## Acknowledgement

The study has made me indebted to many for their help in different ways. It is my moral obligation to acknowledge the help of all individually. But I have acknowledged the help of a few, though the help from many others is not of less significance.

At the outset, I offer heartiest gratitude to my supervisor, Prof. Sumanash Dutta, Department of Economics, Assam University, Silchar, for his guidance throughout the course of my study. It was because of his constant advice encouragement and untiring efforts that the completion of the present study became possible.

Suggestions and help in many from Prof. Niranjan Roy, Head, Department of economics and Dean Mahatma Gandhi School of Economics and Commerce, Assam University are gratefully acknowledged. I express my sincere gratitude to all faculty members, Department of Economics, Assam University, Silchar, for their kind support to my work.

I express my sincere gratitude to all the non teaching staff, Department of Economics, Assam University, for their immense help in various official matters.

I am thankful to Librarian and all the staff of Library, Assam University, Silchar, for their kind help in providing valuable books and periodicals that were necessary for my study.

I express my indebtedness to P.D., D.R.D.A, Cachar, and Dealing Assistant, Establishment Section, D.R.D.A, H.Q., Cachar, for their contribution in this work.

I am thankful to the District, Agriculture office, Cachar, for their endless support in providing all necessary reward helpful for the study.

I am thankful to the office of the Deputy Commissioner, Cachar, for helping me by giving permission for collecting information pertaining to the study.

I am grateful to Superintendent, Food and Civil Supply, Cachar, for supporting me by providing necessary help for the study.

I am indebted to all the G. P. Secretaries and Gram Sevaks of all development blocks in Cachar District for their contribution in the field work carried out for the study. Their help in this respect is unforgettable.

I am also indebted to all Ward Commissioners, Silchar Municipality, for helping me in carrying out the survey. I specially thanks to all the Ward Commissioners of Lakhipur Municipal Board for supporting me to collect field data for the survey.

I acknowledge the kind co-operations and informative help of the villagers of the study area from where I have pursued my survey. I extend thanks for their patience and supporting attitude they have shown for an unknown research scholar.

I also acknowledge the supporting attitude of the residents of the selected areas of the two Sub-Divisions - Silchar and Lakhipur from where I have gathered information for the study.

I express my gratefulness to the FCI office, Silchar for providing me necessary information for the work.

I express my indebtedness to the Librarian, Central Library, Jawaharlal Nehru University New Delhi, Assistant Librarian, EXIM Bank, Economics Library, JNU, for allowing me to consult the necessary Library materials for this study.

I also express my thanks and gratitude to Librarian, Guwahati University, Librarian, NEHU, Shillong, Librarian, NEC, Shillong and Librarian, ICSSR, Shillong, for their contribution in the collection of various research materials necessary for the work.

I am thankful to the Deputy Director, Statistics and Economics, Government of Assam, Silchar, for his kind help who has provided all relevant statistical information necessary for the study.

I express my thanks to all my colleague, Department of Commerce, G.C. College, Silchar, for their kind hearted and all round support without which it would have become impossible on my part to complete this work along with my regular duties.

I am indebted to my student Abhijit Roy specially who has continuously helped me in my work and supported me in overcoming all my hurdles during this long period of my study. I shall never forget his contribution in this regard.

I also express my gratefulness to Biswadeep Roy and Samrat Das of Print.com for taking all pain of typing and printing of the thesis within a very short period of time.

My mother sat beside me during the thesis and shared my pain all along. I extend my regard, gratefulness and indebtedness to her. Her inspiration and support has helped me to complete the work successfully.

Towards my family especially my husband, I owe many thanks. He had given up numerous vacations and much family time but had never given up on me. I express my heartfelt appreciation to my husband, Sanjay of his sincere help, inspiration and encouragement in carrying all the work. However, the web of our life is of a mingled yarn, happiness and sorrow together. And there is no greater sorrow than to remember my Father and Father-in-Law, whom I have lost in the recent past and hence cannot share my moment of joy with them today. They had always been my source of inspiration.

I am grateful to all my family members for their moral support and company all the time I was in need of.

## Contents

CHAPTER - I : General Introduction 1-2			1-26
	1.1	Prelude	1
	1.2	South Asia's Aspect	4
	1.3	India's Aspect	9
	1.4	The Concept of Food Security	10
	1.5	Food Security in North- East India	15
	1.6	Necessity of the Study	16
	1.7	Objective of the Study	18
	1.8	Research Hypothesis	19
	1.9	Limitation of the Study	19
	1.10	Chapterization of the Study	20
СНАРТ	ΓER-I	: Review of Literature	27-80
:	2.1	Review of Important Research Items	27
	2.2	Research gap.	80
СНАРТ	ΓER -	III : Socio-Economic Overview of the Study Area	81-114
	3.1	North-East India	81
		3.1.1 Water Resources and Irrigation	82
		3.1.2 Land Tenural System	83

	3.1.3	Population	83
	3.1.4	Education	83
3.2 D	emogra	phic & Socio-Economic Condition of Assam.	83
	3.2.1	Population Characteristics	85
	3.2.2	Number of Household	88
	3.2.3	Birth & Death Rates in Assam	88
	3.2.4	Literacy in Assam	89
	3.2.5	State Income	90
	3.2.6	Per Capita State Income	91
	3.2.7	Agriculture	91
	3.2.8	Production	93
	3.2.9	Food Grain Requirement	94
3.3 Cachar		94	
	3.3.1	Cachar District under British Regime	95
	3.3.2	Cachar District After Independence	96
	3.3.3	Administrative Set-up	96
	3.3.4	The River System	97
	3.3.5	Climate of the District	98
	3.3.6	Natural Resources	98

	3.3.7	Land Situation	99
	3.3.8	Demographic Features	99
	3.3.9	Population of children (0-6) yrs in the District	100
	3.3.10	Literacy Rate	101
	3.3.11	Population Below Poverty Line	102
	3.3.12	Food Security of Cachar	102
3.4 Fo	ood Ava	ilability	103
	3.4.1	Issue of Food-grains through Food Corporation of India (FC	I) 105
3.5 Fo	od Acce	ess	106
	3.5.1	Employment Status	106
	3.5.2	Physical Achievement of MGNREGA (2013-14)	107
	3.5.3	Main Workers by Category of Economic Activities	107
	3.5.4	Institutional Finance	108
3.6 Food Utilization		109	
	3.6.1	Public Health (Sanitation and Drinking Water)	110
	3.6.2	Amenities Available to Households	110
	3.6.3	Nutritional Status of Individual:	112
	3.6.4	Nutrition Status of Children in Assam	112
	3.6.5	Child Health Indicator in Assam (2013)	113

3.6.6	Nutritional Status in Adult	113
3.6.7	Body Mass Index (BMI)	113
CHAPTER -IV Cor	nceptual, Theoretical Framework and Methodology	115-150
4.1 Food Seco	urity: The General Concept	115
4.1.1	Hunger and Malnutrition	117
4.1.2	Poverty	119
4.1.3	Technicality in Poverty Measurements	120
4.1.4	International Poverty Line	120
4.1.5	Head Count Index	120
4.1.6	Poverty Gap Index	121
4.1.7	Poverty - An Ordinal Measurement	121
4.2 Poverty in	n Indian Context	122
4.2.1	Absolute & Relative Standards	122
4.3 Food Seco	urity and Food Insecurity	123
4.4 Official D	Definition of Food Security	124
4.5 Indian Sco	enario	126
4.5.1	M.S. Swaminathan Research Foundation (MSSRF)	126
4.6 Concept of	of Adult and Index Child	127
4.7 The Three	e Pillars of Food Security	128

	4.7.1 Availability	131
	4.7.2 Accessibility	132
	4.7.3 Food Utilization	133
4.8 De	esign of the Study	134
4.9 Aı	nthropometric Measurement	140
	4.9.1 Body Mass Index (BMI)	140
	4.9.2 Z-score	141
4.10 Methodology		143
	4.10.1 Population	143
	4.10.2 Sample of the study	143
	4.10.3 Data	146
	4.10.4 Analytical Tools and Techniques for Data Analysis	147
	4.10.5 Human Capital	147
	4.10.6 Estimation of Earning	147
	4.10.7 Financial Capital	147
	4.10.8 Households Food & Nutrition Security	147
Chapter - V	Data Analysis, Results & Discussion : Section-A	151-175
5.1 Sa	mple Households and Their Characteristics	151
	5.1.1 Distribution of Sample Households with respect to the Area of Stu	udy 152

5.1.2 Rural-Urban Distribution of sample households and index	children 155
5.1.3 Selected Demographic Characteristics of sample households	s: 156
5.2 Economic Characteristics of Sample Households in the Study Area	158
5.2.1 Occupation wise Distribution	158
5.2.2 Yearly Income Group-wise Distribution of Sample Househo	olds.163
5.2.3 Savings Profile of Sample Households	166
5.3 Socio-Economic Profile of Sample Adults	168
5.4 Socio-Economic Profile of Sample Index Children	171
5.4(A) Household Below Poverty Line	174
5.4 (B) Estimation of Income Poverty of Sample Households	174
Chapter - V Data Analysis, Results & Discussion : Section-B	176-192
5.5 Availability of food	176
5.5.1 Engel's Law	177
5.6 Food Accessibility	178
5.7 Food Utilisation	179
5.8 Indicators of Food Security Dimensions of Individuals	182
5.9 Nutritional Status of Index Children:	185
5.9.1 Weight For Height (WFH) Z-score	186
5.9.2 Weight For Age (WFA) Z-score.	187

5.9.3 Height For Age (HFA) Z-score.	187
5.9.4 Composite Index of Z-score.	188
5.10 Hypothesis Testing	191
CHAPTER VI: Summary, Conclusion and Policy Recommendations	193-204
6.1 Summary and Conclusion	193
6.2 Policy Recommendations.	201
6.3 Research Implications	204
Bibliography	205
Appendix	220-244

## LIST OF TABLES, FIGURES AND MAPS

Table : 3.1	Population Trend in Assam and India
Table: 3.2	Population Characteristics of Assam
Table : 3.3	Population of Children (0-6) years in India & Assam (2011 Census)
Table: 3.4	Number and Size of Household
Table : 3.5	Birth and Death Rates in Assam (in Percentage)
Table : 3.6	Literacy Rate in Assam
Table : 3.7	Gross State Domestic Product at Factor Cost at Constant (2004-05) Prices
Table : 3.8	Per Capita Income of Assam and India (in Rupees)
Table : 3.9	Trend of Growth of Agricultural Sector
Table : 3.10	Trend of Production of Food grains in Assam
Table : 3.11	Food Requirement During the Twelfth Five Year Plan period in Assam
Table : 3.12	Demographic Feature of Cachar District
Table: 3.13	Population of Children (0-6) years in the District
Table : 3.14	Literacy Rate (2011 Census)
Table : 3.15	Percentage of Population Below Poverty Line (2011-12)
Table : 3.16	Target and Achievement of Crops in Cachar
Table : 3.17	Food Crops Production in the District
Table : 3.18	Issue of Food Grains

- Table: 3.19 Employment Growth Scenario
- Table: 3.20 Physical Achievement of MGNREGA (2013-14)
- Table 3.21 Distribution of Workers by Category of Economic Activities
- Table: 3.22 Credit Deposit Ratio
- Table: 3.23 Credit Deposit Growth in Scheduled Commercial Banks
- Table: 3.24 Amenities Available (in percent)
- Table: 3.25 Target and Achievement of NBA in Assam
- Table: 3.26 No. of Habitations / Villages Providing with Drinking Water Facilities
- Table: 3.27 Percentage of Children Under Three Years
- Table: 3.28 Child Health Indicator (2013)
- Table: 3.29 Nutritional Status of Adults (in Assam)
- Table- 4.1 Area Under Survey (Rural) For The Study
- Table: 4.2 Area Under Survey (Urban) For The Study
- TABLE 4.3 Municipal Ward-Wise Distribution Of Sample Households (Urban)
- TABLE 4.3(A) Municipal Ward-Wise Distribution Of Sample Households (Urban)
- Table: 4.4 Developments Block-Wise Distribution Of Sample Households (Rural)
- Table 5.1: Municipal Ward wise Distribution
- Table 5.2: Development Block Wise Distribution
- Table: 5.3: Rural- Urban Distribution Of Sample Households And Index Children

Table: 5.4: Selected Demographic Characteristics of sample households.

Table: 5.5: Occupation wise distribution

Table: 5.6: Income Group wise Distribution (yearly)

Table: 5.7: Descriptive Statistics

Table: 5.8: Savings Profile of Sample Households

Table: 5.9: Profile of Sample Adults.

Table: 5.10: Profile of Sample Index Child

Table: 5.11 Distribution of Households on the Basis of DI for food availability.

Table: 5.12 Distribution of Households on the Basis of Percentage Expenditure on Food.

Table: 5.13 Distribution of Household on the basis of DI Food Accessibility

Table: 5.14 Distribution of Household of Food Utilization on the basis of DI

Table: 5.15 Food Security Status of Sample Households

Table: 5.16 Indicators of Nutrition security of Household

Table: 5.17 Nutritional Status of adult / BMI

Table: 5.18 Nutritional Status of Index Children According to WFH

Table: 5.19 Nutritional Status of Index Children According to WFA

Table: 5.20 Nutritional Status of Index Children According to HFA

Table: 5.21 Composite Index of z-score for Index Children

Fig 5.1 No. of Households

Fig 5.2	Percentage of Households
Fig 5.3	No. of Households
Fig. 5.4	Percentage of Households
Fig 5.5	Savings Profile of Sample Households
Fig. 5.6	Nos. of Adults in the study Area.
Fig 5.7	Average Height of Adults
Fig 5.8	Average Weight of Adults
Fig 5.9	Average Income of Adults
Fig 5.10	Average Education of Adults in Number of year
Fig 5.11	No. of Index Child in the Study Area
Fig 5.12	Average Height of Index Child
Fig. 5.13	No. of Index Children Attending School or not.
Fig 5.14	Average Weight of Index Child
Fig 5.15	Food Security Status of Sample Households
Fig 5.16	Nutritional Status of Adult (BMI)
Fig 5.17	Percentage Distribution of Adult (BMI)
Fig 5.18	No. of Index Child
Map:	Geographical Map of Cachar District

## **ABBREVIATIONS**

AIDS Acquired Immune Deficiency Syndrome

AD Anno Domini

AEU Adult Equivalent Unit.

APL Above Poverty Line

BMI- Body Mass Index.

BTC Bodoland Territorial Council.

BPL Below Poverty Line

CSWI Community on Status of Women in India

CED Chronic Energy Dificiency

CD Community Development.

CPIAL Consumer Price Index for Agricultural Labour.

CPIIW Consumer Price Index for Industrial Worker.

DER Dietary Energy Requirement

DI Dimension Index

FCI Food Corporation of India

FAO Food and Agriculture Organization

FYP Five Year Plan

GDI Gender Development Index

GEM Gender Employment Measure

GDP Gross Domestic Product

GP Gram Panchayat

GSDP Gross State Domestic Product

HFA Height for Age

HIV Human Immunodeficiency Virus

HCR Head Count Ratio.

HCI Head Count Index.

HYV High Yielding Variety.

IDP Internally Displaced

IIDS Indian Institute of Dalit Students

ICDS Intregrated Child Development Scheme

ICMR Indian Council of Medical Research.

ICP International Comparison Programme

IFPRI International Food Policy Research Institute

IMR Infant Mortality Rate.

ICP International Comparison Programme

LGA Local Government Area

MMS Midday Meal Scheme

MEGS Maharashtra Employment Guarantee Scheme

MDG Millennium Development Goal.

MSSRF MS Swaminathan Research Foundation.

MGRS Multicentre Growth Reference Study

MGNREGA Mahatma Gandi National Rural Employment Guarantee Act.

NGO Non-government Organisation

NFHS National Family Health Survey

NER North East Region

NSSO National Sample Survey Organisation

NRHM National Rural Health Mission

NNMB National Nutrition Monitoring Bureau.

NIN National Institute of Nutrition.

NBM Nirmal Bharat Abhiyan

NFI Nutrition Foundation of India

NCHS National Centre for Health Statistics.

OBC Other Backward Classes

ONGC Oil and Natural Gas Commission.

OECD Organization for Economic Co-Operation and Development .

PDS Public Distribution System

PPP Purchasing Power Parity

RDA Recommended Dietary Allowances.

SPFS Special Programme for Food Security.

SC Schedule Caste

ST Schedule Tribe.

SBM Swachh Bharat Mission

SDG Sustainable Development Goal

TEP Total Factor Productivity

USDA United States Department of Agriculture

UNICEF United Nations International Children's Education and Fund

UN United Nations.

USAID United State Agency for International Development

WMS Welfare Monitoring Survey

WFA Weight for Age.

WFH Weight for Height

WHO World Health Organization.