest in Karbi Anglong (29 percent) while that in education is in Marigaon (only 26 percent) (Table 8A.9, Statistical Appendix). Spatial category wise, the levels of satisfaction in health and education are found as the lowest in the hills (Table 8A.7, Statistical Appendix).

The *intensity* of satisfaction or dissatisfaction in the present framework is measured by the average number of domains where people are found to be satisfied[14]. It is seen that, on an average, people in Assam are satisfied in 4.7, rounded up to five, domains out of eight. The general intensity is found to be the highest in Jorhat where the people are satisfied in 5.57 or six domains out of eight, and the lowest in Marigaon where the people are satisfied in 3.15

[13] Confidence was measured in three areas: in providing jobs, provisioning basic services and controlling prices. For details, see the methodology given in Technical Appendix 5.
[14] For details, see the methodology given in Technical Appendix 5.

Figure 8.8: District-wise intensity of subjective well-being(number of average domains)



Source: HDR Survey, 2013.

or only in three out of eight domains. Further, the group of districts consisting of Kokrajhar, Sonitpur, Cachar, Baksa, and Hailakandi are considered to be neither satisfied nor dissatisfied. As previously noted, this is explained by the fact that we used a Likert-type scale which deliberately factors in the likelihood that a person is less than certain in her/his attitude towards life matters. Similarly, the districts of Marigaon and Karbi Anglong can be categorised as grossly 'dissatisfied' requiring serious reviews of the workings of the various processes in the two districts (Figure 8.8).

The average number of domains in which the people are enjoying subjective well-being across various spatial categories is given in Figure 8.9. It could be seen that the spatial categories carry implications for intensities of satisfaction. All the categories are found to have a lower intensity of satisfaction than the general category, with the hills and the flood-affected areas turning out to be indifferent to satisfied. The other spatial categories seem to be witnessing 'moderate satisfaction'.

It is interesting to observe that, like the headcounts, the *intensities* of 'satisfaction' (and consequently 'dissatisfaction') also exhibit differentials across sex, sector, religion and social categories. Remarkably, however, the intensities follow the same trend as that of the

Box 8.1 Examples of Indicators and Questions in the Well-being Survey

Indicator: Perceptions of education: Questions: How satisfied are you with the education system as a whole? How satisfied are you with the quality of education your child is receiving? How satisfied are you with the quality of education that you received? How satisfied are you with the opportunities for education that you needed?

Indicator: Health finance and insurance: Questions: Have you found that you are eligible and, if so, are they affordable? Are you satisfied with the overall healthcare services you are receiving?

Indicator: Anti-corruption: Questions: What are your perceptions of the involvement of government officials and political workers in corruption? Are you eligible for and/or aware of public social protection programmes?

Indicator: Social protection and public programs: Questions: Are you eligible for and/or aware of public social protection programmes? Are you satisfied with the overall healthcare services you are receiving? How confident are you/trustworthy do you find the courts – to deliver justice and in time? How confident are you/trustworthy do you consider public servants/officials to listen properly and address your problems/queries well?

Indicator: Free from discrimination: Questions: [related to the public distribution systems]: Do you feel you have equal access to social programmes? Do you feel discriminated against on the grounds of caste, tribe, sex, religion, language, etc.?

Indicator: Knowledge/information: Questions: How confident are you/trustworthy do you consider the media/newspapers – to provide unbiased information?

Indicator: Absolute wealth satisfaction: Questions: How well does your total income meet your everyday needs for food, shelter, and clothing? In the past 12 months, did any of the following happen to you [related to financial distress]?

Indicator: Calling on others: Questions: If you/any household member is in need of money, in general who would you first approach? If you/any household member is in need of advice/suggestions on any matter of importance, who would you first approach? If you/any household member experience any emergency, either due to any threat or sudden contingency, who would you first approach? Do you have anyone for support if you were to experience illness?

general headcounts (Figure 8.10). This clearly has two-way policy implications – increasing subjective well-being of people requires general improvements in *all domains* and *all sections* of the society.

Two other remarkable trends could be observed from the analysis. The first one suggests that there is a district gradient involved with the level of educational achievement (objective 'achievement' in capability measured by MYS)

Figure 8.9: Average number of domains in which the people are satisfied according to spatial categories

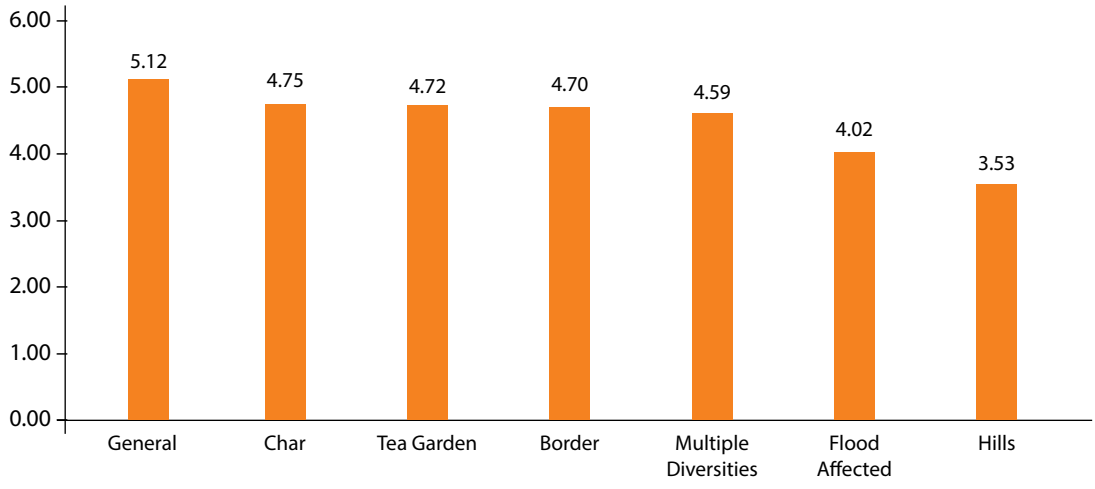
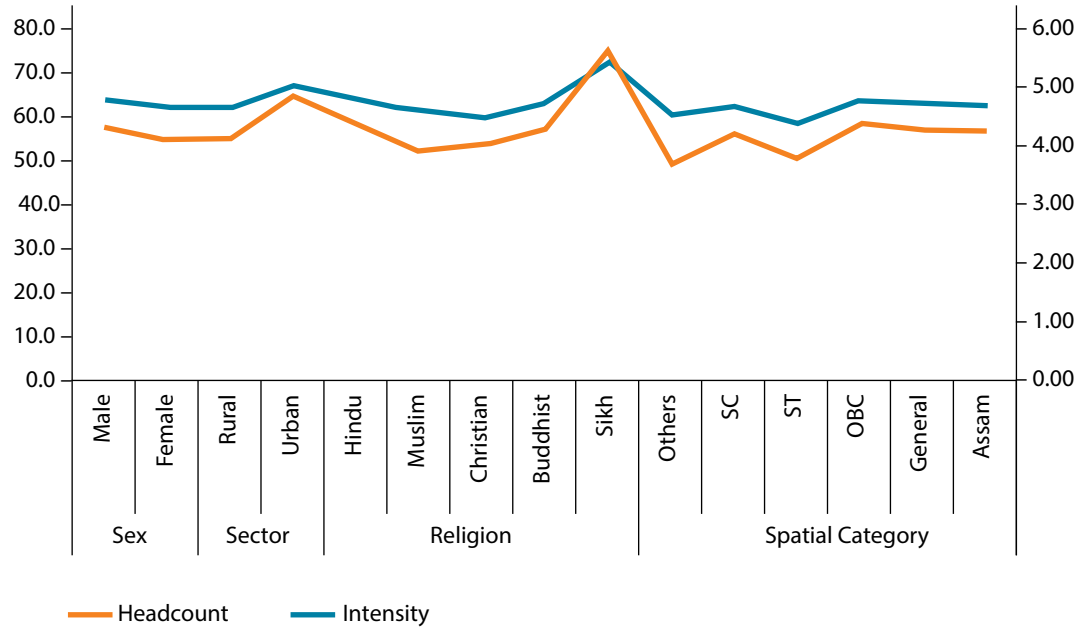
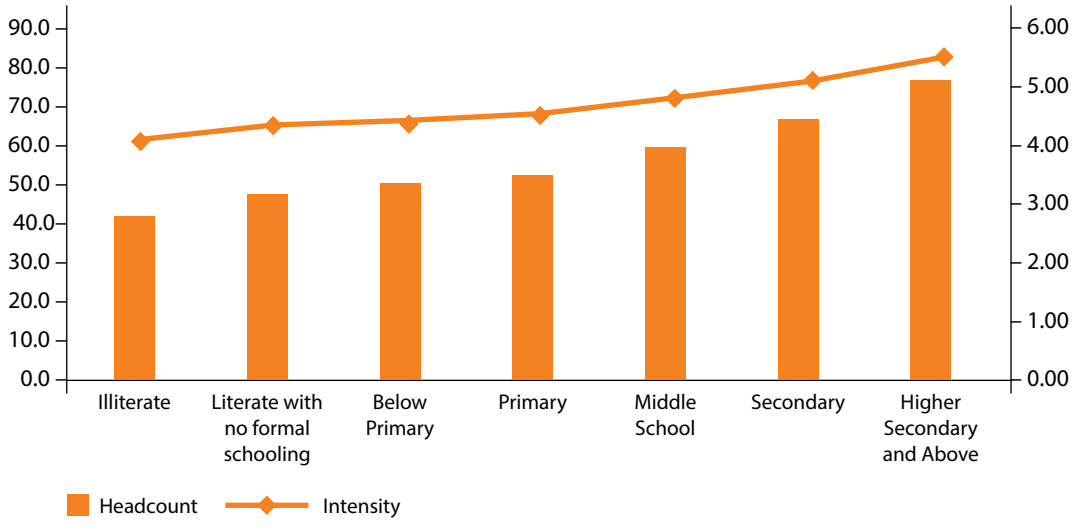


Figure 8.10: Gaps in intensity of satisfaction along with headcounts



Source: HDR Survey, 2013.

Figure 8.11: Subjective well-being gradients with educational attainment

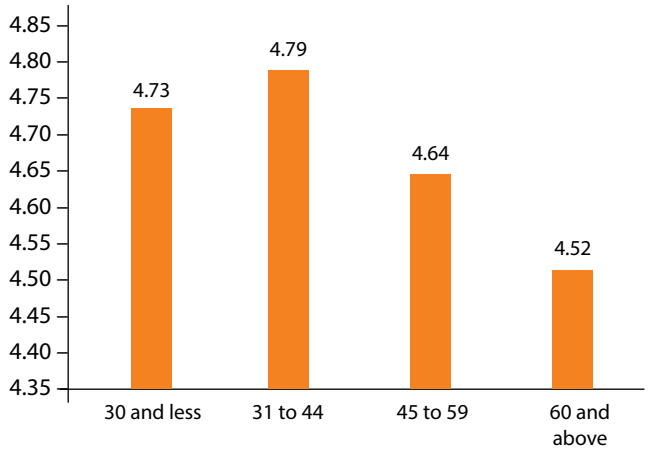


Source: HDR Survey, 2013.

in relation to both headcount and intensity of subjective well-being. This only reiterates the complementarities between *opportunity* and *process* aspects of freedom, that is, well valued processes result in better realised achievements (Figure 8.11).

The second trend relates to the age-specific gradient of subjective well-being. It is observed that the subjective well-being gradient reflects a 'convex' shape implying the highest hopes and confidence in the early middle periods of life, declining gradually with age thereafter(Figure 8.12).

Figure 8.12: Age gradient of subjective well-being



Source: HDR Survey, 2013.

8.5 Using Subjective Well-being Analysis

The essential utility of the subjective well-being analysis presented here lies in its treatment of 'comprehensive outcome' which entails a scrutiny of capability achievements along with an *understanding* of the processes involved in realising the achievements. The conventional capability approach acknowledges the instrumental significance of the processes, but takes them as given. The present report, while admitting the importance of the role of processes in producing differential outcomes, also tries to explore the complementarities between the two. The key message of the report, evidently, is to set the processes right in accordance with what people would like them to be so that opportunities offered by an expansion of capabilities become accessible to and productive for people[15]. The report highlights the fact that process aspects of individual freedom greatly vary even within a state, implying advantages in capability and achievements. Differential human development outcomes – in terms of their culmination – are, thus, contingent on differential processes involved in achieving them. Therefore, human development outcomes viewed in a comprehensive perspective carry much greater policy significance, a point the present report tries to emphasise.

The fundamental significance of the present 'comprehensive' approach relates to its recognition that an evaluation of any social arrangement is naturally multi-dimensional in character. As such, there are 'multiple reasons' for an outcome to emerge rather than a 'single big underlying cause'. This requires a comprehensive information base to examine the multiplicity of reasons and their social, economic and political contexts. The present report attempts to offer such detailed information to allow one to evaluate human development advantages and achievements in a comprehensive perspective.

The underlying idea of this kind of comprehensive understanding is that it goes well beyond the exercise of simple *ranking* by focusing on lower level data to look at a multitude of intervening factors through a 'cluster-type' analysis. For example, the Assam well-being framework allows us to combine the processes by which opportunities are made available, for example, access to health finance and insurance, with the subjective *outcomes*, for example, of discovering ineligibility or non-affordability. It then enables the explanation to go even further by combining these findings with the outcomes that are collected at a level that policy-makers could trust, for example, self-reported number of days that a person had been sick or incapacitated. Therefore, not only would we know that a person's ineligibility or non-affordability was preventing his or her access to health finance and insurance, but also that ineligibility or non-affordability was associated with an identified number of days that the person had been sick or incapacitated. An example will clarify this point.

The Assam well-being framework enables a deeper inquiry into each domain. For instance, it produces answers to questions like *whether males or females enjoy more well-being in health*. The HDR survey findings show that men reported slightly higher satisfaction (57 percent) in health compared to women (54 percent). Similarly, on the question of *whether women or men reported long-term physical*

[15] see Sabina Alkire (2005). 'Measuring the freedom aspects of capabilities' available as pdf file at https://www.aeaweb.org/assa/2005/0107_1430_0104.pdf (accessed on3 August 2014).

or mental illness, the findings reveal that 6.9 percent of men and 7.6 percent of women reported long-term physical or mental illness. With further regards to health as a case of in-depth inquiry using the well-being data, the following example draws on multiple (five) cross-checking survey questions. When reduced to a common point of this inquiry, the five questions ask respondents to self-report on how *satisfied* they are on certain health aspects of their life. The responses are shown below.

Question 1: How satisfied are you with health aspects of your life?

Satisfaction	Percentage response
Satisfied	58.9
Somewhat satisfied	34.0
Not satisfied	6.5
Extremely dissatisfied	0.6
Total	100.0

Question 2: In general, would you say your health is (Excellent, Good, Poor).

Health status	Percentage response
Excellent	5.7
Good	83.9
Poor	10.4
Total	100.0
Total	100.0

Question 3: Do you have any household member suffering from any type of long-term physical or mental disability?

Sex	Whether any member has long term physical/mental illness		
	Yes (%)	No (%)	Total (%)
Male	6.9	93.1	100
Female	7.6	92.4	100
Total	7.1	92.9	100
Total	100.0		

Question 4: Do you think that your present physical health prevents you from doing things you feel like doing?

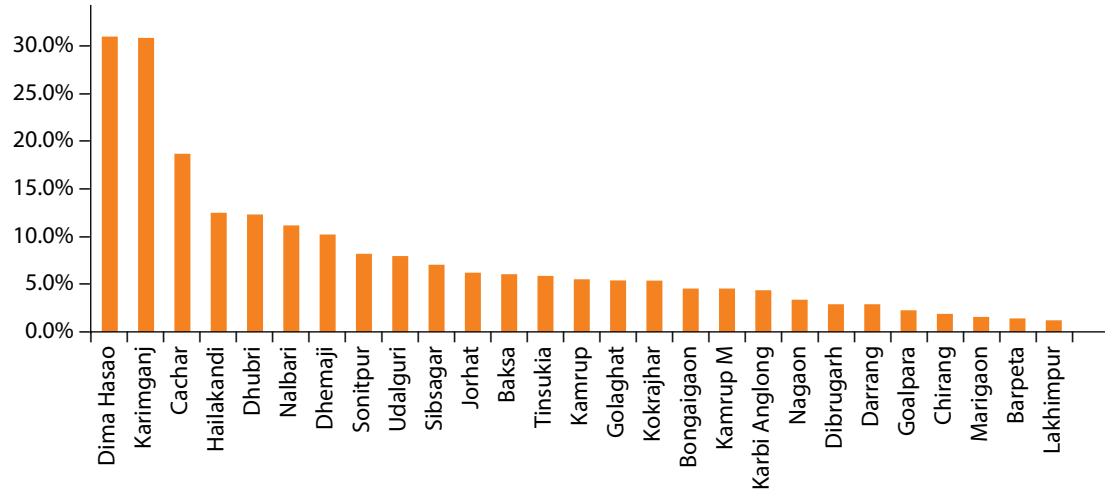
Physical health prevents from doing things	Percentage response
Not at all	38.9
A little	28.5
Moderately	24.4
Very much	5.3
To a great extent	0.5
Cannot say	2.4

Question 5: Do you have any member suffering from any type of long-term physical or mental disability?

Place of residence	Whether any member has long term physical/mental illness	
	Yes (%)	No (%)
Rural	7.0	93.0
Urban	7.7	92.3

We can estimate with a level of certainty that at least 90 percent of the people of Assam are satisfied with their present health status (based on responses to questions 2, 3, 4 and 5). This is a reassuring result. On the other hand, it is disconcerting to note from the responses to the self-reported health question that only 38.9 percent of the people think that their present physical health does not prevent them from doing things they feel like doing (question 4). In other words, 61.1 percent of respondents feel that their physical health prevents them from doings things that they feel like doing. This response factor, when combined with the inference (from questions 2, 3, 4 and 5) that 10 percent of respondents are dissatisfied with their health, makes it essential that

Figure 8.13: Distribution of the proportion of the vulnerable people in each district



Source: HDR Survey, 2013.

policy-makers seek answers in regard to the experiences of those who are not yet enjoying well-being in terms of health. Are they eligible for healthcare services, for example? Can they afford them? Do they suffer discrimination if they attempt to access services? Do corrupt practices hinder their healthcare access?

The following analysis presents just one example of how such inquiries could be carried out by means of the well-being framework. For the purposes of this particular example, the grouping of dissatisfied persons will include (question 1 above), the 'not satisfied' and the 'extremely dissatisfied' respondents. In addition to these two groupings, we will add the large group of people (34 percent) who self-reported that they were 'somewhat satisfied' with the health aspects of their lives (question 1). Although this group does not meet the two-thirds cut-off for well-being, one may be interested from the example that follows to target just the most vulnerable of those who did not satisfy the well-being threshold for the question on self-reported health status. For this reason, the following metrics are focused on the 7.3 percent of people (2,904 respondents) who, in the survey question on self-reported satisfaction with health, responded that they were 'dissatisfied'.

Where are these people more likely to live, district-wise? The analysis shows that Dima Hasao, Karimganj and Cachar have a significantly high concentration of the 2,904 'vulnerable persons' who comprise the 7.3 percent dissatisfied group health wise (Figure 8.13).

The result of the cross-tabulation of the responses of the 7.3 percent of people (2,904 in number) who reported satisfaction with healthcare service provisioning yields further interesting insights. It is important to delve into the issue of satisfaction with healthcare services for respondents whose self-reported health status show that their physical health condition requires healthcare.

Several policy messages emerge from Table 8.2. With regard to the large percentage of 'can't say' responses in regards to satisfaction with healthcare services;this needs further investigation that goes beyond the scope of this chapter. However, two preliminary explanations could be put forward here: firstly, a significant group of respondents has formal access to in-house healthcare services, that is, their experience lies outside of the meaning of the survey question. This refers to tea garden workers who account for just under 20 percent

Table 8.2: Satisfaction with healthcare services of people who self-reported dissatisfaction with their health (N=2,904)

Satisfaction with overall health service(%)	Self-rating on health (%)	
	Not satisfied	Extremely dissatisfied
Not at all satisfied	1.8	0.4
Somewhat satisfied	12.4	21.3
Satisfied	6.7	3.7
Highly satisfied	0.5	0
Can't say	78.4	74.6

of the population of Assam. Further investigation is needed of the healthcare seeking behaviour of this population group, given research that documents the denial of healthcare services in tea garden environments[16].

A second preliminary point of explanation for the 'can't say' responses is based on a 2005 WHO study focused on 'Reducing out-of-pocket expenditures in the context of Millennium Development Goal 1'[17]. That study found that people from poorer states, including Assam, have low health seeking behaviour. The various reasons include poor availability of healthcare services (for reasons that include terrain, etc.) as well as non-affordability due to a high share of food expenditure relative to the total consumption expenditure. In short, income poverty – and thus affordability – is likely to be directly related to healthcare seeking behaviour in Assam.

Moving on from 'can't say' responses, a crucial point from Table 8.2 is that the biggest group among those who self-reported dissatisfaction with their own health are also dissatisfied with healthcare services. (This includes those who responded 'somewhat satisfied', since that response fails to satisfy the cut-off for satisfaction.) Significantly, this is the group of people in Assam who are most likely to need healthcare. The next level of enquiry raised by this example of analysis would be to investigate 'why they are dissatisfied'. Is this because of long waiting times, poor service, unaffordable service, discrimination, systemic corruption or other reasons? The well-being framework can again come handy in locating the possible reasons for people's 'dissatisfaction'. The well-being framework, thus, facilitates an exploration of various layers of reasoning and valuation of people and, hence, a comprehensive understanding.

In order to claim that this sort of comprehensive understanding, indeed, is facilitated by a well-being analysis, one needs to have a statistically robust framework. To rely on the insights offered by such an analysis, the framework used must merit adequate reliability and validity. It may be mentioned that the reliability analysis conducted over the 94 variables used in the framework indicates a fairly good level of reliability (Cronbach's Alpha is 0.79). The validity of the framework is evident from the fact that the average domain where people are taken to be satisfied resulting from the framework, that is, 4.71, which represents 5 (moderately satisfied), matches remarkably well with the average of the direct self-rating score of individuals on overall satisfaction, which is found to be 5.33 or 5 (moderately satisfied). This evidence suggests that the subjective well-being framework presented here is sufficiently robust to rely upon for policy decisions.

[16] Kakali Hazarika (2012). Tea Tribes are lagging behind in the Process of Urbanization. A Study on Selected Tea Gardens of Jorhat District, Assam.Pdf. available http://www.academia.edu/5274841/Tea_Tribes_Are_Lagging_Behind_In_The_Process_Of_Urbanization_A_Study_On_Selected_Tea_Gardens_Of_Jorhat_District_Assam (accessed on 22 December 2014).

[17] Charu C. Garg and A. K. Karan (2005). 'Health and Millennium Development Goal 1: Reducing out-of-pocket expenditures to reduce income poverty - Evidence from India'. EQUITAP Project: Working Paper #15. Pdf. file online http://www.equitap.org/publications/docs/EquitapWP15.pdf (accessed 19 December 2014).

9 Conclusions and Way Forward

Need for Differentiated Approach

Assam, during the last decade or so, has made remarkable progress in terms several key parameters. The decade, inter alia, has witnessed a visible turnaround in the rate of growth in the state's GDP – the state's rate of growth being higher than the national level consecutively since 2009-10. The turn around observed in the growth of the state's domestic product is to be seen in the larger perspective of human development, which essentially requires looking at how this growth has been able to make a qualitative difference in the lives of its people. In this context, the present report assumes utmost significance.

The report offers most valuable insights regarding the various aspects of human development in the state. In presenting these insights, the report adopts two unique approaches largely complementing each another. First, the report underscores the differential human development outcomes across districts like all other state HDRs produced in the country. However, the present report makes a significant departure in accounting for the differential human development outcomes of the districts in terms of various– spatial, demographic and socio-economic – diversities faced by the districts thereby emphasising the fact that addressing the concerns of human development in the state, in general, requires specific and differentiated approaches. Second, the present report considers the human development outcome in the most comprehensive sense – by taking into consideration various processes involved in enhancement of capabilities of individuals.

These two aspects are summarised by two sets of indices. The first set – the standard human development indices depict the average human development scenario in the state. With the value of HDI at 0.557, the present report clearly points out that, in terms of the progress in overall human development, Assam is at the halfway point in achieving the desired goal. Most importantly, the progress is almost similar, that is, around halfway in all three key dimensions, although the dimension of education has a slight edge over the other two dimensions, that is, health and income. The report further points out that differential human development achievement witnessed in the state across districts and other socio-spatial categories is contingent upon myriad diversities of the state in varying degrees; these diversities, more often than not, overlap one another and thereby reinforce the differences in human development attainments further.
The value of HDI is particularly lowered by the income dimension, stressing the importance of securing livelihoods in improving the level of human development in the state. This also offers insights as to the desired process of growth in the state.

It has been observed that, besides income and consumption poverty, the people of the state are also deprived in other dimensions as well and some one-third of the population is multi-dimensionally poor. Moreover, about 16 percent is vulnerable to be multi-dimensionally poor. It has also been underlined that multiple spatial diversities tend to cast a stronger influence over multi-dimensional poverty.

The report further finds that about half of the people are satisfied with the various processes underlying human development achievements. The drivers of satisfaction are culture, ecology and community aspects. On the contrary, the drivers of dissatisfaction have been governance and living standards. It is, therefore, intriguing that, while the state has multiple forms of political autonomy operating at different levels, governance, that is, the processes involved in providing various opportunities continues to be far from being effective. The report emphasises the point that by making a space for democratisation

and people's effective participation the issues related to poor governance can be addressed. The report, therefore, makes a strong case for inclusive institutions ensuring people's participation in different processes involved. In this overall context, the broad summary and key messages of the report are as follow:

9.1 Gainful Employment is Fundamental

The HDR survey reveals that the overall labour force participation rate in the state is 37 percent, characterised by a huge male-female difference – for males the rate is 59 percent and for females it is just 15 percent. Data further uncover that the overall unemployment rate in the state is 14 percent. The total female unemployment rate is close to 39 percent. Rates of unemployment also tend to be high in tea-garden and flood-affected blocks.

The youth unemployment rate (age of 15-35 years) is even higher than the total unemployment rate in the state which stands at close to 25 percent. The rate is adversely favourable to females at 70 percent.

Given the high unemployment rate in general and adversely favourable rate to females in particular, on one hand, the nature of work of those employed, on the other, reveals that a majority, that is, about 40 percent is engaged in casual work. Given the fact that the wage rate for casual work increasing only marginally, the obvious fallout therefore is low income generated by these types of work.

This is reflected in the poverty scenario in the state. The HDR survey estimates overall consumption poverty in the state at 37 percent. The poverty ratio is particularly high in rural areas, amongst minorities and STs, and within hills and Char blocks. Besides, the overall poverty impacts living conditions. Close to 70 percent households lack proper sanitation in the state. Further, consumption inequality has emerged most conspicuously in the HDR survey. It emerges that, on the average, the poorest quintile of population has just one-sixth of the consumption enjoyed by the richest quintile.

Improving the quality of life of a vast majority of people, thus, rests on the nature of employment of people. Analyses show that agricultural labourers, casual workers and unemployed persons have five times greater probability of being poor relative to permanent salaried workers. Therefore, ensuring gainful employment is fundamental in improving the quality of life of people.

The creation of gainful employment opportunities in the state, thus, holds the key to improving human development. The report underlines the significance of reducing the overall unemployment rate in general and youth unemployment rate in particular. Besides, it places emphasis on making the labour market more favourable to women. The analysis interestingly indicates that one additional year of formal education reduces the probability of being poor by 12 percent. It is, therefore, important to recognise the criticality of education in breaking the poverty trap. Linking education with gainful employment would call for comprehensive manpower planning. The report thus, emphasises the effective role of the state in employment planning, going beyond output planning driven by mere growth targeting. There is a need to make the growth broad-based for greater inclusion where gainful employment ought to top the priority as a development strategy.

9.2 Going to and Staying in School Indeed Matters

The significance and criticality of education in improving the quality of life of people is undeniable. The Census data clearly show that, during the decade 2001-2011, there has been about 10 percent gain in the overall literacy rate in the state; besides the male-female gap in literacy is also closing from 16.7 percent to 11.5 percent. However, the state still remains at the bottom of the list of states ranked in terms of literacy rates.

The HDR survey reveals that illiterates are disproportionately concentrated in select districts. More than two-thirds of the illiterates in the state are located in 12 districts and almost one-seventh of them belong to Dhubri district alone. Illiteracy is found to be high in the Char blocks and amongst Muslims. An analysis shows that, on the average, the probability of a Muslim being literate is just half of that of non-Muslims in the state, although there is a wide variation across districts.

The HDR survey indicates that 93 percent of children within the 6-14 year age group are enrolled in school. The state, therefore, is yet to achieve 100 percent enrolment of 6-14 year-old children. Interestingly, the enrolment rate declines to about 18 percent for 19-24 year olds. The decline is even sharper for females and, therefore, gender parity becomes adverse as age progresses.

The decline in net enrolment rates secondary level onwards suggests that students go to school but do not remain in school for long. As a result, the educational attainment in the state in general is skewed towards middle level schooling with most people completing only up to Class VIII of formal schooling. It is important, in this context, to recall that the Annual Status of Education Report 2013 shows that learning quality of students in Class I- VIII in the state has indeed been on a declining trend. The educational attainment of a majority of people in the state, therefore, remains inadequate.

The reasons for leaving school after middle level, however, vary widely. They include, inter alia, the issue of accessibility. Relative to primary schools, the number of secondary schools in the state is evidently wanting. Besides, NSSO data tell us that more than 50 percent of secondary schools are located beyond the distance of 2 km. Given the specific geo-spatial conditions of the state, access becomes difficult especially for girls. The report, therefore, clearly underlines the fact that while going to school is essential, staying in school a little longer is critical for human development. Notwithstanding this, the quality of learning is to be ensured to get the benefit of staying longer in school.

The report further highlights the growing divide in government and private schooling facilities. Most importantly, the report shows that the annual average per capita expenditure on education in private school is about five times higher than that of government schools. The report, therefore, strongly advocates for provisioning of universal and uniform schooling preferably up to secondary level, at least up to elementary level, with an adequate infrastructure and assured quality. This should emerge as one of the main priorities of the state.

9.3 Better Health of Children Holds a Better Future

Despite significant improvements in the IMR, Assam continues to be the state with the highest IMR in the country. The decline in IMR in the state has been steady but at a slower pace than the national average. The NNMR, however,

closely shadows the national levels in the state. Therefore, the high IMR needs to be addressed by looking at post-neonatal death risks arising out of external causes, including household and community environment, prevalence of pathogens and common infections and other child care practices affecting survival risks.

The MMR is another area of concern in the state. Although the MMR has fallen considerably, the rate of decline has been slower than the national level. The state's current MMR is higher than the country's MMR almost a decade ago. The strategy to reduce MMR emphasises the improvement of rates of institutional delivery. The report, quite interestingly, highlights the fact that, despite high institutional delivery rates, the upper Assam districts are reporting much higher MMR.

Successive round of SRS data reveal that the adult mortality rate in the state has been gradually falling. This contributes to improving the overall life expectancy at birth. Although the state's life expectancy has improved quite a lot, it is the lowest in the country.

The HDR survey provides a prevalence rate of short-term morbidity of 125 per 1,000 persons. The rate is higher in rural areas and among females. The rate follows a classic J shaped curve with ages. The rate indicates a strong education gradient but a very irregular gradient with respect to income. The rate has been found to be associated with the source of drinking water and sanitation facilities.

The report highlights the 'double burden' of diseases – both short-term, that is, infectious and communicable diseases, and chronic, that is, lifestyle diseases – in the state. Short-term morbidity exhibits a higher prevalence in the flood-affected and tea garden blocks.

The report depicts a worsening picture of child nutrition in the state. During the last nine years, the proportion of children with stunting has increased from 46 to 54 percent, that of wasting has increased from 14 to 17 percent and the proportion of underweight children has increased from 36 to 37 percent. Very clearly, the proportion of underweight children in blocks with multiple diversities has been as high as 46 percent. It may be noted that underweight is an indicator of both acute and chronic forms of undernutrition.

The report estimates that, on an average, people in Assam spend about 13 percent of their annual income on healthcare. Almost all healthcare spending is self-financed.

Given these findings, the report favours a fresh look at the strategy to reduce IMR and MMR, provisioning of universal quality public healthcare services and institutional mechanism for risk protection. Against the backdrop of worrisome under-nutritional scenario of the state's children, the report emphasises the key message – better health of children holds a better future.

9.4 Environment: Negotiating Externalities Ensures Sustainability

The capabilities achieved or possessed by the human being are, to a large extent, determined by the physical environment people live. This is, however, only one part of the scenario. The other part of the explanation is that, even in the short run, the negative externalities created by the degradation of the environment reduce or limit the capabilities already possessed by human beings and subsequently affect the quality of life. In this context, the need for evaluating the environmental arrangements emerges: how

the opportunities are set or constrained in a new environment and subsequently influence the activities of the people and how people try to cop and finally adapt to the changed situation.

The report highlights that there have been significant changes in the land cover in the state over the last 30 years. The decline of area under forest, barren land, uncultivated fallow and fallow land reveals the pressure on the land. There is evidence that wetlands of the state are being squeezed and so are the ecological and economic benefits derived by the people dependent on them. The wetlands of the state are shrinking due to both natural and anthropogenic reasons. In addition to the massive amount of silt carried by the rivers and flood water, construction of dykes and embankments along the river banks also contributed to the deterioration of the water bodies.

The report identifies floods, erosion and sand deposition as the three prime environmental stressors in the state. Some 32 lakh ha of land in the state is prone to recurring floods which accounts for nearly 10 percent of the total flood prone area in the country. The floods account for a huge direct cost in terms of land and crops lost and life and properties destroyed. They also come with huge indirect costs in terms of number of workdays lost and school days missed besides the post-flood burden of diseases.

In recent times, Assam has lost approximately 7.4 percent of its total land area because of river bank erosion and channel migration. Erosion has wiped out more than 2,500 villages affecting nearly 500,000 people.

Besides these obvious stressors, the report also highlights the issue of clean water and air in the state. Drinking water accessibility is a major issue in the flood-affected blocks. The issue of water quality is fast emerging in Assam with large parts of the state facing contamination of water with fluoride and arsenic apart from excess iron.

Given all these, the report focuses on negotiating with environmental externalities for sustainable human development. It emphasises the fact that, so long as the negative externalities of irreversible damage such as erosion and sand casting continue or return at regular intervals, the initiatives of the people to adapt to the adversities are weakened. Mapping of the hazardous and risk-prone zones at micro administrative units (blocks) would help to initiate preventive measures. Overall, one would agree that afforestation in identified vulnerable zones would help to minimise the negative impacts.

It has also emerged that poor environmental knowledge of the people places stress on the environment and development of the state. The state, therefore, needs to have long-term plans while planning for natural resource based as well as other economic activities, to ensure sustainability.

9.5 Gender: Inequalities Matter more than Differences

Both female life expectancy at birth and child sex ratio – the two critical indicators of gender development – are found adverse towards the women of the state. Despite steady progress, the female life expectancy at birth continues to be the lowest in the country. From the Census data, it has been known that, while the total sex ratio in Assam has improved during 2001-2011, the child sex ratio (0-6 years) in the state has deteriorated. The decline in the child sex ratio has a cascading effect on the population over a period of time which contributes to a gradual

decrease in the total sex ratio. Factors that influence the child sex ratio include the fertility rates and survival rates of children.

The total fertility rate in Assam has shown a gradual decline over the years and SRS (2013) estimates it to be at par with the national level. The HDR survey estimates the total fertility rate in Assam at 2. The fertility rates amongst Muslims and Char blocks have been found to be 2.9 and 2.8, respectively.

Although, the highest fertility rate in Assam and India has been found in the age group of 20-24, the highest marital fertility in Assam is found to be during 15-19 years compared to the country's 20-24 years.

AHS (2010-11) indicated that 54 percent of women in the age of 15-19 years are already mothers. Early marriage and early motherhood thus emerge as real issues in the state. The HDR survey reveals that, by the age of 24 years, 75 percent of women get married against 20 percent boys. The percentage of girls getting married within 15-19 years has been 15 percent – the figures being higher in rural and Char areas, and also amongst Muslims. Half of the total married women of 15-19 years are found in eight districts while about one-fourth is in the two districts of Dhubri and Nagaon only.

The successive rounds of NFHS show that about three-fourths of women are anaemic. Anaemia is more prevalent amongst the women in the age group of 15-19 years.

Early marriage and teenage motherhood together with the high prevalence of anaemia among women puts them at high risk of maternal mortality, underweight children carrying nutritional deficiencies from mothers, child mortality besides depriving women of their opportunities to be educated and productively engaged.

The HDR survey clearly shows that education reduces the chances of early marriage. However, the gender gap in literacy continues to remain in the state. The gap has been closing in the recent years.

Women face major handicaps in employment and the labour market. As has been pointed out earlier, both the employment rate and labour force participation rate of women have been abysmally low.

The report highlights these unequal opportunities and contends that such inequalities matter more than simple male-female differentials in achievement. Besides, women also increasingly face a number of crimes and other suffering affecting their quality of life. The report, therefore, advocates for the removal of entrenched gender inequalities that impede opportunities of women to make choices they have reasons to value.

9.6 Processes are Critical to Outcome

The report makes an important value addition by considering 'processes' along with the 'outcomes' and emphasises the point that processes are critical to outcome. It, therefore, makes a very strong case for getting the processes right by underlining the principles of transparency, accountability and democratisation in the state.

The report finds that about half of the people are satisfied with the various processes underlying human development achievements. The major drivers of satisfaction are culture, ecology and community aspects. On the contrary, the drivers of dissatisfaction have been governance and living standards.

It is, therefore, intriguing that, while the state has multiple forms of political autonomy

operating at different levels, governance, that is, the processes involved in providing various opportunities, continues to be far from being effective. The report stresses the point that making a space for democratisation and people's effective participation can result in issues related to poor governance being addressed. The report, therefore, makes a strong case for inclusive institutions ensuring people's participation in different processes involved.

The overarching broad message of the report is that, given the multi-layered and multi-faceted complexities emanating out of unique diversities of the state, no generic set of policies would be able to bring about overall human development; rather there is a need for a focussed, specific set of policies to deal with the issues discussed in the report.

9.7 Inequality is a Real Concern

The report highlights the critical significance of bridging inequalities across various spaces. It has been shown that inequality in achievements in crucial dimensions of human development does matter as about one-third of potential human development has been found to be lost due to inequalities in underlying distributions. Further, it can be seen that the loss is the highest in income dimension followed by health and education. A similar inequality prevails along the gender dimension as well where females are found to be disadvantaged as they seem to enjoy about two-third of the opportunities enjoyed by their male counterparts. Unequal opportunities faced by females are eminent in the income dimension negatively affecting the human development achievement of females in general.

Given these findings, the report concludes that, given the multi-layered and multi-faceted complexities and diversities of the state, there cannot be a generic set of policies, rather there is need for a focussed, specific set of policies to address the issues of human development. The present report holds critical and analytical insights for drawing up such a differentiated approach towards inclusive human development in the state.

Statistical Appendix

Table 2A.1: Key Dimensional Achievements in Assam (District Level)

District	Life Expectancy at Birth	Mean Years of Schooling	Expected Years of Schooling	Annual Per Capita income
Baksa	42.13	4.49	11.87	18192
Barpeta	69.93	6.33	12.30	21828
Bongaigaon	54.42	6.21	11.97	25164
Cachar	40.76	6.26	11.40	23052
Chirang	68.52	5.82	12.57	21504
Darrang	60.27	3.77	11.44	17892
Dhemaji	51.25	6.50	12.27	17568
Dhubri	53.12	4.29	11.33	16836
Dibrugarh	53.68	7.07	12.08	23364
Dima Hasao	68.62	7.19	10.99	26604
Goalpara	66.69	4.65	11.88	22404
Golaghat	55.29	6.51	12.14	19788
Hailakandi	43.82	5.48	10.98	16632
Jorhat	58.17	8.00	12.41	38664
Kamrup	71.88	5.72	11.90	23316
Kamrup (M)	55.98	9.16	12.42	63444
Karbi Anglong	68.27	5.34	12.14	23076
Karimganj	43.39	5.67	11.38	19152
Kokrajhar	55.04	5.19	12.26	18048
Lakhimpur	59.79	6.60	12.29	22248
Marigaon	67.42	6.54	11.98	17196
Nagaon	58.24	6.64	12.03	25884
Nalbari	52.24	7.24	12.48	27516
Sibsagar	53.89	8.44	12.39	37104
Sonitpur	48.89	5.16	11.52	27240
Tinsukia	47.63	5.90	11.15	23340
Udalguri	55.00	4.90	11.40	20436
Assam	54.00	6.17	11.85	24660

Source: HDR Survey, 2013

Table 2A.2: Key Dimensional Achievements in Assam

(Spatial Diversity Category wise)

Spatial Diversity Category	Life Expectancy at Birth	Mean Years of Schooling	Expected Years of Schooling	Annual Per Capita income
Char	63.80	4.76	11.76	21516
Flood Affected	50.22	6.54	11.90	23604
Hills	67.42	5.25	11.87	18060
Tea Garden	49.10	6.13	11.66	21588
Border	50.34	5.46	11.75	17988
Multiple Diversities	52.37	5.30	11.66	18324
General	56.26	6.15	12.10	26016

Source: HDR Survey, 2013

Table 2A.3: Dimensional Inequalities in Assam (Spatial Diversity Category wise)

Spatial Diversity Category	Inequality In Health	Inequality In Education	Inequality In Living Standard
Char	0.273	0.095	0.439
Flood Affected	0.337	0.073	0.474
Hills	0.243	0.075	0.530
Tea Garden	0.333	0.093	0.479
Border	0.309	0.089	0.349
Multiple Diversities	0.385	0.106	0.357
General	0.315	0.085	0.383

Source: HDR Survey, 2013

Table 2A.4: Dimensional and Human Development Indices of Districts

District	Dimensional Index: Health	Dimensional Index: Education	Dimensional Index: Living Standard	HDI
Baksa	0.340	0.606	0.404	0.437
Barpeta	0.768	0.684	0.462	0.624
Bongaigaon	0.530	0.667	0.507	0.564
Cachar	0.319	0.647	0.479	0.463
Chirang	0.746	0.677	0.457	0.614
Darrang	0.620	0.566	0.399	0.519
Dhemaji	0.481	0.688	0.393	0.507
Dhubri	0.510	0.579	0.380	0.482
Dibrugarh	0.518	0.700	0.483	0.560
Dima Hasao	0.748	0.662	0.525	0.638
Goalpara	0.718	0.612	0.470	0.591
Golaghat	0.543	0.684	0.431	0.543
Hailakandi	0.366	0.605	0.376	0.437
Jorhat	0.587	0.744	0.643	0.655
Kamrup	0.798	0.648	0.483	0.630
Kamrup (M)	0.554	0.783	0.800	0.703
Karbi Anglong	0.743	0.645	0.480	0.612
Karimganj	0.360	0.627	0.420	0.456
Kokrajhar	0.539	0.645	0.402	0.519
Lakhimpur	0.612	0.693	0.468	0.583
Marigaon	0.730	0.678	0.386	0.576
Nagaon	0.588	0.684	0.516	0.592
Nalbari	0.496	0.721	0.535	0.576
Sibsagar	0.521	0.758	0.630	0.629
Sonitpur	0.444	0.615	0.532	0.526
Tinsukia	0.425	0.625	0.483	0.505
Udalguri	0.538	0.602	0.441	0.523
Assam	0.523	0.661	0.501	0.557

Source: HDR Survey, 2013

Table 2A.5: Ranks of Dimensional and Human Development Indices of Districts

District	Rank: Health	Rank: Education	Rank: Living Standard	Rank: HDI
Baksa	26	23	21	26
Barpeta	2	9	16	6
Bongaigaon	16	13	8	14
Cachar	27	16	13	24
Chirang	4	12	17	7
Darrang	8	27	23	19
Dhemaji	21	7	24	21
Dhubri	19	26	26	23
Dibrugarh	18	5	9	15
Dima Hasao	3	14	6	3
Goalpara	7	22	14	10
Golaghat	13	8	19	16
Hailakandi	24	24	27	27
Jorhat	11	3	2	2
Kamrup	1	15	11	4
Kamrup (M)	12	1	1	1
Karbi Anglong	5	17	12	8
Karimganj	25	19	20	25
Kokrajhar	14	18	22	20
Lakhimpur	9	6	15	11
Marigaon	6	11	25	13
Nagaon	10	10	7	9
Nalbari	20	4	4	12
Sibsagar	17	2	3	5
Sonitpur	22	21	5	17
Tinsukia	23	20	10	22
Udalguri	15	25	18	18

Source: HDR Survey, 2013

Table 2A.6: Inequalities in Dimensional Achievements in districts

District	Inequality: Health	Inequality: Education	Inequality: Living Standard
Baksa	0.365	0.065	0.369
Barpeta	0.206	0.074	0.354
Bongaigaon	0.315	0.060	0.423
Cachar	0.375	0.083	0.418
Chirang	0.177	0.049	0.241
Darrang	0.321	0.112	0.318
Dhemaji	0.310	0.094	0.379
Dhubri	0.435	0.087	0.266
Dibrugarh	0.369	0.083	0.448
Dima Hasao	0.314	0.045	0.333
Goalpara	0.252	0.110	0.363
Golaghat	0.304	0.120	0.384
Hailakandi	0.292	0.072	0.413
Jorhat	0.318	0.094	0.484
Kamrup	0.182	0.085	0.433
Kamrup (M)	0.307	0.069	0.381
Karbi Anglong	0.261	0.087	0.593
Karimganj	0.314	0.079	0.340
Kokrajhar	0.208	0.115	0.286
Lakhimpur	0.320	0.103	0.456
Marigaon	0.208	0.069	0.452
Nagaon	0.266	0.079	0.406
Nalbari	0.344	0.089	0.382
Sibsagar	0.332	0.071	0.537
Sonitpur	0.306	0.106	0.579
Tinsukia	0.302	0.084	0.491
Udalguri	0.396	0.073	0.392
Assam	0.321	0.088	0.441

Source: HDR Survey, 2013

Table 2A.7: Inequality Adjusted Dimensional Indices and HDI (IHDI) for Districts

District	Inequality Adjusted Health Index	Inequality Adjusted Education Index	Inequality Adjusted Income Index	IHDI
Baksa	0.216	0.567	0.255	0.315
Barpeta	0.610	0.633	0.298	0.487
Bongaigaon	0.363	0.628	0.293	0.405
Cachar	0.200	0.593	0.279	0.321
Chirang	0.614	0.644	0.347	0.516
Darrang	0.421	0.502	0.272	0.386
Dhemaji	0.332	0.624	0.244	0.370
Dhubri	0.288	0.529	0.278	0.349
Dibrugarh	0.327	0.642	0.267	0.383
Dima Hasao	0.513	0.633	0.350	0.484
Goalpara	0.537	0.544	0.299	0.444
Golaghat	0.378	0.602	0.265	0.392
Hailakandi	0.260	0.561	0.220	0.318
Jorhat	0.401	0.674	0.332	0.448
Kamrup	0.653	0.593	0.274	0.473
Kamrup (M)	0.384	0.729	0.496	0.518
Karbi Anglong	0.549	0.589	0.195	0.398
Karimganj	0.247	0.577	0.277	0.341
Kokrajhar	0.427	0.570	0.287	0.412
Lakhimpur	0.416	0.622	0.255	0.404
Marigaon	0.578	0.631	0.212	0.426
Nagaon	0.432	0.630	0.307	0.437
Nalbari	0.325	0.657	0.331	0.413
Sibsagar	0.348	0.704	0.292	0.415
Sonitpur	0.308	0.550	0.224	0.336
Tinsukia	0.297	0.573	0.246	0.347
Udalguri	0.325	0.558	0.268	0.365
Assam	0.355	0.603	0.280	0.391

Source: HDR Survey, 2013

Table 2A.8: Loss in Human Development due to Inequality (in percent)

District	Loss in Health	Loss in Education	Loss in Income	Loss in Total Human Development	Coefficient of Inequality
Baksa	36.48	6.54	36.88	27.91	26.63
Barpeta	20.58	7.43	35.41	21.98	21.14
Bongaigaon	31.53	5.98	42.26	28.10	26.59
Cachar	37.45	8.32	41.81	30.64	29.20
Chirang	17.75	4.95	24.12	15.97	15.60
Darrang	32.12	11.19	31.84	25.66	25.05
Dhemaji	30.97	9.37	37.86	27.01	26.07
Dhubri	43.49	8.68	26.64	27.66	26.27
Dibrugarh	36.89	8.30	44.78	31.63	29.99
Dima Hasao	31.38	4.45	33.28	24.09	23.04
Goalpara	25.18	11.03	36.35	24.89	24.19
Golaghat	30.43	12.02	38.38	27.75	26.94
Hailakandi	29.16	7.20	41.30	27.20	25.89
Jorhat	31.79	9.42	48.38	31.67	29.86
Kamrup	18.22	8.53	43.29	24.86	23.35
Kamrup (M)	30.67	6.93	38.06	26.34	25.22
Karbi Anglong	26.13	8.67	59.33	35.02	31.37
Karimganj	31.37	7.85	34.04	25.28	24.42
Kokrajhar	20.78	11.54	28.65	20.63	20.32
Lakhimpur	32.02	10.28	45.55	30.75	29.29
Marigaon	20.76	6.93	45.18	26.06	24.29
Nagaon	26.61	7.93	40.58	26.23	25.04
Nalbari	34.44	8.95	38.17	28.27	27.19
Sibsagar	33.24	7.14	53.67	34.02	31.35
Sonitpur	30.63	10.64	57.85	36.07	33.04
Tinsukia	30.18	8.43	49.10	31.22	29.24
Udalguri	39.55	7.29	39.19	30.15	28.68
Assam	32.15	8.85	44.12	29.82	28.37

Source: HDR Survey, 2013

Table 2A.9: Multi-dimensional Poverty Index (MPI) for Districts

District	Headcount Ratio of Multidimensionally Poor	Headcount Ratio of Vulnerable	MPI
Baksa	34.01	17.36	13.61
Barpeta	27.54	17.97	11.08
Bongaigaon	30.79	14.54	12.71
Cachar	37.27	21.47	17.10
Chirang	30.04	14.32	11.12
Darrang	53.16	14.33	21.79
Dhemaji	23.29	21.14	9.25
Dhubri	47.26	18.88	20.10
Dibrugarh	18.79	12.82	7.30
Dima Hasao	27.29	24.31	12.45
Goalpara	35.44	16.89	14.50
Golaghat	23.85	13.04	9.08
Hailakandi	39.49	35.51	17.68
Jorhat	12.43	10.46	4.69
Kamrup	28.43	15.16	11.70
Kamrup (M)	6.26	5.64	2.63
Karbi Anglong	31.29	18.33	12.52
Karimganj	41.06	23.04	18.73
Kokrajhar	25.05	17.68	9.97
Lakhimpur	23.12	14.86	9.01
Marigaon	31.46	17.55	12.80
Nagaon	30.73	13.74	12.18
Nalbari	19.35	13.98	7.89
Sibsagar	11.66	14.77	4.69
Sonitpur	35.25	21.97	15.05
Tinsukia	31.08	10.98	13.13
Udalguri	42.36	14.98	17.45
Assam	30.10	16.54	12.49

Source: HDR Survey, 2013

Table 2A.10: Multi-dimensional Poverty Index (MPI): Spatial Diversity Categories

District	Headcount Ratio of Multi-dimensionally Poor	Headcount Ratio of Vulnerable	MPI
Char	44.59	17.60	18.57
Flood Affected	27.74	17.78	11.70
Hills	33.70	21.21	13.86
Tea Garden	30.09	15.57	12.44
Border	32.87	19.25	13.78
Multiple Diversities	37.48	18.48	15.73
General	29.40	18.06	11.75
Total	30.10	16.54	12.49

Source: HDR Survey, 2013

Table 3A.1: Work Participation Rate and Unemployment Rates

District	Work Participation Rate			Unemployment Rate		
	Male	Female	Total	Male	Female	Total
Baksa	54.9	6.0	30.6	6.5	48.4	13.2
Barpeta	53.8	8.9	32.1	5.0	23.8	8.0
Bongaigaon	51.5	6.6	29.6	8.8	41.8	14.1
Cachar	48.7	7.3	27.8	10.8	53.7	20.5
Chirang	52.0	8.5	31.5	7.7	31.1	11.5
Darrang	52.8	5.6	30.1	8.0	41.3	12.4
Dhemaji	49.7	6.1	28.4	11.1	43.5	16.1
Dhubri	51.5	4.6	28.7	9.8	38.7	13.0
Dibrugarh	56.1	14.8	35.7	10.3	42.4	19.4
Dima Hasao	63.2	17.5	41.8	4.7	34.4	12.4
Goalpara	54.5	6.1	31.0	7.6	46.5	13.4
Golaghat	55.3	11.1	32.7	9.5	37.7	15.8
Hailakandi	50.3	8.2	29.9	9.1	36.4	14.0
Jorhat	57.6	13.0	36.1	7.4	33.4	13.3
Kamrup	56.3	6.3	31.8	6.8	45.3	12.7
Kamrup (M)	57.6	10.2	35.1	6.9	30.9	11.1
Karbi Anglong	52.4	10.6	32.0	7.6	35.0	13.3
Karimganj	50.0	4.9	27.5	8.2	57.6	16.6
Kokrajhar	58.0	7.4	34.3	8.5	45.7	14.4
Lakhimpur	54.2	11.1	33.3	8.8	37.9	15.2
Marigaon	56.7	4.3	31.4	6.5	56.0	13.0
Nagaon	54.0	8.8	31.8	6.3	33.6	11.1
Nalbari	54.1	5.6	30.2	9.4	48.6	15.3
Sibsagar	55.3	11.2	34.1	8.9	33.0	13.7
Sonitpur	54.7	13.6	34.1	7.6	33.0	14.1
Tinsukia	52.8	17.7	35.1	10.6	27.4	15.6
Udalguri	55.3	8.1	31.6	5.2	33.8	10.1
Assam	53.9	9.0	31.9	8.1	38.3	13.9

Source: HDR Survey, 2013

Table 3A.2: Labour Force Participation Rate (Male, Female, Total)

District	HDR Survey 2013		
	Male	Female	Total
Baksa	58.7	11.5	35.2
Barpeta	56.6	11.6	34.9
Bongaigaon	56.4	11.4	34.4
Cachar	54.6	15.7	35.0
Chirang	56.3	12.3	35.6
Darrang	57.4	9.5	34.4
Dhemaji	55.9	10.8	33.9
Dhubri	57.1	7.5	33.0
Dibrugarh	62.5	25.7	44.3
Dima Hasao	66.4	26.6	47.8
Goalpara	59.0	11.3	35.8
Golaghat	61.1	17.7	38.8
Hailakandi	55.3	12.9	34.8
Jorhat	62.2	19.5	41.6
Kamrup	60.4	11.6	36.5
Kamrup (M)	61.9	14.8	39.5
Karbi Anglong	56.7	16.3	36.9
Karimganj	54.4	11.5	33.0
Kokrajhar	63.4	13.6	40.0
Lakhimpur	59.4	17.8	39.2
Marigaon	60.7	9.8	36.1
Nagaon	57.6	13.2	35.7
Nalbari	59.7	10.9	35.7
Sibsagar	60.7	16.7	39.5
Sonitpur	59.1	20.3	39.7
Tinsukia	59.0	24.4	41.6
Udalguri	58.4	12.2	35.2
Assam	58.6	14.7	37.0

Source: HDR Survey, 2013

Table 3A.3: Types of works in Assam (in percentage employed)

District	Casual worker	Permanent worker	Self-employed	Agriculture	Livestock
Baksa	37.4	7.7	19.4	35.4	0.1
Barpeta	34.5	11.9	20.1	33.3	0.1
Bongaigaon	38.8	17.5	20.4	23.3	0.0
Cachar	47.4	17.7	23.7	11.2	0.0
Chirang	36.8	5.4	22.5	30.2	5.1
Darrang	42.7	6.5	24.5	26.0	0.3
Dhemaji	36.8	9.6	14.8	38.7	0.2
Dhubri	57.5	5.6	13.9	22.9	0.1
Dibrugarh	50.8	17.1	15.4	16.7	0.0
Dima Hasao	16.9	12.4	23.0	47.7	0.0
Goalpara	39.8	11.2	20.9	28.0	0.2
Golaghat	35.6	14.7	10.6	39.1	0.1
Hailakandi	50.5	8.0	23.4	17.9	0.2
Jorhat	32.0	23.6	15.9	28.4	0.2
Kamrup	46.1	12.0	18.0	23.8	0.0
Kamrup (M)	28.7	31.8	34.6	4.7	0.2
Karbi Anglong	18.2	11.5	17.5	52.3	0.7
Karimganj	52.1	9.3	21.8	16.6	0.1
Kokrajhar	30.8	7.1	10.5	50.6	1.1
Lakhimpur	34.1	12.5	18.2	35.1	0.1
Marigaon	33.5	6.4	11.9	48.1	0.0
Nagaon	34.4	11.5	25.6	28.4	0.1
Nalbari	39.7	22.4	22.3	15.6	0.1
Sibsagar	32.6	21.0	20.2	26.2	0.0
Sonitpur	49.3	10.9	16.5	23.2	0.1
Tinsukia	39.9	21.0	14.9	24.2	0.0
Udalguri	49.0	10.0	11.3	29.8	0.0
Assam	39.9	13.6	19.1	27.2	0.2

Source: HDR Survey, 2013
Note: Casual Workers include Daily Wage Earners only.

Table 3A.4: Types of works in Assam by Spatial Diversity and Religion

	Casual worker	Regular Salaried worker	Self-employed	Agriculture	Livestock
Spatial Diversity Category					
Char Block	42.4	8.1	16.3	33.1	0.1
Flood-affected Block	36.5	12.8	19.6	31.0	0.1
Hill Block	17.2	8.8	15.2	58.2	0.6
Tea Garden Block	48.0	16.4	12.2	23.4	0.1
Border Block	42.9	7.9	15.0	33.7	0.6
Multiple-diversity Block	43.6	11.4	13.4	31.5	0.1
General Block	39.5	13.5	17.7	29.2	0.1
Religious groups					
Hindus	36.7	16.4	19.7	26.9	0.3
Muslims	47.2	6.9	19.0	26.8	0.1
Christians	44.4	11.6	8.7	35.3	0.0
Others	35.0	15.2	19.3	30.5	0.0

Source: HDR Survey, 2013
Note: Casual Workers include Daily Wage Earners only.

Table 3A.5: Income and Source of Income of Households: District Wise

District	Average PCI	Proportion of HH Income from					
		Agriculture & Farming	Livestock	Self-employment	Casual jobs	Salaries	Transfer Income
Baksa	1516	15.2	2.3	22.4	22.2	30.3	7.6
Barpeta	1819	11.2	2.7	24.1	23.9	35.5	2.4
Bongaigaon	2097	5.5	1.1	17.5	24.6	47.2	4.1
Cachar	1921	5.8	1.0	19.3	24.6	38.1	11.2
Chirang	1792	23.2	5.3	18.6	28.1	20.9	3.8
Darrang	1491	26.6	2.3	25.8	29.3	15.6	0.4
Dhemaji	1464	26.7	3.1	14.6	30.5	20.1	5.1
Dhubri	1403	13.8	1.8	15.0	48.3	18.7	2.3
Dibrugarh	1947	5.5	1.6	20.5	32.1	35.9	4.3
Dima Hasao	2217	15.2	3.8	27.9	10.9	41.8	0.4
Goalpara	1867	9.0	2.6	21.5	39.5	25.9	1.4
Golaghat	1649	22.8	3.9	13.4	21.8	33.5	4.7
Hailakandi	1386	8.3	0.5	24.2	43.5	18.6	4.9
Jorhat	3222	9.3	1.4	13.0	16.8	53.8	5.8
Kamrup	1943	8.6	2.3	18.0	37.5	29.8	3.8
Kamrup (M)	5287	0.5	0.4	28.1	13.5	44.5	13.0
Karbi Anglong	1923	15.8	4.0	30.2	19.8	28.8	1.3
Karimganj	1596	10.2	1.0	21.8	38.3	24.4	4.3
Kokrajhar	1504	25.5	11.1	13.0	25.0	21.6	3.8
Lakhimpur	1854	10.5	2.3	16.9	30.4	38.5	1.3
Marigaon	1433	15.8	2.1	18.8	40.5	22.1	0.7
Nagaon	2157	13.8	2.2	31.2	22.0	25.2	5.6
Nalbari	2293	5.4	1.7	17.2	24.2	46.5	4.9
Sibsagar	3092	8.1	2.6	19.2	12.4	53.2	4.5
Sonitpur	2270	8.9	2.0	21.6	18.3	43.0	6.2
Tinsukia	1945	16.5	0.9	27.5	16.4	35.9	2.9
Udalguri	1703	20.6	2.0	15.8	31.9	26.4	3.5
Assam	2055	11.1	2.1	21.6	24.9	34.9	5.2

Source: HDR Survey, 2013

Table 3A.6: Income and Source of Income of Households: Diversity and Religion

District	Average PCI	Proportion of HH Income from					
		Agriculture & Farming	Livestock	Self-employment	Casual jobs	Salaries	Transfer Income
Spatial Diversity							
Char Block	1793	14.6	2.6	18.4	30.6	32.0	1.9
Flood-affected Block	1967	11.9	2.1	20.5	26.1	33.2	6.1
Hill Block	1505	23.8	6.0	16.3	22.5	30.5	0.9
Tea Garden Block	1799	13.2	2.4	17.9	25.6	37.1	3.9
Border Block	1499	17.8	3.6	16.7	35.0	22.9	4.0
Multiple-diversity Block	1527	18.1	2.9	11.3	37.6	27.9	2.3
General Block	2168	14.4	2.5	18.0	25.6	33.8	5.6
Religious groups							
Hindus	2341	9.7	1.9	21.8	20.4	40.3	6.0
Muslims	1519	14.8	2.5	22.2	39.1	18.5	2.8
Christians	1339	22.2	5.1	10.9	32.6	26.3	2.9
Others	2131	10.6	2.5	26.7	18.7	37.2	4.3

Source: HDR Survey, 2013

Table 3A.7: Average MPCE rural and urban, District Wise

District	Average MPCE Food (Rs.)			Average MPCE Total (Rs.)		
	Rural	Urban	Total	Rural	Urban	Total
Baksa	590.31	968.97	595.03	949.70	2703.89	971.57
Barpeta	557.41	972.75	596.46	915.32	1778.56	996.47
Bongaigaon	750.29	1608.76	896.70	1328.25	2758.73	1572.22
Cachar	858.24	1234.18	928.64	1275.53	2187.30	1446.27
Chirang	483.20	518.18	486.02	899.46	1106.38	916.15
Darrang	508.09	1005.33	541.66	782.68	1607.02	838.33
Dhemaji	570.09	849.71	592.67	1066.02	1757.73	1121.90
Dhubri	583.51	972.82	624.88	854.85	1660.47	940.46
Dibrugarh	625.75	1007.34	702.20	1093.25	1859.55	1246.78
Dima Hasao	573.87	721.84	620.08	761.34	1277.33	922.47
Goalpara	612.40	933.71	659.64	921.29	1310.99	978.59
Golaghat	430.06	1077.43	494.94	790.84	1974.21	909.43
Hailakandi	740.57	1170.85	772.02	1295.44	2030.30	1349.15
Jorhat	588.42	1428.59	776.08	1080.60	2782.83	1460.82
Kamrup	543.20	851.00	572.79	987.44	1864.07	1071.72
Kamrup (M)	591.71	1565.77	1424.48	1049.05	3945.31	3525.22
Karbi Anglong	465.95	1049.78	545.40	951.48	1647.52	1046.20
Karimganj	816.99	1142.82	848.03	1138.02	1720.20	1193.48
Kokrajhar	507.76	523.22	508.80	946.64	1362.53	974.49
Lakhimpur	582.30	699.21	594.70	1138.25	1727.25	1200.71
Marigaon	524.94	841.49	553.62	789.53	1235.04	829.89
Nagaon	521.82	895.52	576.38	904.81	1686.73	1018.96
Nalbari	579.62	1068.76	635.52	1081.37	2070.34	1194.40
Sibsagar	568.47	865.23	599.92	1357.05	2428.93	1470.64
Sonitpur	1041.47	1180.95	1056.05	1830.92	2657.53	1917.34
Tinsukia	586.35	1323.40	747.96	1057.80	2735.54	1425.67
Udalguri	596.52	775.69	605.47	812.18	1112.58	827.19
Assam	622.12	1185.71	710.22	1060.74	2491.15	1284.32

Source: HDR Survey, 2013

Table 3A.8: Poverty Ratios in Assam: District Level by Sector and Social Category

District	2004-2005 (NSSO)			2013 (Primary Data)			2013 (Primary Data)			
	Rural	Urban	Total	Rural	Urban	Total	SC	ST	OBC	GEN
Baksa				41.5	19.5	41.0	40.5	40.0	43.5	37.0
Barpeta	39.9	6.0	37.3	41.0	17.5	39.0	29.5	37.0	29.0	39.5
Bongaigaon	33.0	0.9	29.1	36.0	8.0	31.5	30.5	28.0	28.5	33.5
Cachar	33.5	0.7	28.9	35.5	15.0	31.5	34.5	29.5	31.5	30.0
Chirang				42.0	34.5	41.5	41.0	40.0	44.0	43.5
Darrang	0.1	0.0	0.1	47.0	26.5	45.5	46.5	48.5	41.0	46.0
Dhemaji	0.0	0.0	0.0	37.5	26.0	36.5	35.5	37.0	37.0	30.5
Dhubri	42.4	4.2	37.9	43.5	24.0	41.5	38.5	42.0	36.5	42.5
Dibrugarh	19.2	3.9	16.3	34.0	20.0	31.5	27.5	30.0	32.0	31.5
Dima Hasao				44.5	32.0	41.0	42.5	43.0	40.0	
Goalpara	33.9	6.8	31.7	42.0	30.5	40.5	41.5	35.5	34.5	42.0
Golaghat	25.5	8.1	24.0	46.0	20.5	43.5	39.5	46.0	44.5	40.0
Hailakandi	7.0	2.6	6.6	35.0	13.5	33.5	38.0	40.5	29.0	34.0
Jorhat	27.5	3.8	23.4	38.5	15.0	34.0	30.0	39.5	37.5	25.0
Kamrup	22.3	2.9	15.3	39.5	25.0	38.5	40.5	40.0	32.5	38.5
Kamrup (M)				36.5	3.5	9.5	19.0	28.5	12.5	
Karbi Anglong	26.5	0.0	23.5	45.0	28.5	42.5	37.0	46.5	41.5	29.5
Karimganj	40.9	14.3	39.0	38.0	28.0	37.0	35.5	37.5	33.5	39.0
Kokrajhar	35.7	3.0	33.4	39.0	29.0	38.0	42.0	39.0	38.0	35.5
Lakhimpur	1.4	1.2	1.4	38.0	29.0	37.0	36.5	40.5	37.0	33.5
Marigaon	21.5	0.0	20.5	45.5	36.0	44.5	42.0	45.5	39.5	45.5
Nagaon	25.3	9.1	23.4	41.5	21.5	39.0	41.5	44.0	37.5	37.5
Nalbari	15.0	0.8	14.7	35.0	17.5	33.0	38.0	46.5	32.5	32.0
Sibsagar	20.3	7.1	19.1	34.0	13.5	32.0	35.0	37.0	31.0	31.0
Sonitpur	3.6	0.7	3.3	43.0	14.5	40.5	40.5	42.5	43.0	37.0
Tinsukia	14.4	2.6	12.1	41.5	14.0	36.0	36.5	32.0	40.0	25.5
Udalguri				43.5	40.5	43.0	48.5	39.0	40.5	45.5
Assam	22.1	3.6	19.7	40.5	17.0	37.0	37.5	40.5	36.5	36.0

Source: 2004-2005 (NSSO) estimates are obtained from Siladitya Chaudhuri, Nivedita Gupta (2009): "Levels of living and poverty patterns: a District-wise analysis for India", *Economic & Political* Weekly, Vol. XLIV, No 9
Estimates for 2013 are based on HDR Survey (2013)

Table 3A.9: Poverty Ratios in Assam by Spatial Diversity and Religious Groups

Spatial Diversity Category	Poverty Ratio
Char Block	42.6
Flood-affected Block	36.4
Hill Block	44.7
Tea Garden Block	37.6
Border Block	38.9
Multi-diversity Block	40.8
General Block	39.5
Religious Groups	
Hindu	33.4
Muslim	39.7
Christian	44.0
Others	26.5

Source: HDR Survey, 2013

Table 3A.10: Asset Poverty in Assam by Spatial Diversity and Religion (percent)

	No Agricultural Asset	No Non-agricultural Asset	No Transport Asset	No HH Appliances	No Financial Asset	No Insurance Cover
Spatial Diversity Categories						
Char Block	69.4	24.4	36	91.1	42.5	83.3
Flood-affected Block	64.7	21.9	23.3	82.1	34.1	75.7
Hill Block	53.4	28.2	21.6	74.1	27	81.1
Tea Garden Block	66	18.1	24.1	85.3	28.7	74.5
Border Block	61.4	30.2	25.5	84	41.9	81.1
Multiple-diversity Block	60.6	31.4	34	87.9	42.1	83.2
General Block	67.1	15.6	23.1	86.6	25.7	75.6
Religious Groups						
Hindu	68.9	20.4	19.6	82.1	28	71.6
Muslim	72.5	33.6	32.5	98.4	43	84
Christian	56.7	20.1	30.7	91.6	39.9	85.7
Others	62.2	26.9	28.2	95.5	34.6	70.5

Source: HDR Survey, 2013

Table 3A.11: District Level Asset Poverty in Assam (percent HH) (Rural)

District	No Agricultural Asset	No Non-agricultural Asset	No Transport Asset	No HH Appliances	No Financial Asset
Baksa	65.5	72.5	11.6	23.8	40.6
Barpeta	65.8	93.4	14.8	30.1	35.4
Bongaigaon	70.9	84.6	13.9	18.5	10.2
Cachar	85.5	97.8	54.7	34.0	49.4
Chirang	55.0	88.3	8.0	16.5	17.9
Darrang	67.4	93.8	31.7	47.8	65.3
Dhemaji	37.0	64.2	25.0	21.4	51.5
Dhubri	75.2	97.8	44.8	40.5	54.6
Dibrugarh	70.4	77.4	16.1	21.1	22.7
Dima Hasao	46.5	58.9	93.0	29.2	23.8
Goalpara	56.1	90.2	12.7	29.0	26.4
Golaghat	41.3	75.1	10.1	22.8	26.2
Hailakandi	79.2	99.3	70.7	27.5	33.3
Jorhat	55.8	70.7	8.4	23.2	18.1
Kamrup	73.0	84.3	19.5	22.7	36.0
Kamrup (M)	83.4	86.0	22.6	10.2	30.9
Karbi Anglong	54.8	77.4	16.3	20.4	28.1
Karimganj	79.2	97.9	66.8	23.2	42.8
Kokrajhar	42.5	88.2	16.6	21.3	43.0
Lakhimpur	45.5	85.1	12.7	29.0	36.1
Marigaon	45.0	68.3	20.9	36.4	62.8
Nagaon	66.8	92.4	13.3	25.8	27.8
Nalbari	86.9	61.8	15.0	16.9	17.5
Sibsagar	57.5	74.3	12.9	14.3	13.9
Sonitpur	60.6	85.0	12.0	27.0	34.8
Tinsukia	66.5	88.0	24.0	30.2	40.6
Udalguri	67.4	92.2	17.4	28.6	36.3
Assam	64.5	85.5	23.8	26.9	35.7

Source: HDR Survey, 2013

Table 3A.12: District Level Asset Poverty in Assam (percent HH) (Urban)

District	No Agricultural Asset	No Non-agricultural Asset	No Transport Asset	No HH Appliances	No Financial Asset
Baksa	86.7	93.3	13.3	0.0	0.0
Barpeta	98.5	91.5	11.4	5.5	17.4
Bongaigaon	98.8	99.4	13.7	3.7	10.6
Cachar	96.1	99.5	44.6	12.4	26.7
Chirang	97.9	100.0	16.7	2.1	6.3
Darrang	100.0	100.0	22.5	8.8	45.0
Dhemaji	93.9	100.0	18.2	6.1	33.3
Dhubri	88.9	99.6	33.8	13.7	22.7
Dibrugarh	99.4	100.0	14.2	7.8	10.4
Dima Hasao	85.7	79.8	65.5	6.0	6.0
Goalpara	98.3	97.8	51.9	19.3	35.4
Golaghat	95.1	100.0	7.8	4.2	10.6
Hailakandi	100.0	100.0	77.3	0.0	6.1
Jorhat	97.5	96.0	14.5	6.8	6.5
Kamrup	96.2	52.7	19.6	8.2	14.1
Kamrup (M)	99.4	99.0	35.4	2.4	10.6
Karbi Anglong	85.5	88.8	16.5	4.6	16.5
Karimganj	100.0	100.0	57.7	8.1	43.6
Kokrajhar	100.0	94.7	31.6	13.2	38.2
Lakhimpur	91.1	100.0	13.3	24.4	21.5
Marigaon	91.4	93.3	11.5	14.4	50.0
Nagaon	94.9	97.2	7.5	5.1	15.6
Nalbari	98.2	79.5	25.9	11.6	14.3
Sibsagar	98.2	99.4	18.2	2.4	3.6
Sonitpur	99.6	99.6	18.8	6.3	18.4
Tinsukia	99.2	99.5	26.2	7.6	15.4
Udalguri	98.1	100.0	15.1	18.9	34.0
Assam	97.0	96.4	26.9	7.1	16.8

Source: HDR Survey, 2013

Table 3A.13: District Level Asset Poverty in Assam (percent HH) (Total)

District	No Agricultural Asset	No Non-agricultural Asset	No Transport Asset	No HH Appliances	No Financial Asset
Baksa	65.8	72.7	11.6	23.5	40.1
Barpeta	68.9	93.2	14.5	27.8	33.7
Bongaigaon	75.6	87.1	13.9	16.0	10.3
Cachar	87.5	98.2	52.8	30.0	45.1
Chirang	58.5	89.2	8.7	15.3	17.0
Darrang	69.6	94.2	31.1	45.2	64.0
Dhemaji	41.6	67.1	24.5	20.2	50.1
Dhubri	76.7	98.0	43.7	37.7	51.2
Dibrugarh	76.3	81.9	15.7	18.4	20.3
Dima Hasao	58.7	65.4	84.4	21.9	18.2
Goalpara	62.3	91.3	18.4	27.5	27.7
Golaghat	46.7	77.6	9.9	21.0	24.6
Hailakandi	80.7	99.3	71.2	25.5	31.3
Jorhat	65.2	76.4	9.8	19.5	15.5
Kamrup	75.2	81.3	19.5	21.3	33.9
Kamrup (M)	97.0	97.2	33.6	3.5	13.6
Karbi Anglong	59.0	79.0	16.3	18.3	26.5
Karimganj	81.2	98.1	65.9	21.7	42.9
Kokrajhar	46.3	88.6	17.6	20.8	42.6
Lakhimpur	50.4	86.7	12.7	28.5	34.6
Marigaon	49.2	70.6	20.0	34.4	61.7
Nagaon	70.9	93.1	12.4	22.8	26.0
Nalbari	88.2	63.8	16.2	16.3	17.1
Sibsagar	61.9	76.9	13.4	13.0	12.9
Sonitpur	64.7	86.6	12.7	24.8	33.1
Tinsukia	73.7	90.5	24.5	25.2	35.1
Udalguri	68.9	92.6	17.3	28.1	36.2
Assam	69.6	87.2	24.3	23.8	32.8

Source: HDR Survey, 2013

Table 3A.14: Landlessness by Spatial Diversity and Religious Groups (Percent HH)

	No Homestead Land	No Cultivatable Land	No Irrigated Land
Spatial Diversity			
Char Block	0.8	50.6	79.3
Flood-affected Block	1.2	44.5	90.8
Hill Block	1.4	29.4	93.9
Tea Garden Block	1.5	48.2	98.9
Border Block	0.4	49.3	89.0
Multiple-diversity Block	1.1	48.1	93.7
General Block	0.4	52.4	87.1
Religious groups			
Hindus	4.9	54.9	93.9
Muslims	2.0	59.3	83.9
Christians	1.2	42.3	95.5
Others	3.8	57.1	91.7

Source: HDR Survey, 2013

Table 3A.15: Landlessness District-wise (Percent HH)

District	No Homestead Land	No Cultivatable Land	No Irrigated Land
Baksa	0.6	54.5	75.8
Barpeta	0.3	53.3	67.2
Bongaigaon	0.5	60.3	85.4
Cachar	1.5	63.8	92.6
Chirang	0.0	45.3	75.7
Darrang	0.3	51.0	80.5
Dhemaji	0.4	22.9	99.1
Dhubri	1.0	65.9	77.6
Dibrugarh	3.9	46.4	100.0
Dima Hasao	0.0	41.1	71.9
Goalpara	0.1	48.7	92.1
Golaghat	0.4	33.7	98.9
Hailakandi	0.8	58.0	76.7
Jorhat	0.2	29.0	98.9
Kamrup	0.2	49.5	93.3
Kamrup (M)	0.8	52.1	90.6
Karbi Anglong	1.8	27.8	97.9
Karimganj	0.6	63.2	93.3
Kokrajhar	0.5	42.7	83.7
Lakhimpur	0.5	32.1	99.7
Marigaon	0.1	35.2	83.4
Nagaon	1.4	43.0	88.0
Nalbari	0.4	68.8	95.9
Sibsagar	0.6	30.7	98.1
Sonitpur	1.0	53.2	97.4
Tinsukia	0.4	50.4	99.5
Udalguri	1.2	54.7	94.2
Assam	0.8	48.5	89.5

Source: HDR Survey, 2013

Table 3A.16: Average Land Holding in Rural Areas (in Bigha)

Districts	Per Capita Cultivated Land					Per Capita Irrigated Land				
	SC	ST	OBC	General	Total	SC	ST	OBC	General	Total
Baksa	0.4	0.9	0.7	0.5	0.7	0.2	0.5	0.4	0.2	0.4
Barpeta	0.3	1.1	0.4	0.6	0.6	0.1	0.9	0.3	0.4	0.4
Bongaigaon	0.3	0.5	0.6	0.4	0.4	0.1	0.2	0.1	0.1	0.1
Cachar	0.3	0.3	0.4	0.3	0.4	0.1	0.1	0.1	0.1	0.1
Chirang	0.8	1.2	0.7	0.5	0.9	0.3	0.8	0.2	0.0	0.4
Darrang	0.7	0.9	1.0	0.5	0.6	0.2	0.2	0.3	0.2	0.2
Dhemaji	0.8	1.5	1.3	1.1	1.3	0.0	0.0	0.0	0.1	0.0
Dhubri	0.3	0.1	0.6	0.3	0.4	0.1	0.0	0.3	0.2	0.2
Dibrugarh	0.6	0.7	0.6	0.3	0.6	0.0	0.0	0.0	0.0	0.0
Dima Hasao	0.0	0.7	0.4	0.0	0.6	0.0	0.3	0.2	0.0	0.2
Goalpara	0.3	1.1	0.7	0.5	0.6	0.0	0.0	0.1	0.1	0.1
Golaghat	0.7	1.1	1.0	0.8	0.9	0.0	0.0	0.0	0.0	0.0
Hailakandi	0.2	0.7	0.3	0.4	0.4	0.1	0.0	0.2	0.2	0.2
Jorhat	0.6	1.1	0.7	0.9	0.8	0.0	0.0	0.0	0.0	0.0
Kamrup	0.4	0.6	0.4	0.5	0.5	0.1	0.0	0.0	0.1	0.1
Kamrup (M)	0.5	0.7	0.8	0.6	0.7	0.2	0.1	0.3	0.1	0.2
Karbi Anglong	0.6	1.1	0.8	0.4	0.9	0.1	0.0	0.0	0.0	0.0
Karimganj	0.5	0.7	0.4	0.4	0.4	0.2	0.0	0.1	0.0	0.1
Kokrajhar	0.7	2.1	1.5	1.4	1.7	0.1	0.4	0.4	0.5	0.4
Lakhimpur	0.7	1.2	0.9	0.8	1.0	0.0	0.0	0.0	0.0	0.0
Marigaon	1.3	1.2	0.4	0.6	0.8	0.1	0.3	0.0	0.1	0.1
Nagaon	0.7	0.9	0.7	0.8	0.8	0.2	0.0	0.0	0.1	0.1
Nalbari	0.2	0.4	0.3	0.5	0.4	0.0	0.0	0.0	0.1	0.0
Sibsagar	0.4	0.9	0.8	0.6	0.8	0.0	0.0	0.0	0.0	0.0
Sonitpur	0.8	1.4	0.6	0.5	0.7	0.1	0.1	0.0	0.0	0.0
Tinsukia	0.4	0.8	0.6	0.4	0.6	0.0	0.1	0.0	0.0	0.0
Udalguri	0.6	1.2	0.7	0.5	0.7	0.0	0.2	0.1	0.0	0.1
Assam	0.5	1.1	0.7	0.5	0.7	0.1	0.2	0.1	0.1	0.1

Source: HDR Survey, 2013

Table 3A.17: Size class distribution of operational holding (percent HH)

District	Marginal (< 7.5 bigha)	Small (7 to 15 bigha)	Medium (15 to 21 bigha)	Large (> 21 bigha)
Baksa	81.9	14.6	2.2	1.3
Barpeta	86.9	11.7	1.0	0.4
Bongaigaon	90.9	8.7	0.3	0.1
Cachar	95.1	4.7	0.2	0.1
Chirang	77.3	18.5	2.6	1.6
Darrang	90.2	6.8	2.0	1.0
Dhemaji	59.8	28.5	7.6	4.1
Dhubri	93.0	5.5	1.3	0.1
Dibrugarh	91.1	7.8	0.6	0.5
Dima Hasao	83.2	16.8	0.0	0.0
Goalpara	88.3	9.5	1.2	1.0
Golaghat	76.2	19.4	2.7	1.7
Hailakandi	94.3	4.7	0.5	0.6
Jorhat	82.3	15.1	1.2	1.3
Kamrup	91.3	7.2	0.9	0.6
Kamrup (M)	85.7	10.6	1.9	1.9
Karbi Anglong	75.3	19.9	3.6	1.1
Karimganj	89.6	8.6	1.2	0.6
Kokrajhar	51.0	29.8	15.9	3.3
Lakhimpur	75.0	19.3	4.0	1.7
Marigaon	86.7	11.4	0.9	1.1
Nagaon	78.7	16.3	3.1	2.0
Nalbari	90.9	7.4	1.3	0.5
Sibsagar	86.5	12.4	0.6	0.5
Sonitpur	82.5	13.1	2.5	1.8
Tinsukia	86.3	11.0	1.4	1.3
Udalguri	84.4	12.2	2.1	1.3
Assam	84.3	12.3	2.2	1.1

Source: HDR Survey, 2013

Table 3A.18: Status of Housing in Assam: Rural-Urban District Wise (percent HH)

District	Rural			Urban			Total		
	Kutcha	Semi-pucca	Pucca	Kutcha	Semi-pucca	Pucca	Kutcha	Semi-pucca	Pucca
Baksa	55.7	38.2	6.1	20	26.7	53.3	55.3	38.1	6.7
Barpeta	35.8	44.8	19.4	11.4	33.3	55.2	33.5	43.7	22.8
Bongaigaon	44.3	36.5	19.2	4.4	17.4	78.3	37.5	33.3	29.2
Cachar	44.9	35.8	19.3	27.6	22.5	49.9	41.6	33.3	25.1
Chirang	36.9	51.9	11.2	2.1	66.7	31.3	34.1	53.1	12.8
Darrang	59.8	23.4	16.7	36.3	11.3	52.5	58.2	22.6	19.2
Dhemaji	37.2	53.7	9.2	13.6	47	39.4	35.3	53.1	11.6
Dhubri	40.2	47.8	12	15.1	49.3	35.6	37.5	47.9	14.5
Dibrugarh	59.3	18.1	22.7	43.8	19.4	36.8	56.2	18.4	25.5
Dima Hasao	69.2	29.2	1.6	19.1	28.6	52.4	53.5	29.0	17.5
Goalpara	50.4	32.1	17.5	37.6	20.4	42.0	48.5	30.4	21.1
Golaghat	63.9	26.8	9.3	25.4	12.7	62.0	60.1	25.4	14.5
Hailakandi	65.5	20.6	14	30.3	27.3	42.4	62.9	21.0	16.1
Jorhat	45.7	36.7	17.6	14.8	18.8	66.5	38.8	32.7	28.5
Kamrup	57.8	24.4	17.8	27.7	32.1	40.2	54.9	25.1	20.0
Kamrup (M)	44.5	27.2	28.3	8.5	18.6	73.0	13.7	19.8	66.5
Karbi Anglong	83.4	9.3	7.3	53.3	19.1	27.6	79.3	10.7	10.0
Karimganj	31.5	37.2	31.4	16.1	34.2	49.7	30.0	36.9	33.1
Kokrajhar	39.4	51.6	9.1	4.0	43.4	52.6	37.0	51.0	12.0
Lakhimpur	46.1	39.5	14.4	48.2	34.1	17.8	46.4	38.9	14.8
Marigaon	37.2	38.9	24	26.9	20.2	52.9	36.2	37.2	26.6
Nagaon	47.6	36.0	16.3	25.1	33.7	41.2	44.3	35.7	20.0
Nalbari	55.5	22.2	22.2	28.6	20.5	50.9	52.5	22.0	25.5
Sibsagar	33.4	41	25.7	10.9	23.6	65.5	31.0	39.1	29.9
Sonitpur	40.7	44.1	15.3	12.2	19.2	68.6	37.7	41.5	20.8
Tinsukia	53.1	31.7	15.2	20	17	63.1	45.8	28.5	25.7
Udalguri	59.5	27.1	13.4	43.4	20.8	35.9	58.7	26.8	14.5
Assam	48.1	35.3	16.6	20.2	24.3	55.6	43.7	33.6	22.7

Source: HDR Survey (2013)

Table 3A.19: Status of Housing in Assam: Spatial Diversity, Religion wise

	Kutcha	Semi-pucca	Pucca
Spatial Diversity Category			
Char Block	53.4	35.0	11.7
Flood-affected Block	42.0	35.7	22.4
Hill Block	81.3	12.4	6.3
Tea Garden Block	47.7	34.0	18.3
Border Block	44.9	39.0	16.1
Multiple-diversity Block	42.7	46.0	11.3
Religious groups			
Hindus	39.6	33.7	26.7
Muslims	51.2	33.7	15.0
Christians	60.5	30.9	8.6
Others	53.2	29.5	17.3

Source: HDR Survey, 2013

Table 3A.20: Deprivation in Basic Amenities: Spatial Diversity, Religion wise

	Without Electricity	Without Safe Drinking Water	Without Toilet
Spatial Diversity Category			
Char Block	47.1	3.9	84.6
Flood-affected Block	31.8	19.7	73.1
Hill Block	26.8	38.6	88
Tea Garden Block	29.9	12.5	74.5
Border Block	37.4	19.9	77.2
Multiple-diversity Block	46.4	5.9	77.7
General Block	29.7	11.7	73.4
Religious groups			
Hindus	24.4	12.1	64.8
Muslims	47.4	13.9	80.6
Christians	39.2	19	77.4
Others	34	11.5	76.3

Source: HDR Survey, 2013

Table 3A.21: Deprivation in Basic Amenities: Rural-Urban, District wise

District	HH Without Electricity			HH Without Toilet			HH Without Drinking Water		
	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban	Total
Baksa	34.7	13.3	34.4	72.8	13.3	72.1	23.3	13.3	23.2
Barpeta	43.5	5.0	39.9	71.7	28.9	67.7	1.2	1.0	1.2
Bongaigaon	28.2	6.2	24.5	86.2	25.5	75.9	10.9	1.9	9.3
Cachar	47.4	17.9	41.9	82.0	54.7	76.9	55.6	9.4	47.0
Chirang	28.7	0.0	26.4	85.9	66.7	84.4	0.9	0.0	0.8
Darrang	50.1	6.3	47.2	89.7	41.3	86.4	0.1	0.0	0.1
Dhemaji	48.2	4.6	44.7	85.4	50.0	82.5	6.1	0.0	5.6
Dhubri	57.0	17.3	52.8	73.6	47.8	70.8	2.0	4.7	2.3
Dibrugarh	30.2	7.5	25.7	74.2	22.9	63.9	0.9	0.0	0.8
Dima Hasao	30.8	1.2	21.6	86.5	29.8	68.8	63.8	0.0	43.9
Goalpara	45.3	29.8	43.1	76.6	44.8	71.9	3.5	0.6	3.1
Golaghat	26.6	2.1	24.1	81.5	15.5	74.9	7.2	1.4	6.6
Hailakandi	79.1	10.6	74.1	83.6	28.8	79.6	55.6	33.3	53.9
Jorhat	21.4	1.9	17.0	72.7	16.9	60.3	9.0	4.3	8.0
Kamrup	21.3	3.3	19.5	80.8	54.4	78.2	7.2	2.2	6.7
Kamrup (M)	76.6	3.1	13.8	65.7	11.8	19.7	14.0	4.6	6.0
Karbi Anglong	25.6	5.9	22.9	88.1	56.6	83.8	33.6	12.5	30.7
Karimganj	43.3	25.5	41.6	79.4	37.6	75.4	39.8	32.2	39.1
Kokrajhar	46.0	15.8	44.0	75.3	29.0	72.2	14.4	21.1	14.8
Lakhimpur	16.4	11.9	16.0	75.7	74.8	75.6	9.1	5.9	8.8
Marigaon	50.1	13.5	46.8	80.9	41.4	77.4	0.0	0.0	0.0
Nagaon	14.8	3.9	13.2	73.5	33.7	67.7	8.9	0.0	7.6
Nalbari	64.9	3.6	57.9	74.9	47.3	71.7	0.7	0.0	0.6
Sibsagar	64.7	3.0	58.2	65.7	8.5	59.7	4.5	0.0	4.0
Sonitpur	15.1	6.7	14.2	75.3	24.3	70.0	30.6	33.7	31.0
Tinsukia	28.3	2.7	22.7	74.9	24.0	63.8	3.2	0.5	2.6
Udalguri	0.0	11.3	0.6	79.8	47.2	78.1	7.6	1.9	7.4
Assam	36.2	7.3	31.7	77.3	29.7	69.8	14.2	5.7	12.9

Source: HDR Survey (2013)

Table 3A.22: Proportion of Self-assessed Poor Households

District	Rural	Urban	SC	ST	OBC	GEN
Baksa	17.5	0.2	20.4	15.6	15.2	20.9
Barpeta	5.6	3.0	10.4	0.5	5.1	5.4
Bongaigaon	13.1	4.8	9.0	0.6	10.6	13.3
Cachar	18.0	10.3	18.5	10.1	11.4	21.2
Chirang	0.6	0.2	0.6	0.6	0.3	0.6
Darrang	8.1	0.3	0.5	11.3	8.1	7.5
Dhemaji	28.8	5.7	23.7	27.8	28.7	22.6
Dhubri	12.2	13.9	10.9	0.6	6.9	13.9
Dibrugarh	6.6	0.6	5.8	14.1	4.8	4.6
Dima Hasao	0.3	0.1	0.1	0.3	0.1	0.1
Goalpara	3.7	2.5	5.3	0.4	2.6	3.4
Golaghat	10.5	5.9	12.3	8.9	10.6	9.1
Hailakandi	20.6	0.6	13.8	0.3	17.0	22.9
Jorhat	9.5	3.7	9.5	6.8	10.1	8.7
Kamrup	11.5	11.7	15.7	12.5	8.7	10.6
Kamrup (M)	16.7	2.4	8.4	13.9	10.3	2.0
Karbi Anglong	12.6	11.9	18.5	9.0	18.2	13.0
Karimganj	18.7	0.6	16.6	13.1	19.0	17.0
Kokrajhar	8.9	0.5	6.9	7.3	7.0	10.6
Lakhimpur	8.5	0.1	2.4	7.4	9.8	4.7
Marigaon	3.9	0.5	0.6	0.6	2.8	3.0
Nagaon	13.7	4.8	8.0	12.6	11.5	14.9
Nalbari	9.7	3.4	10.7	0.6	9.2	8.7
Sibsagar	11.5	0.5	4.9	4.9	10.7	12.0
Sonitpur	19.8	6.3	18.9	12.7	22.1	18.5
Tinsukia	13.2	1.6	14.1	13.9	14.6	7.8
Udalguri	13.6	16.5	9.7	13.2	14.2	12.9
Assam	15.3	7.6	15.5	13.9	15.0	14.4

Source: HDR Survey, 2013

Table 3A.23: Inequality in Living Standard (MPCE): Rural

	Share of Bottom 20%	Share of upper 20%	T20/B20 Ratio	Gini Coefficient
Baksa	8.6	41.3	4.8	0.4
Barpeta	9.1	40.3	4.4	0.4
Bongaigaon	7.2	50.2	7.0	0.6
Cachar	7.5	44.2	5.9	0.5
Chirang	7.6	43.4	5.7	0.5
Darrang	7.1	43.9	6.2	0.5
Dhemaji	8.1	43.6	5.4	0.5
Dhubri	7.8	40.2	5.2	0.5
Dibrugarh	8.1	41.3	5.1	0.5
Dima Hasao	9.8	33.6	3.4	0.3
Goalpara	9.0	37.1	4.1	0.4
Golaghat	9.3	37.9	4.1	0.4
Hailakandi	7.0	45.9	6.6	0.6
Jorhat	7.5	46.5	6.2	0.5
Kamrup	7.3	45.7	6.2	0.5
Kamrup (M)	7.5	43.2	5.8	0.5
Karbi Anglong	6.9	51.0	7.4	0.6
Karimganj	7.6	45.4	6.0	0.5
Kokrajhar	9.6	37.4	3.9	0.4
Lakhimpur	6.5	50.8	7.9	0.7
Marigaon	9.6	35.7	3.7	0.4
Nagaon	7.9	43.5	5.5	0.5
Nalbari	7.3	44.6	6.1	0.5
Sibsagar	6.0	52.0	8.7	0.7
Sonitpur	4.7	67.8	14.5	0.9
Tinsukia	7.3	47.6	6.5	0.6
Udalguri	7.2	44.4	6.1	0.5
Assam	8.0	47.5	6.0	0.5

Source: HDR Survey, 2013

Table 3A.24: Inequality in Living Standard (MPCE): Urban

	Share of Bottom 20%	Share of upper 20%	T20/B20 Ratio	Gini Coefficient
Baksa	9.4	45.4	4.9	0.4
Barpeta	6.3	42.6	6.8	0.6
Bongaigaon	7.5	42.2	5.7	0.5
Cachar	7.7	40.8	5.3	0.5
Chirang	8.3	39.8	4.8	0.4
Darrang	7.1	48.1	6.8	0.6
Dhemaji	7.9	43.1	5.5	0.5
Dhubri	6.9	44.6	6.4	0.6
Dibrugarh	7.9	40.1	5.1	0.5
Dima Hasao	8.1	39.6	4.9	0.4
Goalpara	10.2	30.8	3.0	0.3
Golaghat	7.2	42.6	5.9	0.5
Hailakandi	12.0	28.2	2.4	0.3
Jorhat	5.9	46.6	7.9	0.7
Kamrup	4.2	52.8	12.7	0.8
Kamrup (M)	6.7	45.3	6.7	0.6
Karbi Anglong	7.3	47.3	6.5	0.6
Karimganj	8.0	38.4	4.8	0.4
Kokrajhar	8.8	39.3	4.5	0.4
Lakhimpur	5.7	52.8	9.3	0.8
Marigaon	11.0	40.9	3.7	0.4
Nagaon	7.1	43.7	6.1	0.5
Nalbari	4.6	44.1	9.6	0.8
Sibsagar	7.2	45.3	6.3	0.5
Sonitpur	6.2	42.8	6.9	0.6
Tinsukia	5.7	47.2	8.3	0.7
Udalguri	8.0	39.6	4.9	0.4
Assam	8.7	42.5	4.9	0.5

Source: HDR Survey, 2013

Table 3A.25: Chance of being Poor (Result of Logistic Regression Analysis)

Affecting Variable	B-coeff	Exp (B)	Change in Chance of being Poor (%)
Education			
1 year increase in formal education	-0.125	0.882	– 12
Employment Type[a]			
Cultivator	0.998	2.713	+ 171
Agricultural Lab	1.596	4.933	+ 393
Daily Wage Earner	1.489	4.431	+ 343
Self-employed	-0.169	0.844	– 16
Trade/Business	-0.803	0.448	– 55
Casual Worker	0.587	1.799	+ 80
Unemployed	1.552	4.723	+ 372
Religion[b]			
Muslim	0.574	1.775	+ 77
Christian	0.951	2.587	+ 159
Others	0.286	1.331	+ 33
Spatial Diversity[c]			
Char Block	0.403	1.496	+ 50
Flood-affected Block	-0.300	0.741	– 26
Hill Block	0.736	2.087	+ 109
Tea Garden Block	-0.174	0.841	– 16
Border Block	-0.017	0.984	– 2
Multi-diversity Block	0.143	1.153	+ 15

Source: HDR Survey, 2013
a – Regular Salaried workers are Reference Group
b – Hindus are Reference group;
c – General block is the Reference group

Table 3A.26: Employment and Livelihood Index (ELI)

Districts	ELI	Rank
Baksa	0.15	20
Barpeta	0.27	12
Bongaigaon	0.48	5
Cachar	0.48	6
Chirang	0.10	24
Darrang	0.10	23
Dhemaji	0.09	25
Dhubri	0.12	22
Dibrugarh	0.43	7
Dima Hasao	0.27	13
Goalpara	0.24	17
Golaghat	0.24	16
Hailakandi	0.17	19
Jorhat	0.66	2
Geo-spatial Region		
Char Block	0.46	4
Flood-affected Block	0.79	3
Hill Block	0.00	7
Tea Garden Block	1.00	1
Border Block	0.03	6
Multiple-diversity Block	0.33	5
General Block	0.79	2
Kamrup	0.30	10
Kamrup (M)	1.00	1
Karbi Anglong	0.12	21
Karimganj	0.25	15
Kokrajhar	0.00	27
Lakhimpur	0.29	11
Marigaon	0.01	26
Nagaon	0.26	14
Nalbari	0.59	4
Sibsagar	0.63	3
Sonitpur	0.40	9
Tinsukia	0.43	8
Udalguri	0.20	18
Assam	**0.34**	

Source: HDR Survey, 2013

Table 4A.1: Percent literates (7 + years), Male-Female, Rural-Urban

District	Male	Female	Rural	Urban	Total
Baksa	78.07	63.21	70.51	87.04	70.69
Barpeta	87.87	77.45	81.99	91.55	82.87
Bongaigaon	84.24	76.14	77.63	94.29	80.30
Cachar	87.72	78.84	82.01	88.22	83.21
Chirang	87.02	75.94	80.94	92.27	81.81
Darrang	75.91	64.99	69.68	85.20	70.70
Dhemaji	87.54	78.28	82.83	85.17	83.01
Dhubri	78.16	69.16	72.78	81.99	73.78
Dibrugarh	92.28	82.83	87.37	88.67	87.62
Dima Hasao	90.62	80.54	81.45	96.47	85.86
Goalpara	76.00	67.37	71.67	73.12	71.88
Golaghat	92.74	84.68	87.56	98.90	88.72
Hailakandi	86.27	75.80	80.20	93.20	81.21
Jorhat	93.90	86.99	89.02	97.31	90.60
Kamrup	81.96	71.70	76.16	86.27	77.04
Kamrup (M)	93.78	87.21	82.26	92.50	90.69
Karbi Anglong	83.66	70.44	76.92	79.92	77.35
Karimganj	88.90	81.30	84.44	91.32	85.11
Kokrajhar	86.55	74.22	80.37	86.17	80.73
Lakhimpur	92.18	84.38	87.66	94.96	88.39
Marigaon	92.72	87.79	89.98	94.03	90.34
Nagaon	90.00	84.67	86.00	95.81	87.42
Nalbari	90.33	80.11	84.70	90.00	85.29
Sibsagar	94.98	90.06	92.47	94.11	92.63
Sonitpur	81.54	70.88	74.61	92.48	76.19
Tinsukia	86.97	73.92	77.60	91.16	80.40
Udalguri	79.59	68.07	73.41	83.84	73.88
Assam	86.72	77.56	80.81	90.75	82.26

Source: HDR Survey, Assam (2013

Table 4A.2: Percent literates (15 + years) Male- Female, Rural- Urban

District	Male	Female	Rural	Urban	Total
Baksa	73.34	55.41	64.10	85.71	64.37
Barpeta	84.56	71.17	76.75	90.36	78.15
Bongaigaon	79.91	69.25	70.85	93.14	74.72
Cachar	84.77	73.93	77.54	86.01	79.25
Chirang	83.27	70.31	75.82	90.74	77.03
Darrang	69.07	54.81	60.55	82.89	62.23
Dhemaji	84.63	72.24	78.31	82.72	78.67
Dhubri	71.67	58.92	63.84	77.99	65.51
Dibrugarh	90.78	79.67	84.90	86.81	85.27
Dima Hasao	88.75	77.18	77.39	96.00	83.17
Goalpara	69.64	58.58	63.87	67.12	64.35
Golaghat	91.42	81.12	84.82	98.71	86.32
Hailakandi	82.49	69.24	74.55	92.03	76.06
Jorhat	92.93	84.87	87.15	96.92	89.07
Kamrup	78.19	65.90	70.92	84.68	72.24
Kamrup (M)	92.86	85.17	78.43	91.43	89.27
Karbi Anglong	79.88	63.55	71.50	75.54	72.09
Karimganj	85.79	75.86	80.01	88.57	80.84
Kokrajhar	83.64	68.73	76.11	83.40	76.57
Lakhimpur	90.48	80.48	84.77	93.76	85.68
Marigaon	90.79	84.53	87.23	92.90	87.78
Nagaon	87.79	81.13	82.59	95.26	84.56
Nalbari	88.81	76.50	82.10	88.08	82.76
Sibsagar	93.99	88.19	90.95	93.25	91.20
Sonitpur	76.98	64.00	68.18	91.41	70.45
Tinsukia	84.82	69.55	73.38	90.18	77.11
Udalguri	74.77	59.33	66.43	81.29	67.17
Assam	83.74	72.34	76.13	89.26	78.18

Source: HDR Survey, Assam (2013

Table 4A.3: Percent literates in the 7 + and 15+ age category, by Social Category

District	7+literacy			15+literacy		
	Male	Female	Total	Male	Female	Total
SC	87.85	78.63	83.36	85.31	73.83	79.72
ST	86.94	76.69	81.91	84.11	71.60	77.96
OBC	89.03	79.28	84.25	86.88	75.19	81.13
General	84.98	76.53	80.89	81.21	70.35	75.96
Assam	86.72	77.56	82.26	83.74	72.34	78.18

Source: HDR Survey, Assam (2013)

Table 4A.4: Percent literates in the 7 + and 15+ age category, by Religious Group

Religion	7+literacy			15+literacy		
	Male	Female	Total	Male	Female	Total
Hindu	89.79	80.72	85.35	87.89	77.04	82.59
Muslim	80.29	70.87	75.75	73.91	83.62	67.69
Christian	83.91	73.51	78.83	79.88	66.55	73.36
Buddhist	81.56	72.14	77.01	76.54	66.67	71.56
Sikh	96.00	89.74	93.26	95.00	88.89	92.11
Others	88.89	76.83	83.43	95.00	88.89	92.11
Assam	86.72	77.56	82.26	87.34	70.77	78.18

Source: HDR Survey, Assam (2013)

Table 4A.5: Percent Literates in the 7 + and 15+ age category, by Spatial Diversity

Diversity Category	7+literacy			15+literacy		
	Male	Female	Total	Male	Female	Total
Char	79.30	70.28	74.96	73.24	61.01	67.37
Flood Affected	89.38	82.43	86.01	87.10	78.63	82.97
Hills	84.01	70.65	77.68	80.23	64.02	72.51
Tea Garden	87.87	77.03	82.54	85.27	72.31	78.85
Border	85.75	75.96	80.92	82.34	69.83	76.18
Multiple Diversities	83.48	73.43	78.52	79.17	65.89	72.66
General	87.14	77.94	82.65	84.22	73.04	78.75
Assam	86.72	77.56	82.26	83.74	72.34	78.18

Source: HDR Survey, Assam (2013)

Table 4A.6: District wise Muslim population and literacy, Hindus and Muslims

Districts	%	7+ literacy rate			15+literacy rate			15-24 literacy rate		
	Muslim	Hindu	Muslim	Diff	Hindu	Muslim	Diff	Hindu	Muslim	Diff
Baksa	6.36	71.00	72.31	-1.32	64.76	65.70	-0.95	91.19	90.77	0.42
Barpeta	59.71	88.87	78.41	10.45	87.07	70.21	16.85	98.26	92.84	5.41
Bongaigaon	53.42	85.65	75.54	10.10	82.71	66.58	16.13	96.52	90.22	6.30
Cachar	39.73	83.74	82.27	1.47	80.65	76.77	3.88	93.05	96.07	-3.02
Chirang	17.45	80.52	83.80	-3.28	75.71	77.96	-2.24	94.38	86.36	8.01
Darrang	70.81	83.19	65.21	17.99	80.38	52.81	27.57	96.73	82.09	14.63
Dhemaji	2.20	83.08	80.72	2.36	78.85	73.33	5.52	95.21	100.00	-4.79
Dhubri	74.85	82.39	70.86	11.53	78.38	60.62	17.76	95.49	84.31	11.18
Dibrugarh	6.26	87.77	89.82	-2.05	85.46	88.32	-2.86	95.15	99.12	-3.96
Dima Hasao	2.67	85.16	100.00	-14.84	82.06	100.00	-17.94	94.78	100.00	-5.22
Goalpara	59.09	82.08	64.45	17.63	78.71	52.42	26.29	94.65	78.54	16.11
Golaghat	5.35	89.17	88.86	0.32	86.97	86.09	0.88	96.59	97.33	-0.75
Hailakandi	54.95	83.07	79.47	3.60	79.77	72.43	7.34	94.92	92.89	2.03
Jorhat	3.60	90.79	92.79	-2.01	89.32	91.49	-2.17	97.18	97.73	-0.55
Kamrup	33.11	82.46	65.78	16.67	79.31	55.67	23.64	95.00	78.25	16.75
Kamrup (M)	16.34	92.57	80.62	11.95	91.51	76.99	14.51	98.18	93.75	4.43
Karbi Anglong	4.21	76.96	78.14	-1.18	71.50	71.34	0.16	90.38	91.84	-1.46
Karimganj	59.73	89.75	81.86	7.89	87.97	75.01	12.96	97.94	93.69	4.25
Kokrajhar	24.02	82.71	71.66	11.05	79.29	66.16	13.13	98.61	92.43	6.18
Lakhimpur	8.98	89.12	85.89	3.22	86.70	80.80	5.89	97.28	99.05	-1.77
Marigaon	39.85	96.15	81.04	15.11	95.40	73.56	21.85	99.63	93.89	5.74
Nagaon	35.75	90.82	82.23	8.59	89.23	76.14	13.09	96.86	93.52	3.34
Nalbari	25.16	88.49	75.54	12.95	86.87	68.56	18.31	99.02	89.24	9.78
Sibsagar	6.51	92.44	96.16	-3.73	90.97	95.40	-4.43	98.17	100.00	-1.83
Sonitpur	17.04	77.56	74.15	3.41	72.74	65.15	7.59	89.59	91.53	-1.94
Tinsukia	2.81	81.01	79.90	1.11	77.92	76.28	1.63	91.03	85.71	5.32
Udalguri	30.85	76.46	69.00	7.46	71.57	56.87	14.70	92.78	85.24	7.54
Assam	30.74	85.35	75.75	9.60	82.57	67.69	14.88	95.19	89.41	5.77

Source: HDR Survey, Assam (2013)

Table 4A.7: Odds of Literacy (7+ years) of Muslims against Non-Muslims

State/District	Odds Ratio	Std. Err.	z	P>z	[95% Conf.	Interval]
Baksa	1.089	0.143	0.650	0.519	0.841	1.409
Barpeta	0.455	0.028	-12.760	0.000	0.404	0.514
Bongaigaon	0.523	0.043	-7.890	0.000	0.445	0.614
Cachar	0.897	0.052	-1.880	0.060	0.801	1.005
Chirang	1.182	0.169	1.170	0.242	0.893	1.564
Darrang	0.390	0.031	-11.910	0.000	0.334	0.455
Dhemaji	0.854	0.240	-0.560	0.574	0.491	1.483
Dhubri	0.536	0.030	-11.220	0.000	0.481	0.598
Dibrugarh	1.265	0.202	1.470	0.142	0.924	1.730
Dima Hasao*						
Goalpara	0.399	0.027	-13.580	0.000	0.349	0.455
Golaghat	1.015	0.182	0.080	0.936	0.714	1.442
Hailakandi	0.779	0.066	-2.950	0.003	0.661	0.920
Jorhat	1.349	0.355	1.140	0.255	0.805	2.261
Kamrup	0.411	0.023	-16.220	0.000	0.369	0.457
Kamrup (M)	0.333	0.031	-11.650	0.000	0.277	0.401
Karbi Anglong	1.048	0.177	0.280	0.779	0.754	1.459
Karimganj	0.524	0.039	-8.620	0.000	0.453	0.607
Kokrajhar	0.497	0.040	-8.640	0.000	0.424	0.582
Lakhimpur	0.782	0.109	-1.770	0.076	0.595	1.026
Marigaon	0.171	0.020	-15.160	0.000	0.136	0.215
Nagaon	0.507	0.025	-13.660	0.000	0.460	0.559
Nalbari	0.405	0.037	-9.850	0.000	0.338	0.484
Sibsagar	2.064	0.536	2.790	0.005	1.241	3.433
Sonitpur	0.877	0.054	-2.120	0.034	0.777	0.990
Tinsukia	0.968	0.174	-0.180	0.856	0.681	1.376
Udalguri	0.701	0.051	-4.900	0.000	0.608	0.808
Assam	0.552	0.007	-44.560	0.000	0.538	0.567

Source: HDR Survey, Assam (2013)
*Estimates could not be provided because of small sample size of Muslims in the district

Table 4A.8: Levels of Education by Social Categories (in percent)

Level of Education	SC	ST	OBC	General	Total
Informal Schooling	2.2	2.7	2.4	2.3	2.4
Below Primary	7.3	7.1	6.9	6.7	6.9
Primary	26.9	20.4	21.3	24.9	23.3
Middle	29.0	27.6	28.6	25.5	27.1
Secondary	20.0	25.7	22.0	19.8	21.4
Higher Secondary	9.3	11.4	11.5	11.2	11.1
Any Diploma	0.3	0.2	0.4	0.2	0.3
Graduate	4.2	4.2	5.8	7.4	6.1
Post Graduate	0.6	0.5	0.7	1.2	0.9
Technical Degree	0.3	0.2	0.5	0.7	0.5
Total	100.0	100.0	100.0	100.0	100.0

Source: HDR Survey, Assam (2013)

Table 4A.9: Levels of Education by Religion (in percent)

Level of Education	Hindu	Muslim	Christian	Buddhist	Sikh	Others	Total
Informal Schooling	2.0	3.5	2.5	3.3		9.8	2.4
Below Primary	6.1	8.9	9.6	9.9	6.6	10.9	6.9
Primary	19.9	32.7	30.1	21.6	13.1	21.7	23.3
Middle	27.0	27.3	28.6	24.9	29.5	17.4	27.1
Secondary	23.2	16.0	19.0	20.1	24.6	19.6	21.4
Higher Secondary	12.5	7.3	7.6	12.3	18.0	14.1	11.1
Any Diploma	0.3	0.2	0.1	0.9		2.2	0.3
Graduate	7.1	3.5	1.8	5.7	8.2	3.3	6.1
Post Graduate	1.1	0.4	0.5	1.5		1.1	0.9
Technical Degree	0.7	0.2	0.1				0.5
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: HDR Survey, Assam (2013)

Table 4A.10: Levels of Education by Religion (in percent)

Level of Education	Char	Flood Affected	Hills	Tea Garden	Border	Multiple Diversities	General	Total
Informal Schooling	3.5	2.0	1.7	3.0	2.8	5.4	0.9	2.4
Below Primary	8.3	5.2	6.1	9.1	7.8	9.3	6.6	6.9
Primary	31.6	23.3	26.5	19.8	26.4	21.8	26.2	23.3
Middle	23.7	33.7	25.3	26.6	29.6	30.1	25.3	27.1
Secondary	17.3	19.7	28.3	24.6	20.0	16.1	22.6	21.4
Higher Secondary	9.9	9.9	8.7	11.0	9.5	9.9	11.7	11.1
Any Diploma	0.1	0.4	0.2	0.3	0.2	0.2	0.2	0.3
Graduate	4.9	5.0	2.5	4.9	3.2	6.3	5.7	6.1
Post Graduate	0.5	0.7	0.5	0.5	0.4	0.7	0.6	0.9
Technical Degree	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.5
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: HDR Survey, Assam (2013)

Table 4A.11: Age group wise students currently pursuing education (in percent)

	6-14 years	GPI	15-16 years	GPI	17-18 years	GPI	19-24 years	GPI
Baksa	94.21	0.92	78.01	1.00	50.00	0.74	19.71	0.68
Barpeta	96.00	0.93	84.75	0.88	66.86	0.69	18.08	0.79
Bongaigaon	94.72	1.03	72.28	1.32	50.00	0.63	15.72	0.43
Cachar	92.91	1.00	64.43	0.88	39.95	0.78	14.89	1.08
Chirang	97.93	0.76	89.15	0.77	65.35	0.63	19.10	1.20
Darrang	91.83	0.89	68.98	1.04	44.89	0.61	11.22	0.62
Dhemaji	95.98	1.11	85.37	0.75	60.44	0.77	20.00	0.80
Dhubri	91.09	1.02	61.17	1.01	39.03	0.64	11.85	0.63
Dibrugarh	95.64	0.93	80.07	0.81	60.00	1.02	16.86	0.81
Dima Hasao	89.91	0.78	49.09	0.69	43.14	0.69	22.16	0.78
Goalpara	94.95	0.94	76.45	0.78	39.22	0.85	14.12	0.55
Golaghat	93.98	1.10	83.49	1.13	57.10	0.85	15.42	0.94
Hailakandi	89.80	0.90	53.93	0.81	36.11	0.86	12.45	0.87
Jorhat	94.46	0.88	80.38	0.94	63.54	0.71	21.63	0.93
Kamrup	92.68	0.88	71.18	1.13	51.46	1.20	18.99	0.76
Kamrup (M)	95.59	0.90	87.33	0.91	77.97	0.79	34.49	0.71
Karbi Anglong	92.91	0.91	81.67	0.88	68.73	0.73	29.83	0.76
Karimganj	93.39	0.97	64.11	0.88	40.85	1.11	13.04	0.87
Kokrajhar	98.07	0.86	82.27	0.70	54.93	0.86	12.72	0.37
Lakhimpur	96.50	1.01	86.18	0.83	63.10	0.94	17.29	0.65
Marigaon	96.46	0.91	67.77	0.68	32.61	0.55	6.76	0.62
Nagaon	94.40	0.94	74.33	1.02	47.96	0.83	18.61	0.86
Nalbari	96.76	0.99	89.25	1.24	69.65	0.97	24.09	0.80
Sibsagar	96.77	0.87	80.90	0.82	60.81	0.91	20.03	0.87
Sonitpur	93.79	0.98	71.06	1.21	52.11	0.99	16.01	0.93
Tinsukia	87.13	0.95	68.53	1.22	54.39	0.84	17.15	0.81
Udalguri	92.01	1.03	73.42	1.09	49.52	0.65	18.10	1.15
Assam	93.85	0.95	74.57	0.95	52.71	0.82	17.70	0.79

Source: HDR Survey, Assam (2013)

Table 4A.12: Age group wise students currently pursuing education by social groups

Social Groups	6-14 years	GPI	15-16 years	GPI	17-18 years	GPI	19-24 years	GPI
SC	94.54	0.96	75.27	0.89	45.68	0.97	15.31	0.81
ST	94.99	0.95	81.40	0.92	61.00	0.81	22.57	0.87
OBC	93.48	0.95	75.92	0.95	55.21	0.81	16.83	0.81
General	93.60	0.95	71.42	0.98	49.76	0.81	17.08	0.73
Assam	93.85	0.95	74.57	0.95	52.71	0.82	17.70	0.79

Source: HDR Survey, Assam (2013)

Table 4A.13: Age group wise students currently pursuing education by spatial diversity (in percent)

Diversity	6-14 years	GPI	15-16 years	GPI	17-18 years	GPI	19-24 years	GPI
Char	93.33	0.95	57.49	0.85	41.32	0.93	11.62	0.62
Flood Affected	94.67	0.89	66.81	0.86	50.43	0.85	16.17	1.01
Hills	92.09	0.86	68.86	0.79	61.57	0.83	24.15	0.69
Tea Garden	91.85	0.91	65.36	0.94	51.11	1.03	14.26	0.85
Border	93.97	0.99	65.31	0.91	49.05	0.94	15.63	0.79
Multiple Diversities	91.39	1.02	63.80	0.81	47.41	0.84	14.37	0.73
General	95.70	0.92	70.94	1.11	57.66	0.86	17.78	0.92
Assam	93.85	0.95	74.57	0.95	52.71	0.82	17.70	0.79

Source: HDR Survey, Assam (2013)

Table 4A.14: Age group wise students currently pursuing education by religion (in percent)

Religion	6-14 years	GPI	15-16 years	GPI	17-18 years	GPI	19-24 years	GPI
Hindu	94.46	0.96	79.41	0.96	59.22	0.83	20.66	0.83
Muslim	93.10	0.94	65.77	0.94	37.84	0.77	10.38	0.61
Christian	93.11	0.94	72.26	0.87	56.54	0.90	19.28	0.69
Buddhist	87.58	0.68	68.57	1.67	41.67	1.14	17.57	1.60
Sikh	100.00	0.30	100.00		75.00	0.50	25.00	0.50
Others	93.02	0.90	85.71	0.50	70.00	0.75	40.00	1.50
Assam	93.85	0.95	74.57	0.95	52.71	0.82	17.70	0.79

Source: HDR Survey, Assam (2013)

Table 4A.15: Children who are out of school, Male-Female and Rural-Urban (in percent)

District	Never enrolled					Left after enrolment (dropouts)					Enrolled but do not go to school				
	Male	Female	Rural	Urban	Total	Male	Female	Rural	Urban	Total	Male	Female	Rural	Urban	Total
Baksa	10.85	6.98	17.83		17.83	47.29	31.01	78.29		78.29	0.78	2.33	3.10		3.10
Barpeta	13.21	13.21	26.42		26.42	47.17	23.90	70.44	0.63	71.07	1.26	1.26	2.52		2.52
Bongaigaon	7.96	4.42	12.39		12.39	57.52	23.89	71.68	9.73	81.42	1.77	3.54	5.31		5.31
Cachar	4.44	11.94	15.28	1.11	16.39	39.44	38.89	66.11	12.22	78.33	2.22	2.50	4.17	0.56	4.72
Chirang	14.29	7.14	21.43		21.43	39.29	28.57	67.86		67.86	3.57	7.14	10.71		10.71
Darrang	20.21	10.88	31.09		31.09	46.11	20.21	61.66	4.66	66.32	1.04	1.55	2.59		2.59
Dhemaji	8.96	8.96	13.43	4.48	17.91	43.28	32.84	71.64	4.48	76.12	4.48	1.49	5.97		5.97
Dhubri	18.25	12.30	29.17	1.39	30.56	52.58	13.69	58.93	7.34	66.27	2.38	0.60	2.98		2.98
Dibrugarh	5.26	6.02	10.53	0.75	11.28	43.61	38.35	77.44	4.51	81.95	2.26	4.51	6.77		6.77
Dima Hasao	4.00	2.00	6.00		6.00	52.00	42.00	84.00	10.00	94.00					
Goalpara	17.88	6.62	16.56	7.95	24.50	43.05	30.46	57.62	15.89	73.51	0.66	0.66	1.32		1.32
Golaghat	6.56	5.74	12.30		12.30	40.98	31.97	68.03	4.92	72.95	8.20	6.56	13.93	0.82	14.75
Hailakandi	6.54	7.94	14.49		14.49	47.20	35.05	79.91	2.34	82.24	1.87	0.93	2.80		2.80
Jorhat	7.25	11.59	17.39	1.45	18.84	39.13	31.88	63.77	7.25	71.01	2.90	7.25	10.14		10.14
Kamrup	22.11	16.58	38.19	0.50	38.69	38.19	18.09	50.25	6.03	56.28	4.52	0.50	5.03		5.03
Kamrup (M)	6.15	4.62	6.15	4.62	10.77	50.77	32.31	36.92	46.15	83.08	6.15		4.62	1.54	6.15
Karbi Anglong	10.00	18.18	27.27	0.91	28.18	47.27	23.64	63.64	7.27	70.91		0.91	0.91		0.91
Karimganj	2.98	5.30	8.28		8.28	47.02	40.07	81.13	5.96	87.09	1.32	3.31	4.64		4.64
Kokrajhar	8.11	6.76	14.86		14.86	39.19	44.59	83.78		83.78		1.35	1.35		1.35
Lakhimpur	7.61	10.87	18.48		18.48	46.74	29.35	70.65	5.43	76.09	2.17		2.17		2.17
Marigaon	4.46	2.68	7.14		7.14	57.14	35.71	84.82	8.04	92.86					
Nagaon	11.17	9.54	20.16	0.54	20.71	42.23	25.61	58.86	8.99	67.85	7.63	3.81	10.63	0.82	11.44
Nalbari	20.00	15.56	33.33	2.22	35.56	35.56	22.22	46.67	11.11	57.78	4.44		4.44		4.44
Sibsagar	11.11	6.17	17.28		17.28	41.98	38.27	74.07	6.17	80.25	2.47		2.47		2.47
Sonitpur	9.59	15.89	24.66	0.82	25.48	36.44	30.14	64.11	2.47	66.58	5.21	2.74	7.95		7.95
Tinsukia	13.50	19.29	31.51	1.29	32.80	35.05	31.51	61.74	4.82	66.56	0.32	0.32	0.64		0.64
Udalguri	18.48	10.87	29.35		29.35	36.96	31.52	67.93	0.54	68.48	1.63	0.54	2.17		2.17
Assam	11.31	10.76	21.14	0.93	22.07	43.88	29.18	66.41	6.65	73.06	2.72	1.91	4.48	0.15	4.63

Table 4A.16: Children who are out of school by spatial diversity (in percent)

District	Never enrolled	Left after enrolment (dropouts)	Enrolled but do not go to school
Char	33.21	62.35	4.20
Flood Affected	23.63	70.02	6.13
Hills	22.60	76.71	0.68
Tea Garden	23.89	70.20	5.91
Border	15.97	78.99	4.71
Multiple Diversities	29.95	67.15	2.90
General	14.58	78.33	6.46
Group Total	22.07	73.06	4.63

Source: HDR Survey, Assam (2013)

Table 4A.17: Children who are out of school by social category (in percent)

Social Category	Never enrolled	Left after enrolment (dropouts)	Enrolled but do not go to school
SC	15.92	78.77	5.31
ST	18.54	76.82	4.64
OBC	21.41	73.18	5.41
General	24.36	71.52	4.12

Source: HDR Survey, Assam (2013)

Table 4A.18: Children who are out of school by religion (in percent)

Religion	Never enrolled	Left after enrolment (dropouts)	Enrolled but do not go to school
Hindu	20.46	74.92	4.62
Muslim	24.03	71.46	4.52
Christian	19.50	72.96	7.55
Buddhist	32.14	67.86	
Others	33.33	66.67	
Total	22.12	73.23	4.64

Source: HDR Survey, Assam (2013)

Table 4A.19: Reasons for dropping out of school: Male-Female, Assam (percent of children)

District	Work at home			Need to support earning			Failed in Exam			Cannot afford			Not interested in studies		
	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total
Baksa	3.81	3.81	7.62	20.95	6.67	27.62	5.71	10.48	16.19	3.81	3.81	7.62	21.90	11.43	33.33
Barpeta	5.22	4.35	9.57	26.09	6.96	33.04	4.35	3.48	7.83	1.74	0.87	2.61	22.61	10.43	33.04
Bongaigaon	4.08	12.24	16.33	43.88	9.18	53.06	6.12	2.04	8.16		2.04	2.04	14.29	6.12	20.41
Cachar	3.37	13.13	16.50	20.54	6.73	27.27	4.71	5.72	10.44	6.73	12.79	19.53	11.78	7.74	19.53
Chirang		4.55	4.55	18.18	9.09	27.27							22.73	22.73	45.45
Darrang	24.24	9.09	33.33	12.12	3.79	15.91	6.82	1.52	8.33	3.79	5.30	9.09	18.94	10.61	29.55
Dhemaji				23.64	1.82	25.45	3.64	3.64	7.27	10.91	9.09	20.00	10.91	12.73	23.64
Dhubri	2.58	3.44	6.02	36.96	3.15	40.11	3.44	0.86	4.30	10.89	2.87	13.75	23.21	7.16	30.37
Dibrugarh		6.03	6.03	29.31	19.83	49.14	7.76	5.17	12.93	1.72	1.72	3.45	12.93	12.07	25.00
Dima Hasao				36.17	19.15	55.32				2.13		2.13	12.77	23.40	36.17
Goalpara	1.77	4.42	6.19	28.32	21.24	49.56	10.62	6.19	16.81				17.70	9.73	27.43
Golaghat	0.94	0.94	1.89	16.98	12.26	29.25	7.55	5.66	13.21		2.83	2.83	27.36	19.81	47.17
Hailakandi	1.70	2.27	3.98	25.00	5.68	30.68	2.84	4.55	7.39	19.32	17.05	36.36	5.11	3.41	8.52
Jorhat	3.57	8.93	12.50	14.29	12.50	26.79	5.36	5.36	10.71				25.00	19.64	44.64
Kamrup	10.08	3.36	13.45	14.29	6.72	21.01	15.97	10.92	26.89	4.20	0.84	5.04	21.85	4.20	26.05
Kamrup (M)	10.53		10.53	14.04	8.77	22.81	12.28	8.77	21.05	8.77	5.26	14.04	15.79	10.53	26.32
Karbi Anglong	5.13	3.85	8.97	35.90	8.97	44.87	1.28	2.56	3.85	1.28	1.28	2.56	17.95	11.54	29.49
Karimganj	1.81	3.25	5.05	26.71	2.89	29.60	6.14	7.22	13.36	1.81	8.66	10.47	14.08	15.88	29.96
Kokrajhar	1.59	3.17	4.76	25.40	19.05	44.44	1.59	12.70	14.29		1.59	1.59	15.87	15.87	31.75
Lakhimpur		1.39	1.39	6.94	2.78	9.72	1.39		1.39	2.78		2.78	50.00	26.39	76.39
Marigaon	0.98	2.94	3.92	39.22	15.69	54.90	1.96	0.98	2.94		3.92	3.92	17.65	13.73	31.37
Nagaon	4.12	2.41	6.53	22.68	11.00	33.68	4.47	4.81	9.28	1.03	0.69	1.72	24.40	13.06	37.46
Nalbari		3.57	3.57	14.29	7.14	21.43	17.86	7.14	25.00				25.00	17.86	42.86
Sibsagar	4.62	9.23	13.85	30.77	15.38	46.15	1.54	4.62	6.15	6.15	3.08	9.23	10.77	6.15	16.92
Sonitpur	2.21	7.01	9.23	14.39	5.54	19.93	4.80	3.69	8.49	4.43	4.80	9.23	26.57	17.34	43.91
Tinsukia	3.35	9.57	12.92	18.18	7.18	25.36	5.74	4.31	10.05	2.39	5.26	7.66	19.62	15.31	34.93
Udalguri		2.31	2.31	16.15	8.46	24.62	13.08	16.15	29.23				24.62	13.08	37.69
Assam	3.66	5.21	8.88	23.87	8.23	32.09	5.64	5.04	10.68	4.34	4.62	8.96	19.44	12.06	31.50

Source: HDR Survey, Assam (2013)

Table 4A.20: Reasons for dropping out of school: Rural-Urban, Assam (percent children)

District	Work at home			Need to support earning			Failed in Exam			Cannot afford			Not interested in studies		
	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban	Total
Baksa	7.62		7.62	27.62		27.62	16.19		16.19	7.62		7.62	33.33		33.33
Barpeta	8.70	0.87	9.57	33.04		33.04	7.83		7.83	2.61		2.61	33.04		33.04
Bongaigaon	15.31	1.02	16.33	47.96	5.10	53.06	8.16		8.16	1.02	1.02	2.04	16.33	1.35	20.41
Cachar	16.16	0.34	16.50	23.23	4.04	27.27	6.06	4.38	10.44	17.85	1.68	19.53	14.81	63.64	19.53
Chirang	4.55		4.55	27.27		27.27							45.45		45.45
Darrang	33.33		33.33	12.88	3.03	15.91	8.33		8.33	8.33	0.76	9.09	26.52	7.27	29.55
Dhemaji				20.00	5.45	25.45	7.27		7.27	20.00		20.00	23.64		23.64
Dhubri	5.73		6.02	37.82	2.29	40.11	3.72	0.57	4.30	12.61	1.15	13.75	24.64	17.24	30.37
Dibrugarh	6.03		6.03	47.41	1.72	49.14	12.07	0.86	12.93	2.59	0.86	3.45	23.28	4.26	25.00
Dima Hasao				44.68	10.64	55.32				2.13		2.13	36.17		36.17
Goalpara	6.19		6.19	37.17	12.39	49.56	11.50	5.31	16.81				23.89	3.77	27.43
Golaghat	1.89		1.89	22.64	6.60	29.25	13.21		13.21	2.83		2.83	47.17		47.17
Hailakandi	3.98		3.98	30.68		30.68	7.39		7.39	34.09	2.27	36.36	7.95	1.79	8.52
Jorhat	12.50		12.50	23.21	3.57	26.79	10.71		10.71				39.29	2.52	44.64
Kamrup	13.45		13.45	18.49	2.52	21.01	24.37	2.52	26.89	4.20	0.84	5.04	21.85	8.77	26.05
Kamrup (M)	8.77	1.75	10.53	7.02	15.79	22.81	7.02	14.04	21.05	5.26	8.77	14.04	15.79	7.69	26.32
Karbi Anglong	7.69	1.28	8.97	41.03	3.85	44.87	3.85		3.85		2.56	2.56	26.92	0.72	29.49
Karimganj	5.05		5.05	28.16	1.44	29.60	12.27	1.08	13.36	10.11	0.36	10.47	26.35	15.87	29.96
Kokrajhar	4.76		4.76	44.44		44.44	14.29		14.29	1.59		1.59	31.75		31.75
Lakhimpur	1.39		1.39	8.33	1.39	9.72	1.39		1.39	2.78		2.78	70.83	3.92	76.39
Marigaon	3.92		3.92	50.98	3.92	54.90	2.94		2.94	3.92		3.92	26.47	1.72	31.37
Nagaon	6.53		6.53	29.90	3.78	33.68	7.56	1.72	9.28	1.37	0.34	1.72	31.62	60.71	37.46
Nalbari	3.57		3.57	10.71	10.71	21.43	25.00		25.00				35.71	3.08	42.86
Sibsagar	13.85		13.85	41.54	4.62	46.15	6.15		6.15	9.23		9.23	15.38	0.37	16.92
Sonitpur	8.86	0.37	9.23	19.19	0.74	19.93	8.49		8.49	9.23		9.23	42.07	2.39	43.91
Tinsukia	12.92		12.92	22.97	2.39	25.36	8.61	1.44	10.05	7.18	0.48	7.66	32.06	4.62	34.93
Udalguri	2.31		2.31	24.62		24.62	29.23		29.23				36.92	0.03	37.69
Assam	8.68	0.20	8.88	28.99	3.10	32.09	9.44	1.24	10.68	8.20	0.76	8.96	28.23	3.27	31.50

Source: HDR Survey, Assam (2013)

Table 4A.21: Reasons for dropping out of school: Rural diversities, Assam (percent)

Diversity	Work at home	Need to support earning	School too far	Failed in Exam	Cannot afford	Not interested in studies	Ill health
Char	13.51	35.83	2.81	8.07	4.13	29.83	1.13
Flood Affected	5.85	30.41	2.63	18.13	13.45	24.56	2.34
Hills	5.36	47.32	4.46	2.68	0.89	33.93	0.89
Tea Garden	12.10	29.00	1.25	8.54	7.47	34.70	2.67
Border	7.96	29.74	3.73	11.39	10.18	31.55	1.61
Multiple Diversities	8.97	27.93	3.10	6.90	17.59	29.66	2.41
General	9.11	34.98	1.23	11.33	6.90	31.28	1.23
Assam	8.88	32.09	2.51	10.68	8.96	31.50	1.72

Source: HDR Survey, Assam (2013)

Table 4A.22: Reasons for dropping out of school: religion wise, Assam (percent)

Religion	Work at home	Need to support earning	School too far	Failed in Exam	Cannot afford	Not interested in studies	Got married	Ill health
Hindu	8.40	31.31	1.69	11.78	7.26	33.28	2.24	2.03
Muslim	9.69	33.16	3.57	9.63	11.03	28.44	2.17	3.28
Christian	6.25	28.91	1.56	7.81	7.81	43.75	0.78	1.65
Buddhist	5.56	44.44		5.56	11.11	33.33		1.37
Assam	8.88	32.09	2.51	10.68	8.96	31.50		

Source: HDR Survey, Assam (2013)

Table 4A.23: Reasons for dropping out of school: social category wise, Assam

Category	Work at home	Need to support earning	School too far	Failed in Exam	Cannot afford	Not interested in studies	Got married	Ill health
SC	8.35	36.71	2.28	11.39	6.33	30.38	1.27	2.03
ST	6.28	29.78	2.73	9.84	7.38	35.25	3.83	3.28
OBC	8.46	30.86	1.55	12.28	8.26	33.85	2.06	1.65
General	9.73	32.22	3.02	9.84	10.23	29.74	2.09	1.37
Assam	8.88	32.09	2.51	10.68	8.96	31.50	2.17	1.72

Source: HDR Survey, Assam (2013)

Table 4A.24: Availability of Schooling Facilities (Primary and Upper Primary)

District	Total No. of habitations	Primary (in percent)			Upper Primary (in percent)		
		Within Habitation	Within 1 KM	Beyond 1 KM	Within Habitation	Within 3 KM	Beyond 3 KM
Barpeta	2808	54.84	36.43	8.73	26.21	62.46	11.32
Baska	2875	40.49	30.64	28.87	15.72	27.76	56.52
Bongaigaon	1373	52.22	33.94	13.84	29.50	49.82	20.68
Cachar	3114	53.05	33.43	13.52	14.55	53.31	32.15
Chirang	1157	69.23	16.16	14.61	17.55	25.84	56.61
Darrang	2089	36.86	43.13	20.01	10.63	66.54	22.83
Dhemaji	2698	52.15	34.51	13.34	34.43	46.07	19.50
Dhubri	2771	52.29	34.75	12.96	29.56	46.08	24.36
Dibrugarh	2937	54.00	37.08	8.92	28.80	52.37	18.83
Goalpara	2503	50.66	36.64	12.70	20.42	61.77	17.82
Golaghat	2635	44.97	35.37	19.66	17.08	60.95	21.97
Hailakandi	1482	54.12	37.38	8.50	26.92	60.32	12.75
Jorhat	3464	51.27	42.09	6.64	18.42	69.40	12.18
Kamrup	5675	46.73	43.82	9.44	19.88	58.68	21.44
Karbi Anglong	3608	38.25	38.89	22.87	11.14	50.11	38.75
Karimganj	2060	59.56	29.85	10.58	15.49	69.90	14.61
Kokrajhar	2259	64.67	29.08	6.24	16.56	63.66	19.79
Lakhimpur	3011	53.54	43.21	3.25	25.34	68.65	6.01
Marigaon	1683	57.34	25.01	17.65	24.78	45.22	30.01
Nagaon	6133	38.55	47.43	14.02	12.13	66.77	21.10
Nalbari	2158	41.52	36.05	22.43	34.38	40.18	25.44
N C Hills	660	98.48	0.45	1.06	17.88	27.58	54.55
Sibsagar	4244	50.19	48.21	1.60	15.10	81.20	3.70
Sonitpur	3341	32.09	43.94	23.97	8.11	58.28	33.61
Tinsukia	2223	36.48	44.80	18.71	9.04	67.12	23.84
Udalguri	2088	49.04	32.52	18.44	32.33	40.76	26.92
Assam	71049	48.36	38.15	27.89	19.50	57.45	23.05
India	1307519	58.35	31.67	9.98	28.69	56.73	14.58

Source: 8th All India School Education Survey, 2009

Table 4A.25: Reported School facilities

District	Schools having (in percent)																	
	Separate Class room			Sufficient Desk/Bench			Electricity			Drinking Water			Girls' Toilet			Boundary Wall		
	Govt.	Pvt.	Total	Govt.	Pvt.	Total	Govt.	Pvt.	Total	Govt.	Pvt.	Total	Govt.	Pvt.	Total	Govt.	Pvt.	Total
Baksa	72.2	98.2	77.3	95.0	98.2	95.6	30.6	81.2	40.5	94.5	95.9	94.8	58.5	85.3	63.8	14.6	81.8	27.8
Barpeta	91.7	100.0	92.5	92.3	100.0	93.0	13.2	62.0	17.9	93.9	98.4	94.4	73.4	85.6	74.6	9.6	45.5	13.1
Bongaigaon	89.7	97.9	91.0	87.0	94.4	88.2	32.7	87.3	42.5	96.5	95.1	96.2	37.0	81.0	44.9	11.9	85.9	25.2
Cachar	75.4	97.3	79.3	85.9	97.9	88.1	20.9	69.8	29.7	69.8	86.7	72.8	53.9	86.4	59.7	15.4	57.4	23.0
Chirang	97.8	100.0	97.8	94.9	100.0	95.1	28.9	72.2	30.4	98.8	100.0	98.8	83.9	83.3	83.9	47.6	94.4	49.2
Darrang	65.7	97.8	68.5	64.3	95.6	67.1	13.5	68.9	18.4	98.9	100.0	99.0	64.6	66.7	64.8	8.9	32.2	11.0
Dhemaji	71.7	94.1	77.0	89.8	92.9	90.4	17.6	49.7	25.1	89.5	94.7	90.7	65.3	80.5	68.8	15.1	52.7	23.9
Dhubri	93.3	98.8	93.6	77.2	96.3	78.4	42.8	68.1	44.5	96.1	95.1	96.0	45.4	66.9	46.8	19.5	49.1	21.4
Dibrugarh	98.2	99.1	98.4	95.0	97.8	95.6	51.1	92.2	59.7	98.5	99.1	98.7	77.4	91.0	80.2	51.5	83.2	58.1
Dima Hasao	79.1	100.0	81.1	94.2	100.0	94.7	5.8	94.4	14.2	81.4	50.0	78.4	9.9	83.3	16.8	3.5	83.3	11.1
Goalpara	99.1	100.0	99.2	96.1	100.0	96.3	26.2	75.5	28.9	98.0	100.0	98.1	95.1	94.3	95.0	33.5	90.6	36.6
Golaghat	95.3	99.0	96.2	97.8	99.0	98.1	27.3	74.4	38.6	95.6	96.6	95.8	95.6	96.1	95.7	20.2	56.7	29.0
Hailakandi	77.6	96.0	80.5	95.6	93.7	95.3	10.4	38.9	15.0	62.3	63.5	62.5	43.1	60.3	45.8	9.5	23.0	11.7
Jorhat	89.5	99.3	91.3	98.6	100.0	98.9	57.8	93.4	64.5	97.4	98.7	97.7	74.3	92.1	77.6	48.2	80.9	54.3
Kamrup	86.8	99.3	88.2	88.9	100.0	90.2	23.9	83.6	31.1	97.1	98.0	97.2	60.3	87.0	63.5	16.4	59.6	21.7
Kamrup (M)	93.4	99.2	96.7	92.9	100.0	96.9	78.2	99.6	90.2	94.0	99.2	96.9	62.2	90.3	78.0	60.6	96.9	81.0
Karbi Anglong	97.0	100.0	97.6	93.2	96.3	93.8	34.7	83.1	44.9	96.9	97.4	97.0	72.0	95.2	77.0	21.7	70.9	32.1
Karimganj	74.5	94.2	77.7	80.5	93.4	82.5	33.8	70.0	39.9	85.8	80.9	84.8	53.1	63.0	54.7	13.4	36.2	17.2
Kokrajhar	92.9	98.8	93.5	82.7	98.8	84.3	17.7	96.3	25.5	94.0	97.5	94.4	52.9	91.4	56.7	24.3	95.1	31.3
Lakhimpur	84.7	99.2	86.6	96.2	100.0	96.7	19.7	68.6	26.0	88.7	95.0	89.6	81.2	90.1	82.3	13.5	50.4	18.2
Marigaon	75.9	100.0	76.4	89.2	100.0	89.5	32.2	95.0	33.6	98.7	100.0	98.7	63.1	95.0	63.8	38.9	90.0	40.0
Nagaon	94.0	99.6	94.6	96.4	99.6	96.8	63.4	96.6	67.0	96.3	99.3	96.6	60.3	93.2	64.0	33.6	80.5	38.8
Nalbari	95.7	98.8	96.5	95.7	97.1	96.1	44.2	79.0	53.2	99.4	98.8	99.2	87.9	84.2	87.0	47.7	60.8	51.1
Sibsagar	76.0	100.0	80.6	96.5	98.9	97.0	53.6	93.9	61.2	99.0	99.5	99.1	57.7	87.3	63.3	42.9	66.9	47.5
Sonitpur	89.2	98.9	90.6	90.8	98.9	92.0	32.0	83.0	39.4	97.4	97.1	97.3	62.2	79.4	64.7	16.3	60.3	22.7
Tinsukia	99.0	100.0	99.3	89.7	98.8	91.8	41.6	92.9	53.9	97.9	98.4	98.0	86.0	94.9	88.1	46.4	89.8	56.8
Udalguri	90.4	97.2	91.2	96.4	95.3	96.3	22.2	78.5	28.8	97.8	95.3	97.5	63.5	87.9	66.3	29.4	68.2	34.0
Assam	87.3	98.5	89.0	89.6	97.9	90.9	33.5	80.9	40.8	93.2	94.9	93.5	63.9	85.2	67.2	24.6	67.7	31.3

Source: HDR Survey, Assam (2013)

Table 4A.26: Reported teacher behaviour towards child at school, by school type (percent)

School type	Discrimination (By Race/ Religion/ Caste/Gender)	Beaten by teacher	Punished for homework	Punished for absence	Praised for performance	Teacher busy with MDM and not taking class
Government Aided	5.8	10.9	25.8	27.2	46.7	4.9
Private	4.9	10.0	32.3	30.7	61.4	3.5
School run by NGO	4.0	2.0	14.0	34.0	64.0	2.0
Government Madrassa	1.4	6.8	56.8	8.1	64.9	8.1
Private Madrassa	9.6	19.2	32.7	21.2	55.8	1.9
Cannot Say	0.0	0.0	16.7	16.7	33.3	0.0
Total	5.7	10.7	26.9	27.7	49.0	4.7

Source: HDR Survey, Assam (2013)

Table 4A.27: 6-14 year olds currently studying (in percent)

District	Government schools*					Private Schools				
	Rural	Urban	Male	Female	Total	Rural	Urban	Male	Female	Total
Baksa	81.3	40.0	48.6	51.4	81.1	18.7	60.0	64.3	35.7	18.9
Barpeta	92.2	69.6	51.5	48.5	91.0	7.8	30.4	55.5	44.5	9.0
Bongaigaon	89.9	34.3	48.3	51.7	82.5	10.1	65.7	60.0	40.0	17.5
Cachar	84.0	74.7	49.5	50.5	82.5	16.0	25.3	54.2	45.8	17.5
Chirang	96.2	100.0	56.7	43.3	96.4	3.8	0.0	55.6	44.4	3.6
Darrang	92.2	60.0	52.6	47.4	91.2	7.8	40.0	58.6	41.4	8.8
Dhemaji	79.2	56.8	46.0	54.0	77.7	20.8	43.2	54.7	45.3	22.3
Dhubri	94.7	83.9	49.1	50.9	93.8	5.3	16.1	61.8	38.2	6.2
Dibrugarh	83.3	65.4	51.8	48.2	80.2	16.7	34.6	52.9	47.1	19.8
Dima Hasao	98.7	63.4	57.0	43.0	91.0	1.4	36.6	58.8	41.2	9.0
Goalpara	96.1	85.2	51.4	48.6	94.6	3.9	14.8	52.9	47.1	5.4
Golaghat	79.0	55.0	47.8	52.2	76.6	21.0	45.0	57.1	42.9	23.4
Hailakandi	84.9	57.1	51.4	48.6	83.6	15.1	42.9	65.9	34.2	16.4
Jorhat	89.3	42.2	53.4	46.6	81.6	10.7	57.8	56.6	43.5	18.4
Kamrup	89.6	72.3	50.9	49.1	88.7	10.4	27.7	55.7	44.3	11.4
Kamrup (M)	85.3	34.7	48.8	51.2	45.3	14.7	65.4	55.4	44.6	54.8
Karbi Anglong	83.8	59.1	50.4	49.6	80.1	16.2	40.9	60.0	40.0	19.9
Karimganj	84.3	75.7	48.8	51.2	83.4	15.7	24.3	57.9	42.1	16.6
Kokrajhar	90.8	78.1	54.7	45.3	90.1	9.2	22.0	45.0	55.0	9.9
Lakhimpur	89.5	68.3	49.2	50.8	87.1	10.5	31.7	56.0	44.0	12.9
Marigaon	98.3	95.3	52.8	47.2	98.1	1.7	4.7	64.7	35.3	1.9
Nagaon	91.5	74.5	52.0	48.0	89.3	8.6	25.5	53.8	46.2	10.7
Nalbari	79.5	54.3	47.6	52.4	76.6	20.5	45.7	54.2	45.8	23.4
Sibsagar	84.9	44.4	50.7	49.3	81.2	15.1	56.1	61.1	39.0	18.8
Sonitpur	88.6	52.0	49.7	50.3	86.6	11.4	48.0	59.8	40.2	13.4
Tinsukia	83.2	47.1	51.0	49.0	77.0	16.8	53.5	54.2	45.8	23.0
Udalguri	89.4	72.0	50.1	49.9	88.9	10.6	28.0	45.9	54.1	11.1
Assam	88.6	60.2	50.6	49.4	85.3	11.4	39.9	56.6	43.4	14.7

Source: HDR Survey, Assam (2013);
Note: *Government schools include Government Madrassa

Table 4A.28: Children (6-14 years) currently in schools by various categories (percent)

	Government schools	Private schools	Total
Religion			
Hindu	80.96	19.04	100.00
Muslim	91.46	8.54	100.00
Christian	83.94	16.06	100.00
Buddhist	84.31	15.69	100.00
Sikh	50.00	50.00	100.00
Others	74.36	25.64	100.00
Social categories			
SC	89.29	10.71	100.00
ST	84.91	15.09	100.00
OBC	81.78	18.22	100.00
General	85.83	14.17	100.00
Diversity groups			
Char	93.52	6.48	100.00
Flood Affected	86.78	13.22	100.00
Hills	85.30	14.70	100.00
Tea Garden	86.14	13.86	100.00
Border	86.78	13.22	100.00
Multiple Diversities	87.48	12.52	100.00
General	86.65	13.35	100.00

Source: HDR Survey, Assam (2013)

Table 4A.29: Reported reasons for going to private schools (in percent)

District	Good Infrastructure	Quality Teachers	Regular Classes	Student Care	Extra Activity	Others
Baksa	40.91	30.52	21.43	3.25	0.65	3.25
Barpeta	25.43	5.20	11.56	53.76	1.73	2.31
Bongaigaon	28.89	19.26	22.22	22.22	2.22	5.19
Cachar	35.48	39.35	7.74	9.35	2.90	5.16
Chirang	22.22	61.11	5.56	11.11		
Darrang	27.59	1.15	18.39	47.13	4.60	1.15
Dhemaji	20.67	35.33	18.00	12.67	9.33	4.00
Dhubri	25.66	4.61	22.37	23.03	10.53	13.82
Dibrugarh	24.76	8.57	15.24	50.00	0.48	0.95
Dima Hasao	58.82				23.53	17.65
Goalpara	17.65	31.37	15.69	31.37	3.92	
Golaghat	38.62	13.23	12.70	34.39		1.06
Hailakandi	32.52	23.58	34.96			8.94
Jorhat	36.55	16.55	12.41	33.10		1.38
Kamrup	38.93	11.45	19.85	24.43	2.29	3.05
Kamrup (M)	35.36	11.71	6.98	40.77	2.48	2.70
Karbi Anglong	35.88	30.59	23.53	5.88		4.12
Karimganj	19.58	43.33	17.08	5.00	3.75	11.25
Kokrajhar	46.25	33.75	5.00	5.00	8.75	1.25
Lakhimpur	35.34	49.14	3.45	1.72		10.34
Marigaon		76.47		17.65		5.88
Nagaon	39.44	8.37	6.37	41.04	2.39	2.39
Nalbari	33.10	0.70	6.34	56.34	3.52	
Sibsagar	59.30	19.19	8.14	7.56	0.58	5.23
Sonitpur	20.48	17.67	28.51	20.88	4.42	8.03
Tinsukia	26.69	24.15	17.80	27.12	2.54	1.69
Udalguri	32.65	13.27	25.51	23.47		5.10
Assam	32.37	20.59	14.86	25.05	2.75	4.41

Source: HDR Survey, Assam (2013)

Table 4A.30: Perception about quality of education received by child (in percent)

District Name	Satisfied	Indifferent	Dissatisfied	Don't Know	Total
Baksa	55.2	13.8	0.7	30.3	100
Barpeta	44.5	20.0	0.7	34.8	100
Bongaigaon	58.1	18.5	1.3	22.1	100
Cachar	48.7	12.8	0.7	37.8	100
Chirang	72.6	11.3	0.5	15.6	100
Darrang	41.5	13.2	0.9	44.3	100
Dhemaji	66.7	12.6	1.3	19.3	100
Dhubri	43.8	13.8	2.4	40.0	100
Dibrugarh	70.3	14.1	0.2	15.4	100
Dima Hasao	48.0	4.8	0.0	47.2	100
Goalpara	76.4	1.1	0.0	22.5	100
Golaghat	43.1	8.8	0.4	47.6	100
Hailakandi	36.2	33.7	7.4	22.7	100
Jorhat	63.6	14.1	2.3	20.0	100
Kamrup	58.1	5.6	0.2	36.1	100
Kamrup M	59.7	9.4	0.4	30.5	100
Karbi Anglong	36.3	23.1	1.4	39.1	100
Karimganj	54.4	15.8	2.7	27.0	100
Kokrajhar	37.8	16.8	1.9	43.4	100
Lakhimpur	55.1	14.9	2.3	27.7	100
Morigaon	10.9	57.5	0.3	31.3	100
Nagaon	48.1	16.3	1.7	33.9	100
Nalbari	48.5	24.9	1.2	25.4	100
Sibsagar	65.6	13.4	0.8	20.1	100
Sonitpur	47.9	10.5	1.0	40.6	100
Tinsukia	53.2	15.1	1.2	30.5	100
Udalguri	42.0	23.4	0.5	34.1	100
All	51.1	15.7	1.3	31.9	100

Source: HDR Survey, Assam (2013)

Table 6A.1: Sex Ratio in Assam and its Districts (2001-2011)

District/State	2001	2011	2013*
Baksa	NA	974	970
Barpeta	941	953	930
Bongaigaon	945	966	953
Cachar	945	959	1013
Chirang	NA	969	887
Darrang	943	954	921
Dhemaji	936	953	946
Dhubri	944	953	948
Dibrugarh	923	961	975
Dima Hasao	883	932	877
Goalpara	955	964	922
Golaghat	945	964	994
Hailakandi	933	951	936
Jorhat	903	962	923
Kamrup	894	949	938
Kamrup (M)	NA	936	886
Karbi Anglong	992	951	925
Karimganj	944	963	970
Kokrajhar	945	959	882
Lakhimpur	952	968	938
Marigaon	945	967	932
Nagaon	939	962	940
Nalbari	937	949	968
Sibsagar	926	954	922
Sonitpur	942	956	1000
Tinsukia	909	952	1012
Udalguri	NA	973	982
Assam	932	958	950
India	933	943	–

Source: Census of India 2001, 2011. *HDR Survey (2013)
Note: NA- Not Available

Table 6A.2: Child Sex Ratios (0-6 years) in Assam and its Districts (2001-2011)

District/State	2001			2011			2013*		
	Total	Rural	Urban	Total	Rural	Urban	Total	Rural	Urban
Baksa	NA	NA	NA	966	966	949	853	860	500
Barpeta	964	964	949	961	961	965	986	1008	650
Bongaigaon	978	981	945	969	973	933	990	928	1696
Cachar	956	957	951	954	954	952	905	913	861
Chirang	NA	NA	NA	968	969	961	864	868	800
Darrang	974	975	954	969	970	932	969	960	1231
Dhemaji	957	958	954	950	951	930	886	908	609
Dhubri	984	986	956	968	971	935	951	962	796
Dibrugarh	954	959	918	962	968	931	990	1052	726
Dima Hasao	951	942	981	967	966	969	579	815	NA
Goalpara	975	973	1004	963	963	960	979	970	1051
Golaghat	965	966	953	964	968	948	1000	1007	920
Hailakandi	903	900	959	954	954	963	947	935	1500
Jorhat	901	895	932	964	968	948	1004	934	1586
Kamrup	939	959	888	967	968	944	1093	1093	1095
Kamrup (M)	NA	NA	NA	946	980	936	907	902	908
Karbi Anglong	973	975	953	959	962	932	1030	1015	1156
Karimganj	979	980	940	969	970	962	847	854	744
Kokrajhar	955	955	941	954	954	947	735	730	1000
Lakhimpur	962	965	921	959	961	933	884	885	867
Morigaon	965	966	934	956	957	937	935	928	1059
Nagaon	981	982	967	964	964	961	948	935	1078
Nalbari	962	963	917	967	968	958	914	952	583
Sivasagar	966	970	914	960	962	944	1010	1033	750
Sonitpur	983	984	957	966	966	959	949	940	1083
Tinsukia	964	971	922	960	967	917	1017	998	1167
Udalguri	NA	NA	NA	973	972	994	989	1000	571
Assam	965	967	943	962	964	944	947	948	932
India	927	934	906	914	919	902			

Source: Census of India 2001, 2011 *HDR Survey (2013)
Note: NA- Not Available

Table 6A.3: Percent of married women in 15-19 years and district share

District	Percent married women	Share of district
Baksa	13.6	2.88
Barpeta	17.2	5.51
Bongaigaon	20.3	3.75
Cachar	11.8	4.63
Chirang	17.8	1.92
Darrang	20.6	3.27
Dhemaji	21.0	3.27
Dhubri	29.2	11.18
Dibrugarh	9.2	2.72
Dima Hasao	10.6	0.56
Goalpara	22.1	4.55
Golaghat	9.7	2.88
Hailakandi	17.6	3.27
Jorhat	8.5	1.92
Kamrup	15.3	4.79
Kamrup (M)	6.5	1.28
Karbi Anglong	10.1	2.32
Karimganj	17.1	5.67
Kokrajhar	10.5	2.00
Lakhimpur	12.3	2.80
Marigaon	12.1	1.76
Nagaon	18.1	11.18
Nalbari	7.4	1.36
Sibsagar	10.8	2.48
Sonitpur	13.1	6.47
Tinsukia	11.6	3.83
Udalguri	9.2	1.76
Assam	14.6	100.00

Source: HDR Survey (2013)

Table 6A.4: Gender Inequality Index (GII) for Districts

District	Rate of Institutional Delivery	LFPR Male	LFPR Female	Adolescent Fertility Rate*	Percent Male with above Secondary schooling	Percent Female with above Secondary schooling	Gender Inequality Index
Baksa	63.3	58.7	11.5	0.020	59.20	40.80	0.394
Barpeta	61.5	56.6	11.6	0.016	61.53	38.47	0.412
Bongaigaon	37.7	56.4	11.4	0.015	56.54	43.46	0.437
Cachar	51.2	54.6	15.7	0.033	52.44	47.56	0.303
Chirang	72.8	56.3	12.3	0.016	60.61	39.39	0.390
Darrang	29.3	57.4	9.5	0.016	64.25	35.75	0.498
Dhemaji	62.5	55.9	10.8	0.018	57.37	42.63	0.399
Dhubri	28.3	57.1	7.5	0.010	67.20	32.80	0.566
Dibrugarh	81.9	62.5	25.7	0.023	58.02	41.98	0.271
Dima Hasao	28.9	66.4	26.6	0.032	65.40	34.60	0.354
Goalpara	62.5	59.0	11.3	0.013	62.58	37.42	0.438
Golaghat	59.4	61.1	17.7	0.019	57.89	42.11	0.348
Hailakandi	40.6	55.3	12.9	0.021	60.14	39.86	0.402
Jorhat	53.1	62.2	19.5	0.021	57.99	42.01	0.340
Kamrup	69.2	60.4	11.6	0.022	57.98	42.02	0.379
Kamrup (M)	81.0	61.9	14.8	0.022	57.47	42.53	0.337
Karbi Anglong	23.9	56.7	16.3	0.020	62.94	37.06	0.428
Karimganj	31.7	54.4	11.5	0.023	58.44	41.56	0.420
Kokrajhar	55.7	63.4	13.6	0.018	65.48	34.52	0.424
Lakhimpur	79.9	59.4	17.8	0.015	59.73	40.27	0.348
Marigaon	71.0	60.7	9.8	0.015	57.64	42.36	0.427
Nagaon	62.1	57.6	13.2	0.017	57.40	42.60	0.383
Nalbari	65.9	59.7	10.9	0.022	58.44	41.56	0.392
Sibsagar	81.7	60.7	16.7	0.022	54.86	45.14	0.311
Sonitpur	64.3	59.1	20.3	0.019	56.79	43.21	0.318
Tinsukia	68.1	59.0	24.4	0.019	55.31	44.69	0.290
Udalguri	69.0	58.4	12.2	0.016	60.34	39.66	0.397
Assam	56.4	58.6	14.7	0.018	58.45	41.55	0.375

Source: HDR Survey (2013) except * based on F series data from Census 2001

Table 6A.5: Gender Development Index (GDI) for Districts

Part 1

District	IMR M	IMR F	EYS M	EYF F	MES M	MES F	Wage M	Wage F	EA M	EA F
Baksa	53	48	11.74	12.02	5.48	3.50	3727	3633	90.5	9.5
Barpeta	51	34	12.18	12.43	7.30	5.29	5081	2198	86.0	14.0
Bongaigaon	47	48	11.61	12.34	7.00	5.40	6511	5050	89.0	11.0
Cachar	52	54	11.53	11.27	6.92	5.62	5904	3765	86.6	13.4
Chirang	57	35	12.56	12.57	6.72	4.85	3979	2018	83.4	16.6
Darrang	69	71	11.06	11.88	4.59	2.87	3497	3137	90.7	9.3
Dhemaji	37	37	12.17	12.37	7.42	5.46	3239	3919	88.8	11.2
Dhubri	67	70	10.70	12.06	5.08	3.51	4046	3291	91.6	8.4
Dibrugarh	51	51	12.10	12.07	7.90	6.22	5127	3679	79.5	20.5
Dima Hasao	50	58	11.01	10.97	8.23	6.05	4599	2916	80.0	20.0
Goalpara	53	53	11.70	12.09	5.43	3.82	5235	5299	90.8	9.2
Golaghat	55	57	12.04	12.25	7.27	5.74	3447	3591	82.9	17.1
Hailakandi	56	48	10.87	11.11	6.28	4.60	4135	2938	86.8	13.2
Jorhat	48	52	12.47	12.35	8.73	7.22	7735	6167	82.7	17.3
Kamrup	41	38	11.66	12.17	6.54	4.84	5168	5654	90.5	9.5
Kamrup (M)	41	38	12.31	12.54	9.88	8.35	12980	12264	86.4	13.6
Karbi Anglong	51	70	12.07	12.21	6.34	4.21	4844	4406	84.3	15.7
Karimganj	61	69	11.34	11.41	6.36	4.97	5000	3755	90.6	9.4
Kokrajhar	78	71	12.35	12.15	6.27	3.99	2659	2380	90.1	9.9
Lakhimpur	43	53	12.19	12.39	7.42	5.68	4997	3545	83.5	16.5
Marigaon	65	60	11.83	12.15	7.21	5.82	3638	3881	93.7	6.3
Nagaon	60	63	11.86	12.22	7.19	6.05	5396	4545	86.3	13.7
Nalbari	58	58	12.34	12.62	8.24	6.17	6359	7650	89.8	10.2
Sibsagar	54	59	12.37	12.41	9.05	7.79	7695	7768	84.2	15.8
Sonitpur	60	63	11.48	11.56	5.95	4.34	5520	5396	80.0	20.0
Tinsukia	50	50	11.18	11.12	6.75	5.04	5048	2683	74.6	25.4
Udalguri	69	71	11.22	11.59	5.92	3.85	4125	3161	87.4	12.6
Assam	55	56	11.72	11.99	6.97	5.32	5343	4495	86.0	14.0

Source: HDR Survey (2013) Expect *IMR from Annual Health Survey, 2013-14
IMR: Infant Mortality Rate
EYS: Expected Years of Schooling
MYS: Mean Years of Schooling
Wage: Share in Wage Bill
EA: Economically Active Population (i.e. those who are working)

Table 6A.5: Gender Development Index (GDI) for Districts

Part 2

District	Female Share of Wage	Male Share of Wage	Male Population	Female Population	HDI of Female	HDI of Male	Gender Development Index
Baksa	0.093	0.907	2792	2708	0.523	0.639	0.820
Barpeta	0.066	0.934	5300	4927	0.568	0.686	0.828
Bongaigaon	0.087	0.913	2363	2251	0.581	0.703	0.827
Cachar	0.090	0.910	5148	5217	0.535	0.673	0.796
Chirang	0.092	0.908	1503	1333	0.615	0.651	0.945
Darrang	0.084	0.916	2830	2607	0.406	0.531	0.765
Dhemaji	0.132	0.868	2241	2121	0.631	0.731	0.863
Dhubri	0.069	0.931	6116	5799	0.382	0.543	0.704
Dibrugarh	0.156	0.844	3997	3896	0.631	0.690	0.914
Dima Hasao	0.137	0.863	699	613	0.588	0.692	0.850
Goalpara	0.093	0.907	3024	2789	0.538	0.649	0.829
Golaghat	0.177	0.823	3418	3399	0.594	0.652	0.912
Hailakandi	0.098	0.902	2312	2163	0.520	0.615	0.845
Jorhat	0.143	0.857	3437	3172	0.684	0.749	0.913
Kamrup	0.104	0.896	4586	4303	0.624	0.718	0.868
Kamrup (M)	0.130	0.870	3760	3333	0.805	0.824	0.977
Karbi Anglong	0.145	0.855	2990	2765	0.507	0.672	0.754
Karimganj	0.072	0.928	3947	3830	0.414	0.606	0.683
Kokrajhar	0.089	0.911	2636	2326	0.428	0.493	0.869
Lakhimpur	0.123	0.877	3213	3015	0.591	0.722	0.818
Marigaon	0.067	0.933	2644	2463	0.443	0.590	0.752
Nagaon	0.118	0.882	8827	8294	0.555	0.640	0.868
Nalbari	0.120	0.880	2342	2268	0.593	0.672	0.883
Sibsagar	0.159	0.841	3668	3382	0.659	0.716	0.920
Sonitpur	0.196	0.804	5716	5716	0.578	0.621	0.930
Tinsukia	0.153	0.847	4162	4214	0.607	0.672	0.902
Udalguri	0.099	0.901	2490	2446	0.442	0.555	0.795
Assam	0.121	0.879	96161	91350	0.578	0.661	0.875

Source: HDR Survey (2013)

Table 6A.6: Crimes reported to be committed against women in Assam: 2001 (No.)

District	Rape	Kidnapping & Abduction	Dowry deaths	Assault with intent to outrage modesty	Cruelty by husband & his relatives	Total
Barpeta	28	88	10	29	95	250
Bongaigaon	20	21	1	22	26	90
Cachar	45	74	7	80	216	422
Darrang	48	47	9	56	37	197
Dhemaji	42	20		26		88
Dhubri	43	51	5	49	111	259
Dibrugarh	35	37	3	41	19	135
Goalpara	35	35	1	54	64	189
Golaghat	30	40		23	26	119
Guwahati City	37	64	5	67	98	271
Hailakandi	24	34	2	27	28	115
Jorhat	42	28	2	44	48	164
Kamrup	21	65	2	42	27	157
Karbi Anglong	5	15	4	5	8	37
Karimganj	33	8	1	9	30	81
Kokrajhar	14	12		37	20	83
Lakhimpur	64	62		22	93	241
Morigaon	23	37		6	28	94
Dima Hasao	2	4		2	7	15
Nagaon	51	109	1	117	132	410
Nalbari	30	27	3	16	15	91
Sibsagar	47	64		28		139
Sonitpur	53	80	1	43	99	276
Tinsukia	41	48	2	9	21	121
Total	817	1070	59	854	1258	4058

Source: ncrb.nic.in/CD-CII2012/Statistics2012.pdf accessed on 21.12.2014

Table 6A.7: Crimes reported to be committed against women in Assam: 2005 (No.)

District	Rape	Kidnapping & Abduction	Dowry deaths	Assault with intent to outrage modesty	Cruelty by husband & his relatives	Total
Baksa	9	15		8	8	40
Barpeta	56	66	8	25	105	260
Bongaigaon	38	28	3	15	66	150
Cachar	51	99	4	165	334	653
Chirang	17	16	7	6	16	62
Darrang	47	30	4	65	45	191
Dhemaji	52	20	4	31	67	174
Dhubri	101	63	10	56	201	431
Dibrugarh	57	51	4	41	53	206
Goalpara	40	69	3	2	144	258
Golaghat	54	70		27	91	242
Guwahati City	38	93	6	37	114	288
Hailakandi	18	33	1	7	32	91
Jorhat	29	40		40	42	151
Kamrup	73	53		26		152
Karbi Anglong	8	15	2	5	10	40
Karimganj	28	29	9	8	71	145
Kokrajhar	36	29	2	17	53	137
Lakhimpur	69	110	4	34	125	342
Morigaon	52	47	3	76	65	243
Dima Hasao	1	8		2	1	12
Nagaon	149	181	2	35	291	658
Nalbari	27	29	2	39	19	116
Sibsagar	38	73	2	68	81	262
Sonitpur	77	106	3	2	146	334
Tinsukia	42	61	10	20	16	149
Udalguri	21	15	6	57	13	112
Total	1238	1456	99	918	2209	5920

Source: ncrb.nic.in/CD-CII2012/Statistics2012.pdf accessed on 21.12.2014

Table 6A.8: Crimes reported to be committed against women in Assam: 2012

District	Rape	Kidnapping & Abduction	Dowry deaths	Assault with intent to outrage modesty	Cruelty by husband & his relatives	Total
Baksa	33	50	3	4	15	105
Barpeta	98	224	5	67	638	1032
Bongaigaon	50	59	6	15	169	299
Cachar	94	163	19	11	551	838
Chirang	24	30		11	78	143
Darrang	88	168	9	246	387	898
Dhemaji	74	61	2	17	82	236
Dhubri	159	305	13	219	729	1425
Dibrugarh	50	75		138	316	579
Goalpara	65	68	3	97	323	556
Golaghat	60	154	1	72	226	513
Guwahati City	78	326	9	90	237	740
Hailakandi	56	65	6	52	125	304
Jorhat	42	95	1	53	254	445
Kamrup	54	107	5	70	172	408
Karbi Anglong	31	62		6	33	132
Karimganj	32	85	11	4	262	394
Kokrajhar	27	65	3	31	86	212
Lakhimpur	62	97		25	19	203
Morigaon	58	88	4	25	115	290
Dima Hasao	5	13				18
Nagaon	173	348	10	248	875	1654
Nalbari	34	89	3	83	131	340
Sibsagar	78	153	5	134	269	639
Sonitpur	97	220	11	39	124	491
Tinsukia	64	142	1	43	137	387
Udalguri	23	38	8	41	46	156
Total	1716	3360	140	1845	6407	13468

Source: ncrb.nic.in/CD-CII2012/Statistics2012.pdf accessed on 21.12.2014

Table 8A.1: Rural-Urban Head Counts as per Level of Overall Satisfactions (in percent)

	Level of overall satisfaction in life					Total
	Intensively dissatisfied	Moderately dissatisfied	Neither satisfied nor dissatisfied	Moderately satisfied	Intensively satisfied	
Rural	0.34	25.43	19.36	51.61	3.27	100.00
Urban	0.19	17.99	17.11	61.32	3.37	100.00
Assam	0.32	24.27	19.01	53.13	3.28	100.00

Source: HDR Survey (2013)

Table 8A.2: Male-Female Head Counts as per Level of Overall Satisfactions (in percent)

	Level of overall satisfaction in life					Total
	Intensively dissatisfied	Moderately dissatisfied	Neither satisfied nor dissatisfied	Moderately satisfied	Intensively satisfied	
Male	0.20	23.42	18.99	53.96	3.42	100.00
Female	0.52	25.82	19.04	51.60	3.03	100.00
Assam	0.32	24.27	19.01	53.13	3.28	100.00

Source: HDR Survey (2013)

Table 8A.3: Social Category wise Head Counts of Overall Satisfactions (in percent)

	Level of overall satisfaction in life					Total
	Intensively dissatisfied	Moderately dissatisfied	Neither satisfied nor dissatisfied	Moderately satisfied	Intensively satisfied	
SC	0.28	24.13	19.34	54.03	2.22	100.00
ST	0.36	30.88	18.40	48.19	2.16	100.00
OBC	0.19	22.69	18.56	55.58	2.98	100.00
General	0.39	23.21	19.40	52.95	4.05	100.00
Assam	0.32	24.27	19.01	53.13	3.28	100.00

Source: HDR Survey (2013)

Table 8A.4: Religion wise Head Counts of Overall Satisfactions (in percent)

	Level of overall satisfaction in life					Total
	Intensively dissatisfied	Moderately dissatisfied	Neither satisfied nor dissatisfied	Moderately satisfied	Intensively satisfied	
Hindu	0.25	22.85	18.40	55.27	3.23	100.00
Muslim	0.40	27.28	20.36	48.46	3.50	100.00
Christian	0.69	27.30	18.48	51.00	2.53	100.00
Buddhist	1.92	19.23	21.79	53.85	3.21	100.00
Sikh	0.00	0.00	25.00	65.00	10.0	100.00
Others	0.00	21.95	29.27	48.78	0.00	100.00
Assam	0.32	24.27	19.01	53.13	3.28	100.00

Source: HDR Survey (2013)

Table 8A.5: Spatial diversity wise Head Counts of Overall Satisfactions (in percent)

	Level of overall satisfaction in life					Total
	Intensively dissatisfied	Moderately dissatisfied	Neither satisfied nor dissatisfied	Moderately satisfied	Intensively satisfied	
Char	0.07	23.78	19.21	52.37	4.57	100.00
Flood Affected	0.84	40.53	18.68	38.75	1.20	100.00
Hills	0.09	54.70	18.96	26.17	0.09	100.00
Tea Garden	0.48	21.37	20.10	55.44	2.61	100.00
Border	0.41	23.07	18.96	54.99	2.58	100.00
Multiple Diversities	0.08	23.69	24.19	50.68	1.36	100.00
General	0.15	18.43	17.74	56.82	6.87	100.00
Assam	0.32	24.27	19.01	53.13	3.28	100.00

Source: HDR Survey (2013)

Table 8A.6: Domain wise Head Counts of Satisfied People (in percent)

Domain	Dissatisfied	Satisfied
Psychological and Emotional Domain	31.94	68.06
Health Domain	44.44	55.56
Education Domain	45.06	54.94
Cultural domain	14.87	85.13
Governance domain	76.99	23.01
Community vitality domain	37.96	62.04
Ecology Domain	14.11	85.89
Living Standard Domain	64.03	35.97

Source: HDR Survey (2013)

Table 8A.7: Spatial Diversity wise Headcounts of Satisfied People on Domains (percent)

	Psychological and Emotion	Health	Education	Culture	Governance	Community	Ecology	Living Standard	Overall
Char	66.2	64.6	48.6	86.5	22.5	76.0	71.8	38.6	56.9
Flood Affected	51.4	47.7	45.6	77.2	18.2	51.7	84.2	25.6	40.0
Hills	49.2	33.5	34.9	83.9	2.6	29.4	92.7	26.8	26.3
Tea Garden	64.1	56.4	62.7	85.2	27.7	56.6	90.5	28.9	58.1
Border	69.3	55.5	52.5	85.7	25.8	57.4	88.8	34.8	57.6
Multiple Diversities	70.9	48.1	56.1	78.4	12.8	79.2	81.3	31.7	52.0
General	71.5	58.4	57.4	90.9	32.4	72.0	86.5	42.5	63.7
Assam	68.1	55.6	54.9	85.1	23.0	62.0	85.9	36.0	56.4

Source: HDR Survey (2013)

Table 8A.8: District wise Head Counts of Overall Satisfactions (in percent)

	Level of overall satisfaction in life					Total
	Intensively dissatisfied	Moderately dissatisfied	Neither satisfied nor dissatisfied	Moderately satisfied	Intensively satisfied	
Baksa	1.08	28.18	27.68	42.39	0.67	100.00
Barpeta	0.00	19.13	14.36	53.84	12.68	100.00
Bongaigaon	0.00	13.77	18.33	66.10	1.80	100.00
Cachar	0.26	35.86	28.07	35.47	0.34	100.00
Chirang	0.00	11.26	20.17	68.40	0.17	100.00
Darrang	0.08	21.86	17.72	57.64	2.70	100.00
Dhemaji	0.12	18.12	21.30	56.55	3.92	100.00
Dhubri	0.15	23.39	21.67	50.65	4.13	100.00
Dibrugarh	0.00	9.93	18.52	69.57	1.97	100.00
Dima Hasao	0.00	12.64	33.46	52.42	1.49	100.00
Goalpara	0.00	8.53	13.08	77.90	0.49	100.00
Golaghat	0.00	12.77	23.50	59.92	3.81	100.00
Hailakandi	0.22	29.90	22.26	46.73	0.89	100.00
Jorhat	0.07	6.46	11.07	75.67	6.74	100.00
Kamrup	0.21	13.79	14.94	63.43	7.63	100.00
Kamrup (M)	0.11	12.92	17.02	66.01	3.94	100.00
Karbi Anglong	0.09	59.44	16.20	24.08	0.18	100.00
Karimganj	0.51	28.45	19.76	49.42	1.85	100.00
Kokrajhar	0.09	41.15	19.12	39.21	0.44	100.00
Lakhimpur	0.00	15.08	19.32	62.29	3.30	100.00
Marigaon	0.17	60.02	21.69	18.12	0.00	100.00
Nagaon	0.89	29.02	13.79	52.81	3.48	100.00
Nalbari	0.00	14.49	18.37	63.06	4.08	100.00
Sibsagar	0.06	19.14	18.30	57.55	4.95	100.00
Sonitpur	1.72	38.66	21.32	37.31	0.98	100.00
Tinsukia	0.12	27.01	18.97	53.66	0.24	100.00
Udalguri	0.38	23.47	20.45	49.10	6.60	100.00
Assam	0.32	24.27	19.01	53.13	3.28	100.00

Source: HDR Survey (2013)

Table 8A.9: District wise Headcounts of Satisfied People on Domains (percent)

	Psychological and Emotion	Health	Education	Culture	Governance	Community	Ecology	Living Standard	Overall
Baksa	56.4	45.4	59.0	83.0	9.8	57.6	90.4	21.4	43.1
Barpeta	74.6	49.3	51.7	98.9	35.4	95.4	67.8	60.5	66.5
Bongaigaon	80.2	53.8	65.4	93.8	59.2	29.6	92.6	43.1	67.9
Cachar	77.7	35.9	51.8	85.1	5.6	38.5	82.1	24.5	35.8
Chirang	69.2	52.3	72.3	92.4	25.9	38.3	94.1	51.3	68.6
Darrang	58.1	69.8	46.4	78.2	22.0	93.5	81.3	26.6	60.3
Dhemaji	77.2	53.0	67.1	85.4	25.5	61.9	85.6	34.9	60.5
Dhubri	77.6	53.2	39.9	83.0	25.6	77.3	79.9	31.8	54.8
Dibrugarh	55.8	66.8	87.4	91.2	33.4	51.9	99.1	19.3	71.5
Dima Hasao	94.8	68.4	48.3	95.5	5.2	4.8	97.8	58.0	53.9
Goalpara	67.1	79.9	77.3	83.3	2.0	97.4	86.8	52.0	78.4
Golaghat	78.8	57.7	51.6	83.6	31.5	78.8	85.9	45.4	63.7
Hailakandi	39.3	59.8	37.8	97.6	14.8	60.4	91.3	41.9	47.6
Jorhat	82.5	66.1	68.1	93.4	34.1	77.5	98.1	36.9	82.4
Kamrup	81.3	63.9	62.6	93.6	20.4	78.3	90.2	46.1	71.1
Kamrup (M)	85.9	62.7	73.0	87.1	15.8	54.2	96.8	45.6	70.0
Karbi Anglong	44.8	29.0	35.6	79.5	3.0	34.5	90.1	24.5	24.3
Karimganj	75.9	42.8	56.9	81.1	35.7	41.6	85.2	30.6	51.3
Kokrajhar	54.1	57.5	20.4	86.1	6.0	42.5	97.5	32.5	39.6
Lakhimpur	75.5	60.7	63.6	71.7	59.1	42.3	90.8	39.0	65.6
Marigaon	24.5	44.1	26.4	93.3	6.9	31.5	64.8	23.4	18.1
Nagaon	61.4	60.8	51.6	75.1	30.8	70.9	81.8	36.3	56.3
Nalbari	76.5	67.1	52.6	84.9	20.6	96.1	80.0	39.4	67.1
Sibsagar	74.0	50.8	68.4	87.6	17.1	71.0	88.0	41.2	62.5
Sonitpur	45.8	45.0	53.0	72.9	24.5	51.9	80.3	23.7	38.3
Tinsukia	73.2	58.8	50.7	84.8	11.3	49.8	97.8	28.2	53.9
Udalguri	80.3	68.7	40.4	88.1	14.9	58.2	72.5	46.2	55.7
Assam	68.1	55.6	54.9	85.1	23.0	62.0	85.9	36.0	56.4

Source: HDR Survey (2013)

Table 8A.10: Average number of domains where people are satisfied

	No. of Domains in general	No. of Domains only those satisfied
Baksa	4.2	5.6
Barpeta	5.3	6.4
Bongaigaon	5.2	6.0
Cachar	4.0	5.5
Chirang	5.0	5.6
Darrang	4.8	5.9
Dhemaji	4.9	5.9
Dhubri	4.7	5.9
Dibrugarh	5.0	5.7
Dima Hasao	4.7	5.6
Goalpara	5.5	6.0
Golaghat	5.1	6.0
Hailakandi	4.4	5.7
Jorhat	5.6	6.0
Kamrup	5.4	6.2
Kamrup (M)	5.2	6.0
Karbi Anglong	3.4	5.6
Karimganj	4.5	5.9
Kokrajhar	4.0	5.5
Lakhimpur	5.0	5.9
Marigaon	3.1	5.2
Nagaon	4.7	6.1
Nalbari	5.2	6.0
Sibsagar	5.0	6.0
Sonitpur	4.0	5.8
Tinsukia	4.5	5.8
Udalguri	4.7	5.9
Assam	4.7	5.9

Source: HDR Survey (2013)

Table 8A.11: Important Gaps in Average number of domains where people are satisfied

		No. of Domains with satisfaction
Sex	Male	4.74
	Female	4.64
Sector	Rural	4.65
	Urban	5.03
Religion	Hindu	4.77
	Muslim	4.59
	Christian	4.50
	Buddhist	4.74
	Sikh	5.45
	Others	4.54
Social Category	SC	4.66
	ST	4.38
	OBC	4.77
	General	4.77
Assam		4.71

Source: HDR Survey (2013)

Technical Appendix 1: Sampling

1. Determination of Sample Size

Given that all 27 districts are to be covered, in rural areas, the first stage of sampling is obliviously, taken as the blocks. The second stage of sampling is considered to be the villages, while the third stage of sampling is the households. Similarly, for urban areas, while the first stage is taken as designated towns or urban areas, the second stage was taken as the Census Enumeration Blocks (EB) and the third stage is taken as the household.

Since the survey, in most cases, will try to obtain primarily various "proportions" of given attributes related to human development, assuming certain parameters ex ante, the required sample size for these three stages, for both rural and urban areas, has been estimated as given in Table A1.

Table A1: Required sample size for three stages

Sampling Stage	First		Second		Third
Sample Unit	Block	Town	Village	EB	Households
Universe Based on Census 2011	238	214	26395	6266	6367295
Expected Proportion (in %)	99	99	66	66	50
Margin of Error	1.5	1.5	2	2	0.5
Level of Significance (in %)	5	5	5	5	5
Estimated Sample Size (No.)	97	97	1975	147	38184
Response Rate (RR)	1	1	1	1	0.95
Final Sample Size (adjusted for RR)	97	97	1975	147	40194

From the table, it is therefore clear that the survey involves 97 blocks and 95 towns in the first stage, 1,975 villages and 147 EBs in the second stage and altogether 40,194 (both rural and urban taken together) households in the final stage of sampling.

2. Brief about the Sample Design

The present state HDR attempts to locate the specific issues of the state within the broad framework of human development achievements and enhanced capabilities. While looking at various indicators of human development in the state, one cannot ignore certain issues specific to the state. It is worth noting that natural disasters including perennial problems of flood and erosion, demographic diversities, locational disadvantages, infrastructural bottlenecks along with myriad insecurities have serious implications for human development outcomes in the state. These, along with other forms of vulnerabilities relating to life and livelihood, and gaps in the level

of capabilities across diverse socio-economic and demographic groups including people living in the Char areas and tea gardens, need to be highlighted clearly in the HDR to place the overall level of human development of the state in the right perspective.

Given this overall approach and perspective, a **multi-stage stratified random sampling design** is followed in formulating the household survey and the sample design is briefly explained in the following paras.

The **Primary Sampling Unit** (PSU) being the households, which are to be sampled across all 27 district in such a way as to reflect the myriad "specificities" and "diversities" potentially impacting various indicators of human development, it is desired that all possible "specificities" and "diversities" are mapped properly. Since all 27 districts are to be covered, clearly, no sampling is needed for districts.

A district may be divided into **two sectors** – rural and urban. Each of these sectors has different concerns and, therefore, may be considered as a distinct sample frame. It is, thus, required that both these sample frames need to be stratified according to various "specificities" and "diversities".

2.1 Stratification Scheme for Rural

In a district, the most appropriate sub-district (rural) unit is the development block. The blocks cover quite a substantial area and are fairly heterogeneous. However, blocks represent wide-scale geographical diversity within a district. Therefore, based on five spatial characteristics representing unique specificities with respect to human development outcomes of people therein, all blocks (in all districts) have been stratified. Five spatial characteristics used for stratification of the blocks are: hills, border (inter-state as well as international), tea garden, flood-affected and Char. The blocks without any of these five spatial characteristics have been referred to as "general blocks" and considered as "control".

For identification of the blocks as per these spatial characteristics the Census Administrative Atlas (used 2001 version as 2011 was not published at that time, updated for BTAD configurations and geo-referenced as per Survey of India Toposheets) was used as the base. This immediately facilitated the identification of hill and border blocks. Char blocks were identified using the latest available Directory of Char Areas (2009) published by the Government of Assam. For identification of flood-prone blocks, time series flood hazard maps (1998-2007) of the National Remote Sensing Centre have been utilised. For identification of tea garden blocks, LANDSAT TM images of 30 metre resolution have been used.

After identification of blocks as per the five spatial characteristics, a simple map overlay was carried out to see the unique typologies of blocks in all districts. This resulted in 14 typologies of blocks in the state as a whole, each forming a unique stratum. These strata are referred to as the First Stage Strata (FSS). The 14 typologies are given in Table A2.

Table A2: Typologies of blocks

Stratum Serial No.	Diversity Type
1	Char Block
2	Flood-affected Block
3	Hill Block
4	Tea Garden Block
5	Border Block
6	Flood and Char Block
7	Flood and Border Block
8	Flood and Tea Garden Block
9	Char and Border Block
10	Hill and Border Block
11	Tea Garden and Border Block
12	Flood, Char and Border Block
13	Flood, Border and Tea Block
14	General Block

This First Stage Stratification helps to capture the "spatial diversities" of a district in a much better way. For instance, if a district has 10 blocks in total, spread across say, three typologies and we need to select only three, then the entire spread can be represented by selecting one block from each of the three strata.

In the second stage, the villages of the selected block (from the first stage) were stratified according to "demographic" diversities. Accordingly, three strata were formed: (1) predominantly Scheduled Caste village with more than 50 per cent of the total population being SCs; (2) predominantly Scheduled Tribe village with more than 50 per cent of the total population belonging to STs; and (3) general villages which included all remaining villages of the block.

It may, however, be noted that due to non-availability of Census Village Directory of 2011, the Second Stage Stratification for the present survey was done on the basis of the Census Village Directory of 2001 after making necessary adjustments to district boundaries to account for changes caused due to the creation of four new districts under BTAD affecting 14 districts in total and their boundaries. These adjustments were carried out on the Census Administrative Atlas after appropriately geo-referencing according to Survey of India Top sheets.

In the third stage, households, that is, the PSUs, were stratified according to "economic" criterion. The Third Stage Stratum (TSS) refers to the MPCE category of the household which is defined based on NSSO 66th round survey on consumer expenditure for rural areas in Assam as shown in Table A3.

Table A3: Third Stage Stratum consumer expenditure

MPCE (in INR)	Third Stage Stratum	Category
< 610	1	Low Expenditure Households
611 - 912	2	Middle Expenditure Households
> 912	3	High Expenditure Households

For accomplishing the TSS, a complete house-listing of the sample village is suggested along the lines of NSSO surveys, with a pre-defined House-listing Schedule (Schedule 0) with all necessary information for stratification.

To sum up, the sampling scheme for rural areas involves three stages entailing three different stratifications, that is, spatial in the first, demographic in the second and economic in the third stage, which is assumed to reflect the various "specificities" and "diversities" of the state.

2.2 Stratification in Urban

In case of urban areas, the FSS is taken as per the civic status of the towns and their size classes to represent the "specificities/diversities" since these two aspects bear significant importance in governance and access to urban infrastructure impacting upon human development outcomes. Accordingly, like the rural areas, depending on information of Census 2011, 13 types of diversities are codified as shown in Table A4.

Table A4: Types of diversities

Serial No.	Diversity Type		Stratum Code
	Civic Status	Size Class	
1	MC	I	01
2	MB	I	02
3	MB	II	03
4	MB	III	04
5	MB	IV	05
6	TC	III	06
7	TC	IV	07
8	TC	V	08
9	TC	VI	09
10	CT	III	10
11	CT	IV	11
12	CT	V	12
13	CT	VI	13

**MC= Municipal Corporation, MB=Municipal Board, TC=Town Committee CT=Census Town*

3. Allocation of Units

At each stage, allocation was done proportionally. All selections were done at random. For selecting the households, a complete listing was carried out to apply TST over the households. Then final selection of the households was conducted at random using a fixed random number table from the listing frame. To facilitate urban listing of households, Census EB maps were used with special permission from the Registrar General of India.

The sample distribution, which thus emerged, is shown in Table A5.

Table A5: Sample distribution

District	No of Sample blocks	No of Sample Town	Total Sample HH	Rural Sample HH	Urban Sample HH
BAKSA	3	1	1204	1188	16
BARPETA	4	4	2137	1936	201
BONGAIGAON	2	2	949	788	161
CACHAR	6	8	2323	1889	434
CHIRANG	1	1	614	566	48
DARRANG	2	1	1187	1107	80
DHEMAJI	2	2	818	752	66
DHUBRI	6	4	2618	2340	278
DIBRUGARH	3	4	1723	1378	345
DIMA HASAO	2	2	271	186	85
GOALPARA	3	5	1247	1066	181
GOLAGHAT	3	3	1419	1278	141
HAILAKANDI	2	1	906	840	66
JORHAT	3	5	1472	1148	324
KAMRUP	6	7	1927	1733	194
KAMRUP METRO	2	5	1833	267	1566
KARBI ANGLONG	4	3	1117	965	152
KARIMGANJ	3	3	1561	1412	149
KOKRAJHAR	4	2	1137	1062	75
LAKHIMPUR	4	2	1283	1148	135
MARIGAON	3	3	1171	1067	104
NAGAON	9	8	3540	3031	509
NALBARI	3	5	981	869	112
SIVASAGAR	4	3	1559	1394	165
SONITPUR	6	4	2442	2187	255
TINSUKIA	3	6	1694	1323	371
UDALGURI	4	1	1061	1008	53
TOTAL	97	95	40194	33928	6266

4. Sample Weight

Since the proportional allocation rule was followed at each stage, the design becomes self-weighted, thus requiring no sample weight to account for design effect.

Technical Appendix 2:
Estimation Procedures

The estimation procedures followed in the report are based on UNDP's new methodology (2010), however, with some modifications to overcome data limitations. The procedures are explained in the following paras.

1. Estimation of HDI

The HDI is based on three dimensions:

Long and Healthy Life	measured by *life expectancy at birth*
Knowledge	measured by *mean years of schooling and expected years of schooling*
Standard of Living	measured by *per capita annual income*

Life expectancy at birth at the district level was estimated based on five-year death-age data obtained from HDR survey by using Chiang's method. The *mean years of schooling and expected years of schooling* were estimated from the HDR survey data. The first is based on the number of years to complete a particular level and actual level of educational attainment of individuals obtained from the survey and the second is based on enrolment ratios. Instead of using *district domestic product*, the report uses directly obtained household income data from the survey.

The goal posts used for normalisation are as follow:

Indicators	**Minimum**	**Maximum**
Life Expectancy	20	85
MYS	0	15
EYS	0	13
Income	5090	119032

Only in case of EYS, the maximum is used as 13 instead of 18 since, in India, the right to education ensures 6-14 years of education; the rest are the same as UNDP's. The income bounds are chosen from the per capita income of the states with minimum being one-third of the minimum of Bihar and the maximum is for Goa as per 2013-14 GSDP data series.

In the next step, the usual UNDP method has been applied to obtain the HDI (see HDR, UNDP, 2014).

2. Inequality Adjusted HDI

The method followed for IHDI is the same as the UNDP method.

3. Gender Inequality Index

The GII in the report is based on UNDP's method, however, with a couple of changes. Since the present HDR sample size does not allow robust district level estimates of MMR, the indicator is replaced by a correlated variable rate of institutional delivery which is obtainable from the HDR survey.

Similarly, the adolescent fertility rate was estimated using 2001 Census F Series data by the Brass Method assuming fertility change to be a fairly long-term phenomenon given the fact that Census 2011 F series is not yet released.

Female participation in politics has been dropped as there is no representative data for all districts. Therefore, the GII formula was on based on the following two:

$$G_F = \sqrt[3]{\left(ID \times \frac{1}{AFR}\right)^{1/2} \times SE_F \times LFPR_F}$$

$$G_M = \sqrt[3]{1 \times SE_F \times LFPR_F}$$

The rest of the procedures are the same as the UNDP method.

3. Gender Development Index

The GDI estimation in the report is same as that of the UNDP but with only one change. Since it requires producing HDI for both males and females, all indicators are to be segregated accordingly. This was done for all following UNDP's procedure except for life expectancy. Due to lack of data, the male and female life expectancy at birth could not be ascertained. Therefore, the child survival ratio taken as additive inverse of IMR was considered with AHS 2013-14 data. The AHS provides IMR for only 23 districts. The data for four districts were interpolated by population weighted average of their constituent districts based on Census 2011 population figures. The rest follows the UNDP method.

4. Multi-dimensional Poverty Index

The MPI estimates in the report follow the UNDP method except a change in one indicator of health deprivations. Instead of nutrition, it uses the direct response to the question 'whether treatment has been stopped to want of money" as a substitute. The rest of the method is as per UNDP's method.

Technical Appendix 3:
Methodology of Measuring Subjective Well-being

1.1. The methodology used to measure subjective well-being in the report is largely dependent on the assumption that the variables of interest are ordinal or rarely categorical variables, which contrasts with HDI data that are predominantly cardinal. The categorical variable of interest is gender. The difference between the categorical and the ordinal variables is that ordinal data contain a clear ordering of the variables (low, medium and high). So, we can put people in the categories of dissatisfied/satisfied but also we can order the categories as low, medium and high.

1.2. The Alkire-Foster methodology is the basis of the current measurement[1]. In this system, the step of identifying who falls into the category of dissatisfied/satisfied uses two forms of cut-off: one within each dimension to determine the category (dissatisfied/ satisfied) with respect to each variable in that dimension, and a second cut-off (a nominal one) that is done across dimensions. This nominal cut-off identifies dissatisfied people by 'counting' the dimensions in which a person is dissatisfied. The step of summarising the different statistics (nominal, ordinal, categorical) – aggregation – uses the Foster Alkire measures, appropriately adjusted (ranging from 1-5) to account for variance in dissatisfaction. The identification method is well suited for use with ordinal data, as is the first of our measures, the adjusted headcount ratio of dissatisfied persons.

1.3. Measuring "well-being" at each domain level. The two-thirds rule is applied for calculations at each of the eight domains. For example, there are 18 variables in the Psychological and Emotional domain. This means that the maximum score an individual could get in this domain is 18 (that is, if he/she scores 1 in each variable) and the minimum could be 0 (that is, if he/she scores 0 in each variable). Applying the two-thirds rule, an individual would need to score a minimum of 12 (which is two-thirds of 18) to be considered as satisfied. The domain is than recoded as "0" for "Dissatisfied" (those who scored less than 12) and "1" for "satisfied" (those who scored at least 12). Thus, the number of respondents would be distributed between a score of 0 and a score of 1. In this way, each domain will have a distribution of respondents between 0 and 1.

1.4. A Likert-type scale is used with values ranging from "strongly dissatisfied" to "strongly satisfied", with a midpoint of "neutral". Since we cannot be sure that the intervals between each of these (five) values are the same, then we cannot say that this is an interval variable, but we

[1] See Alkire and Foster (2009).

can say that it is an ordinal variable. Why does it matter that predominantly we use ordinal variables? It would not make sense to compute an average 'dissatisfaction'. An average of a categorical variable does not make much sense because there is no intrinsic ordering of the levels of the categories. Moreover, if an attempt was made to compute the average of healthcare service experience, the result would be meaningless.

1.5. Recoding each variable: Responses for each variable were re-coded into binary categories: "1""Satisfied"; "0""Dissatisfied".

1.6. "Missing Data": variables which include responses like "Don't know", "Can't say", "Not Applicable", were examined on a case by case basis to identify whether to assign "1" or "0" to their responses. The majority of these responses were re-coded "0" ("Dissatisfied"). Variables V26, V31, V70 and V71 were deleted from the analysis for the reason that the Not applicable responses were very large in number (which indicates a possible issue with the survey question or how it was interpreted, etc.). Variable V19 (Spirituality level) was also deleted from the analysis as it could not be clearly established from the responses whether there is any specific relationship between the level of spirituality reported in the survey and people's well-being (that is, it is an unreliable variable for policy purposes). We have included three variables from the household schedule for the purposes of the head count. These were not specifically within any domain but we assigned them specific domains depending on the type of the variable. These variables are: Self rating on health (V100), Financial security (V101) and Family relations (V102). For the head count analysis, V100, V101 and V102 are now included in the domains on Health, Standard of Living and Community Vitality respectively.

1.7. Measuring the "level of life satisfaction" (for all domains combined): A person could score 0 in all eight domains, 0 in seven domains and 1 in one domain, 0 in six domains and 1 in two domains, 0 in five domains and 1 in three domains, and so on ….., or 1 in all eight domains. Thus, we can organise nine boxes for each of the scores ranging from 0 through 8. We can then put a person scoring 0 in each of the individual eight domains in the box marked 0, a person scoring 0 in seven domains and 1 in one domain in the box marked 1, a person scoring 0 in six domains and 1 in two domains in the box marked 2 and so on, until a person scoring 1 in all the eight domains is entered in the box marked 8. This will give a distribution of the respondents according to various levels of satisfaction. A person scoring a 1 in each of the eight domains will be considered totally satisfied with life, a person scoring 0 in each of the eight domains will be considered totally dissatisfied with life. The scores in between may be classified into moderate levels of satisfaction or dissatisfaction. As mentioned above, the individual boxes may be considered as a nine-point scale. However, for convenience, these nine individual boxes are categorised as follows:

(0= extensively dissatisfied), (1 to 3= moderately dissatisfied) (4 = neither satisfied nor dissatisfied), (5 to 7= moderately satisfied) and (8= extensively satisfied).

These categories represent an ordinal scale but not an interval scale, as the differences contained by the categories are not equal. As such, a summary index in the form of a statistical mean cannot

be calculated, but a median can certainly be calculated. However, if the respondents are distributed according to individual values of 0 through 8, we can calculate the average number of domains in which a person is satisfied. This could be another summary index of life satisfaction.

Based on the distribution of the respondents according to individual values of 0 through 8 as mentioned above (that is, the number of respondents satisfied in no domain, satisfied in one domain, satisfied in two domains, and so on), a mean value of individual scores for each district is calculated to show the average number of domains in which the respondents of each district are satisfied (that is, *intensity* of satisfaction). This may be expressed as a percentage. The complement of this percentage would indicate the percentage of respondents who are dissatisfied, since the policy-makers should be concerned with improving the situation of the 'dissatisfied' group. This mean number of domains of satisfaction (or dissatisfaction) is ranked to give a comparative picture of the districts surveyed in this study. Apart from the ranking, the *mean* value can also be interpreted as follows: for example, a mean value of 5.8 for Jorhat will mean that, on an average, the individuals of Jorhat district are satisfied in 6 of the 8 domains.

However, we can also get a comparative picture by just comparing the combined percentages of extensively satisfied and moderately satisfied (calling it satisfied) for each district.

Bibliography and References

Alkire, S. (2002). *Valueing Freedoms: Sen's Capability Approach and Poverty Reduction*. Oxford University Press, Oxford.

Alkire, S. (2010). Human Development: Denitions, Critiques, and Related Concepts. UNDP.

Alkire, S., & Foster, J. (2009). Counting and Multidimensional Poverty Measurement. Working Paper No 32, OPHI.

Allendorf, K. (2007). Do women's land rights promote empowerment and child health in Nepal? *World Development*, *353*(11), 1975–1988.

Anand, S., & Sen, A. K. (1994). Human Development: Methodology and Measurement. UNDP.

Anand, S., & Sen, A. K. (2000). The Income Component of Human Development Index. *Journal of Human Development*, *1*(1), 83–106.

Arrow, K. J. (1951). *Social Choice and Individual Values*. Wilely, New York.

Ballet, J., Dubois, J., & Mahieu, F. (2007). Responsibility for Each Other's Freedom: Agency as the Source of Collective Capability. *Journal of Human Development*, *8*(2), 185–201.

Bhagabati, A. (2001). Biodiversity and Associated Problems in the Islands of the Brahmaputra, Assam. *Geographical Review of India*, *63*(4).

Bhatt, C. M. et. al. (2013). Satellite images for extraction of flood disaster footprints and assessing the disaster impact: Brahmaputra floods of June–July 2012, Assam, India. *Current Science*, *104*(12), 1692–1700.

Bloom, G., Kanjilal, B., & Peters, D. H. (2008). Regulating health care markets in India and China. *Health Affairs*, *27*(4), 952–963.

Cahill, M. B. (2005). Is the Human Development Index Redundant? *Eastern Economic Journal*, *31*(1), 1–5.

Chacraborty, A. (2011). Human Development: How Not to Interpret Change. *Economic and Political Weekly*, *XLVI*(51), 16–19.

Chacraborty, G. (2012). The "Ubiquitous" Bangladeshis. *Economic and Political Weekly*, *XLVII*(38).

Chowdhury, O. H. (1991). Human Development Index: A Critique. *The Bangladesh Development Studies*, *19*(3), 125–127.

Clark, C. (1941). *The Conditions of Economic Progress*. London: Macmillan.

Clark, D. A. (2005a). Sen's Capability Approach and Many Spaces of Human Well-being. *Journal of Development Studies*, *41*(8), 1339–1368.

Clark, D. A. (2005b). The Capability Approach: Its Development, Critiques and Recent Advances. Global Poverty Research Group.

Das, K. (n.d.). Constructing a human security governance index for northeast India. *Human Security from Concept to Practice,*. Singapore: World Scientifc.

Dean, H. (2009). Critiquing capabilities: The distraction of a beguiling concept. *Critical Social Policy*, *29*(2).

Desai, S., & Thorat, A. (2012). Social Inequalities in Education', India Infrastructure Report 2012. India Infrastructure Report, Routledge.

Dreze, J., & Sen, A. (1995). *India: Economic Development and Social Opportunity*. Oxford University Press, New Delhi.

Dreze, J., & Sen, A. (2013). *An Uncertain Glory: India and Its Contradictions*. London: Allen Lane.

Engelgau, M., Karan, A., & Mahal, A. (2012). The Economic impact of Non-communicable Diseases on households in India. *Globalization and Health*, *8*(9).

Fukuda-Parr, S. (2003). Operationalizing Sen's Ideas on Capabilities. *Feminist Economics*, *9*(2-3), 301–317.

Gasper, D. (n.d.). Is Sen's Capability Approach an Adequate Basis for Consiering Human Development. *Reveiw of Political Economy*, *14*(4), 435–461.

Gaye, A., & Jha, S. (2010). A Review of Conceptual and Measurement Innovations in National and Regional Human Development Reports, 1998-2009. UNDP.

Gohain, H. (n.d.). Big Dams, Big Floods: On Predatory Development. *Economic and Political Weekly*, *43*(30).

Guha, A. (n.d.-a). Colonisation of Assam: Second Phase 1840-1859. *Indian Economic and Social History Review*, *4*, 289.

Guha, A. (n.d.-b). Assamese Agrarian Society in the Late Nineteenth Century: Roots, Structures and Trends. *Indian Economic and Social History Review*, *17*, 35.

Haque, A. K. E. (2011). *Environmental Valuation in South Asia*. New Delhi: Cambridge.

Herrero, C. et al. (2010). Improving the Measurement of Human Development. UNDP.

Himanshu. (2011). Employment Trends in India: A Re-examination. *Economic and Political Weekly*, *XLVI*(10), 43–59.

I Ivanova. (1999). An Assessment of the Measurement Properties of the Human Development Index. *Social Indicators Research*, *46*(2), 157–179.

Ibrahim, S. S. (2006). From Individual to Collective Capabilities: The Capability Approach as a Conceptual Framework for Self-help. *Journal of Human Development*, *7*(3), 397–416.

Indrayan, A. et al. (1999). 3-Decade Trend in Human Development Index in India and Its Major States. *Social Indicators Research*, *46*(1), 91–120.

Jodha, N. S. (n.d.). Common Property Resources - Contributions and Crisis. *Economic and Political Weekly*, (June 30), A65–A78.

Kabeer, N. (1999). Resources, Agency, Achievements: Reflections on the Measurement of Women's Empowerment. *Development and Change*, *30*, 435–464.

Kelley, A. C. (1991). The Human Development Index: "Handle with Care." *Population and Development Review,*, *17*(2), 315–324.

Klugman, J. et al. (2011). The HDI 2010: New Controversies, Old Critiques. UNDP.

Kovacevic, M. (2010). Measurement of Inequality in Human Development - A Reveiw. Human Development Reaserch Paper, 35, UNDP.

Kuznets, S. (1966). *Modern Economic Growth. Rate, Structure, and Spread*. New Haven: Yale University Press.

Kynch, J., & Sen, A. (1983). The Indian Women: Well-Being and Survival. *Cambridge Journal of Economics*, *7*.

Lee, I. M., Shiroma, E. J., & Lobelo, F. (2012). Effect of physical inactivity on major non-communicable diseases worldwide: an analysis of burden of disease and life expectancy. *The Lancet*, *380*(9838), 219–229.

Lind, N. C. (1992). Some Thoughts on the Human Development Index. *Social Indicators Research*, *27*(1), 89–101.

Lind, N. C. (2004). Values Reflected in the Human Development Index. *Social Indicators Research*, *66*(3), 283–293.

Lloyd-Sherlock, P., Beard, J., & Minicuci, N. (2014). Hypertension among older adults in low- and middle-income countries: prevalence, awareness and control. *International Journal of Epidemiology*.

Maddox, b. (2008). What Good is Literacy? Insights and Implications of the Capabilities Approach. *Journal of Human Development*, *9*(2), 185–204.

Mandal, R. (2014, March). Cropping Pattern Choice and Risk Mitigation in Flood Affected Agriculture, A Study of Assam Plains, India. Working Paper No. 14-03, Department of Economics and International Business, Sam Houston State University.

Mandal, R. (n.d.). Cropping Pattern and Risks Management in the Flood Plain of Assam. *Economic and Political Weekly*, *45*(33), 78–81.

Mazumdar, I., & Neetha, N. (2011). Gender Segregations: Employment Trends in India, 1993-94 to 2009-10. Occassional Paper No 56, Centre for Women's Development Studies;

Moser, C. O. N. (n.d.). *Gender Planning and Development: Theory, Practice and Training*. London and New York: Routledge.

Nussbaum, M. (1995). Human Capabilities, Female Human Beings. *Women, Culture and Development*. Clarendon Press, Oxford.

Nussbaum, M. (2000). *Women and Human Development: The Capability Approach*. Cambridge University Press, Cambridge.

Patel, V., Chatterji, S., Chisholm, D., Ebrahim, S., Gopalakrishna, G., & Mathers, C. (2011). Chronic diseases and injuries in India. *Lancet*, (377), 413–428.

Phukan, A. et al. (2012). River Bank Erosion and Restoration in the Brahmaputra River in India. *The Clarion*, *1*(1), 1–7.

Qizilbash, M. (1996). Capabilites, Well-being and Human Development: A Survey. *Journal of Development Studies*, *33*(2), 143–62.

Quisumbing, A. et. a. (2008). Helping Women Respond to the Global Food Price Crisis. Policy Brief 7. Washington, DC: International Food Policy Research Institute (IFPRI).

Ray, K. B. (1954). Flood Prevention in the Rivers of Bihar, North Bengal and Assam. *The Economic Weekly*, (October 9).

Reddy, V. R. (2003). Land Degradation in India: Extent, Costs and Determinants. *Economic and Political Weekly*, *38*(44), 4700–4017.

Rigotti, J. I. R. et. al. (2013, November). A R-examination of the Expected Years of Schooling: What Can It Tell Us? Working Paper No 117, Centre for Inclusive Growth.

Robeyns, I. (2000). An Unworkable Idea or a Promising Alternative? Sen's Capability Approach Reexamined. Discussion Paper 00.30, Centre for Economics Studies, , Katholoieke Universiteit leuven.

Robeyns, I. (2003). Sen's Capability Approch and Gender Inequality: Selecting Relevant Capabilities. *Feminist Economics*, *9*(2-3), 61–92.

Robeyns, I. (2005). Capability Approach: A Theoretical Survey. *Journal of Human Development*, *6*(1), 93–114.

Robeyns, I. (2006). Three models of education. Rights, capabilities and human capital. *Theory and Research in Education*, *4*(1), 69–84.

Saikia, A. (2011). *Forest and Ecological History of Assam, 1826-2000*. New Delhi: Oxford University Press.

Saito, M. (2003). Amartya Sen's Capability Approach to Education: A Critical Exploration. *Journal of Phylosophy of Education*, *37*(1).

Sakiko, F.-P. (2003). The Human Development Paradigm: Operationalizing Sen's Ideas on Capabilities. *Feminist Economics*, *9*(2-3), 301–317.

Sarmah, B. (2006). *Rejuvenating Panchayati Raj; Ideology Indian State and Lessons from the Periphery*. New Delhi: Akansha Publishing House.

Sen, A. (1982). Equality of What. *Choice, Welfare and Measurement* (p. 353). Oxford University Press, New Delhi.

Sen, A. (1985). Well-Being, Agency and Freedom: The Dewey Lectures. *The Journal of Philosophy*, *82*(4), 169–221.

Sen, A. (1987a). Freedom of Choice: Concept and Content. WIDER Working Paper 25, The United Nations Univrsity.

Sen, A. (1987b). *Commodities and Capabilities*. Oxford University Press, New Delhi.

Sen, A. (1989). Development as Capability Expansion. *Journal of Development Planning*, *19*(1), 41–58.

Sen, A. (1995). *Inequlity Reexamined*. Oxford University Press, New Delhi.

Sen, A. (1999). Capability and Well-being. *The Quality of Life* (2nd ed.). Oxford University Press, New Delhi.

Sen, A. (2000). *Development as Freedom*. Oxford University Press, New Delhi.

Sen, A. (2002a). Opportunities and Freedom. *Rationality and Freedom* (pp. 581–622). Oxford University Press, New Delhi.

Sen, A. (2002b). Processes, Liberty and Rights. *Rationality and Freedom* (pp. 623–658). Oxford University Press, New Delhi.

Sen, A. (2003). *Rationality and Freedom*. Oxford University Press, New Delhi.

Shiv Kumar, A. K. (1991). UNDP's Human Development Index: A Computation for Indian States. *Economic and Political Weekly*, *26*(41), 2343–2345.

Stewart, F. (2004). Groups and Capabilities. Paper presented at 4th Conference on Capability Approach: Enhancing Human Security, Held in University of Pavia, Italy, Sept 5-7.

Thakur, J. S., Prinja, S., Garg, C. C., Mendis, S., & Menabde, N. (2011). Social and Economic Implications of Non-communicable diseases in India. *Indian Journal of Community Medicine*, *36*, 13–22.

Torras, M. (2006). Ecological inequality in assessing well-being: Some implications. *Policy Sciences*, *38*(4), 205–224.

Tucker, R. P. (2011). *A Forest History of India*. New Delhi: Sage.

Vellakkal, S., Subramanian, S. V., Millett, C., Basu, S., & Stuckler, D. (n.d.). Socioeconomic Inequalities in Non-Communicable Diseases Prevalence in India: Disparities between Self-Reported Diagnoses and Standardized Measures. *PLoS One*, *8*(7), 2013.

Walker, M. (2006). Towards a capability-based theory of social justice for education policy-making. *Journal of Education Policy*, *21*(2), 163–185.

Walker, M., & Unterhalter, M. (2007). *Amartya Sen's Capability Approach and Social Justice in Education*. New York: Plagrave Macmillan.

Weibe, H. (2006). River Flooding and Erosion in North East India: Exploratory Consideration of Key Issues (mimeo). North West Hydraulic Consultants, Alberta, Canada.

WHO. (n.d.). Trends in Maternal Mortality: 1990 to 2010: WHO, UNICEF, UNFPA, and the World Bank Estimates. WHO, Geneva, Switzerland.

Zambrano, E. (2011). Functionings, Capabilities and the 2010 Human Development Index. UNDP.

Zimmer, Z., Natividad, J., Lin, H. S., & Chayovan, N. (2000). A cross-national examination of the determinants of self-assessed health. *Journal of Health and Social Behavior*, *41*(4), 465–481.

OKD Institute of Social Change and Development (www.okd.in)

Institute for Human Development (www.ihdindia.org)