

**URBAN HOUSING POVERTY : STATUS AND DIMENSIONS IN
NORTH-EAST INDIA**

**A THESIS SUBMITTED IN PARTIAL FULFILMENT OF THE
REQUIREMENTS FOR THE DEGREE OF DOCTOR OF
PHILOSOPHY**

TUANMUANSANGA

MZU REGISTRATION NO.: 3131 of 2010-11

Ph.D. REGISTRATION NO.: MZU/Ph.D./1168 of 26.10.2018



**DEPARTMENT OF ECONOMICS
SCHOOL OF ECONOMICS, MANAGEMENT
& INFORMATION SCIENCES
JULY, 2025**

**URBAN HOUSING POVERTY : STATUS AND DIMENSIONS IN
NORTH-EAST INDIA**

BY

TUANMUANSANGA

DEPARTMENT OF ECONOMICS

SUPERVISOR

Prof. JAMES L.T. THANGA

Submitted

**In partial fulfillment of the requirement of the Degree of Doctor of
Philosophy in Economics of Mizoram University, Aizawl.**

MIZORAM UNIVERSITY
DEPARTMENT OF ECONOMICS

James L.T. Thanga

Professor

Department of Economics

Email: jametea@yahoo.com

Mizoram University

Tanhril, Aizawl

Mizoram – 796001

Ph-9436366060/ 2317504

Dated _____

CERTIFICATE

This is to certify that the thesis entitled “**Urban Housing Poverty : Status and Dimensions in North-East India**” by Tuanmuansanga has been written under my supervision. The thesis is the result of his investigation into the subject. Neither the thesis as a whole nor any part of it was ever submitted to any other University for any research degree.

(Prof. JAMES L.T. THANGA)

Supervisor

DECLARATION
MIZORAM UNIVERSITY
JULY, 2025

I **TUANMUANSANGA**, hereby declare that the subject matter of this thesis is the record of work done by me, that the contents of this thesis did not form basis of the award of any previous degree to me or to the best of my knowledge to anybody else, and that the thesis has not been submitted by me for any research degree in any other University/ Institute.

This is being submitted to the Mizoram University for the **Degree of Doctor of Philosophy in Economics.**

(TUANMUANSANGA)

Candidate

(PROF. GIRIBABU. M)

Head of Department

(Prof. JAMES L.T. THANGA)

Supervisor

ACKNOWLEDGEMENTS

First and foremost, I would like to express my gratitude to my supervisor Prof. James L.T. Thanga for his continuous support, guidance, and patience throughout this journey. I wholeheartedly acknowledge that this research could not have been completed without his expertise and mentorship. I sincerely appreciate and feel fortunate to have conducted my research under his supervision.

I am deeply thankful to the faculty and staff of the Department of Economics for the opportunity and support during this study. Without their assistance, this research would not have been possible.

I am also grateful to my friends and seniors in the Department of Economics, Government Hrangbana College- Dr. Rohmingliani, Laldinpuii, Dr. C. Lalthantluangi, Dr. Doumuanlal and PC Lalremtlunga for their support as well as their constant encouragement.

My heartfelt thanks go to my family for their unwavering support, motivation and prayers. They have been a continuous source of strength and inspiration.

Above all, I thank the Almighty God for his blessings and protection throughout this journey

Date:

(TUANMUANSANGA)

CONTENTS

Title	Page Number
Certificate	i
Declaration	ii
Acknowledgement	iii
Contents	iv
List of Tables	viii
List of Figures	xii
List of Abbreviations	xiii
 CHAPTER 1:	 1-21
INTRODUCTION	
1.1 Introduction	1
1.2 Urbanization and the Housing Problem: The Global Context	2
1.3 Overview of Urbanization and Urban Poverty in India	3
1.4 Housing Shortages and Incidence of Housing Deprivation in Urban India and North-East India	5
1.5. Housing Policy Framework in India	7
1.5.1. Regulatory and institutional frameworks	8
1.5.2. Key policy initiatives and schemes	8
1.6. Conceptual Frameworks	10
1.7. Profile of North-East India	12
1.8. Significance of the Study	13
1.9. Statement of the problem	14
1.10. Objectives of the Study	15
1.11 Hypotheses	16
1.12 Methodology	16
1.12.1. Scope of the Study	16
1.12.2. Data Sources	17
1.12.3. Analytical Framework	18
1.13 Scheme of Chapterisation	21

CHAPTER 2:	REVIEW OF LITERATURE	22-39
2.1	Introduction	22
2.2	Quality of Housing and Access to Services	23
2.3	Issues of Affordability	24
2.4	Housing Poverty and Inequality	26
2.5	Housing Poverty as an Alternative Measure of Poverty	27
2.6	Government Policy Responses to the Problem of Housing Poverty	30
2.7	Rental Housing and the Issue of Tenure Security	32
2.8	The Need for Housing Finance	34
2.9.	Data and Analytical Methods on Housing Poverty	36
2.10.	Concluding Notes	37
CHAPTER 3:	AN OVERVIEW OF URBAN HOUSING CONDITION IN NORTH-EAST INDIA	40-66
3.1	Introduction	40
3.2	Housing Shortages	41
3.3	Urban Housing Profile in India as per Census 2011	43
3.3.1	Number of Total Census Houses in North-East India.	43
3.3.2	Distribution of Urban Census Houses by Material of Structure	44
3.3.3	Distribution of Urban Census Houses by Habitable Conditions	47
3.3.4.	Distribution of Urban Census Household by Tenurial Status	48
3.3.5.	Distribution of Urban Census Households by Access to Drinking Water	49
3.3.6.	Distribution of Urban Census Households by Access to Latrine	51
3.3.7.	Distribution of Urban Census Households by Access to Bathroom	52
3.4.	Housing Conditions as given in National Sample Survey Reports	53
3.4.1	Percentage Distribution of Urban Households by Tenurial Status	53
3.4.2	Percentage Distribution of Urban Households by Types of Structure	55
3.4.3	Percentage distribution of urban households by Condition of Structure	56

3.4.4	Percentage Distribution of Urban Household by Access to Drinking Water	57
3.4.5	Percentage Distribution of Urban Households by Access to Latrine	60
3.4.6.	Percentage Distribution of Urban Households by Access to Bathroom	61
3.4.7.	Comparison of North-East Averages-All India data of selected Housing Characteristics.	63
3.5.	Conclusion	65
CHAPTER 4: HOUSING POVERTY AND ITS MEASURES IN NORTH-EAST INDIA		67-112
4.1	Introduction	67
4.2	Measurement of Housing Poverty	68
4.2.1.	Congestion	69
4.2.2.	Housing Structure	70
4.2.3.	Drinking Water and Sanitation	71
4.2.4.	Sources of Energy	74
4.2.5.	Tenurial Security	76
4.2.6.	Affordability	77
4.3	Results and Discussion	78
4.3.1.	The Problem of Congestion	78
4.3.2.	Structure Adequacy	81
4.3.3.	Drinking Water and Sanitation	88
4.3.4.	Sources of Energy	99
4.3.5.	Tenure Security	101
4.3.6.	Affordability	103
4.4	Measuring Overall Housing Deprivation or Poverty	104
4.5	Estimates of Housing Poverty Incidence	109
4.6	Conclusion	111

CHAPTER 5: FACETS AND FACTORS OF URBAN HOUSING POVERTY 113-150

5.1	Introduction	113
5.2	Socio-economic Dimensions of Housing Poverty	114
5.2.1.	Demography	114
5.2.2.	Religion and Social Groups- and Housing Poverty	118
5.2.3.	Education and Housing Poverty	121
5.2.4.	Land Ownership Status and Housing Poverty	123
5.2.5.	Income Distribution and Housing Poverty	124
5.3	Employment and Occupation of the Housing Poor	126
5.4.	Access of Government Schemes by the Housing Poor	132
5.5.	Analysis of Factors affecting Housing Poverty	139
5.6.	Income-based Poverty and Housing Poverty	143
5.7.	Inequality in access to Adequate Housing	146
5.8.	Conclusion	149

CHAPTER 6: SUMMARY OF FINDINGS AND CONCLUSION 151-163

6.1	Introduction	151
6.2	Major Findings	152
6.3	Conclusion	161
6.4.	Recommendations	162

BIBLIOGRAPHY 164-173

LIST OF TABLES

Table No.	Title	Page No.
Table-1.1	Percentage and number of urban poor (Tendulkar Methodology)	4
Table-1.2	Urbanization in north-east India, 2011 & number and percentage of urban poverty, 2011-12	5
Table-1.3	Estimated urban housing shortage in India – 2012	6
Table-1.4	Condition of Housing in North-East India, 2011	7
Table-1.5	Basic Profiles of North-East India	13
Table-1.6	Indices and variables	18
Table-3.1	Distribution of urban housing shortage among different Socio-Economic Group in India	41
Table-3.2	Estimation of urban housing shortages in North-East India	42
Table-3.3	Number of census houses in North-East India	44
Table-3.4	Percentage Distribution of Urban Census Houses by Material (Roof, Wall and Floor)	46
Table-3.5	Percentage distribution of urban census houses by Habitable Condition	47
Table-3.6	Percentage Distribution of urban census houses by Tenorial Status	48
Table-3.7	Percentage Distribution of urban census houses by Source & Location of Drinking Water	50
Table-3.8	Percentage Distribution of urban census houses by Types of Latrines and Access to Latrine Facility	51
Table-3.9	Percentage distribution of urban census houses by Access to Bathroom Facility	52
Table-3.10	Percentage distribution of urban household by Tenorial Status	54
Table-3.11	Percentage distribution of urban households by Types of Structures	55

Table-3.12	Percentage distribution of urban households by Condition of Structure & Ventilation	57
Table-3.13	Percentage distribution of urban households by Source of Drinking Water & Access to Drinking Water	58
Table-3.14	Percentage distribution of urban households by Access to Principal Source of Drinking Water	59
Table-3.15	Percentage distribution of urban household by Access to Latrine Facilities	61
Table-3.16	Percentage distribution of urban households by Access to Bathroom Facility	62
Table-3.17	Selected Housing Characteristics-State Wise	64
Table-4.1	Summary of housing congestion indicator and adopted criteria	70
Table-4.2	Summary of housing structure indicators and adopted criteria	71
Table-4.3	Summary of drinking water and sanitation indicators and adopted criteria	73
Table-4.4	Summary of sources of energy indicators and adopted criteria	75
Table-4.5	Tenurial security indicator and adopted criteria	76
Table-4.6	Affordability indicators and adopted criteria	78
Table-4.7	Area sufficiency/per capita floor area of urban household in north-east India	79
Table-4.8	Average Floor area of the house in urban areas of North-East India (Square feet)	80
Table-4.9	Distribution of urban household by housing material-roof status	81
Table-4.10	Distribution of urban household by housing material- wall status	82
Table-4.11	Distribution of urban household by housing material- floor status	83

Table-4.12	Distribution of urban household by access to kitchen in north-east India	84
Table-4.13	Distribution of urban household by condition of structure in north-east India	85
Table-4.14	Summary scores on housing adequacy indicators	86
Table-4.15	Estimates of the incidence of housing structure inadequacy in north-east India	88
Table-4.16	Access to improved sources of drinking water	89
Table-4.17	Sufficiency of drinking water	90
Table-4.18	Level access to principal source of drinking water	92
Table-4.19	Distribution of urban households by types of latrine use	93
Table-4.20	Distribution of urban households by access to latrine	94
Table-4.21	Distribution of urban households by access to bathroom	95
Table-4.22	Average scores in access to drinking water & sanitation	97
Table-4.23	Estimates of the Incidence of inadequacy in access to drinking water & sanitation	98
Table-4.24	Distribution of urban households in north-east India by access to electricity & cooking fuel	100
Table-4.25	Distribution of urban household on access to energy	101
Table-4.26	Distribution of urban households by security of tenure	102
Table-4.27	Distribution of urban household based on level of housing affordability	104
Table-4.28	Allocation of Weights to different Indicators	106
Table-4.29	Averages scores of aggregate housing indicator	108
Table-4.30	Estimates of the Incidence of housing poverty in urban north-east India	111
Table-5.1	Gender of head of household	114
Table-5.2	Marital status of head of household	115
Table-5.3	Age distribution of head of household	116
Table-5.4	Household size and housing poverty	118
Table-5.5	Distribution of head of household by social group	119

Table-5.6	Distribution of head of household by religion	120
Table-5.7	Distribution of head of household highest level of education	122
Table-5.8	Land ownership status of urban households	124
Table-5.9	Income distribution of urban household in north-east India	126
Table-5.10	Percentage distribution of head of household by usual principal activity (within housing poverty status)	128
Table-5.11	Percentage distribution of head of household by usual principal activity (within activity status)	130
Table-5.12	Percentage distribution of household based on industry of employment	131
Table-5.13	Percentage distribution of receiving benefit on housing scheme (ever)	134
Table-5.14	Percentage distribution of household receiving benefit on housing & related schemes (within 3 years)	137
Table-5.15	Types of schemes on which maximum benefit is received	138
Table-5.16	Determinants of housing poverty-Binary Logistic Regression	140
Table-5.17	Adjusted poverty line for 2017-18 (Tendulkar Methodology)	144
Table-5.18	Comparison between housing poverty and income-based poverty	145

LIST OF FIGURES

Figure No.	Title	Page No.
Figure-4.1	Distribution of Housing Deprivation Scores	109
Figure-5.1	Lorenz Curve on Housing Deprivation Index Scores	147
Figure-5.2	Gini Coefficient on Housing Deprivation Scores	148

LIST OF ABBREVIATIONS

AHI	Adequate Housing Index
AHP	Affordable Housing in Partnership
AMRUT	Atal Mission for Rejuvenation and Urban Transformation
BLC	Beneficiary-led Individual House Construction
BPL	Below Poverty Line
BSUP	Basic Services to the Poor
CAGR	Compound Annual Growth Rate
CDP	Comprehensive Development Plan
CEE	Central and Eastern European
CES	Consumer Expenditure Survey
CLSS	Credit Linked Subsidy Schemes
CSO	Central Statistical Organisation
EW	Equal Weight
EWS	Economically Weaker Section
GI	Galvanized Iron
HCES	Household Consumption and Expenditure Survey
HDI	Housing Deprivation Index
HQI	Housing Quality Index
HUDCO	Housing and Urban Development Corporation
IEA	International Energy Agency

IHSDP	Integrated Housing & Slum Development Programme
ISCO	International Standard Classification of Occupations
ISHUP	Interest Subsidy Scheme for Housing the Urban Poor
ISIC	International Standard Industrial Classification
ISSR	In-situ” Slum Redevelopment
JNNURM	Jawaharlal Nehru National Urban Renewal Mission
LIG	Low Income Group
LPG	Liquefied Petroleum Gas
MCA	Multiple Correspondence Analysis
MEV	Market or Exchange Value Approach
MIG	Middle Income Group
MoHUPA	Ministry of Housing and Urban Poverty Alleviation
MoSPI	Ministry of Statistics and Programme Implementation
MPCE	Monthly Per Capita Consumption Expenditure
NCO	National Classification of Occupation
NFHS	National Family Health Survey
NHB	National Housing Bank
NIC	National Industrial Classification
NICs	New Industrialised Countries
NSS	National Sample Survey
NSSO	National Sample Survey Organisation

NUHHP	National Urban Housing and Habitat Policy
OBCs	Other Backward Classes
OR	Odd Ratio
PMAY-U	Pradhan Mantri Awas Yojana–Urban
PMUY	Pradhan Mantri Ujjwala Yojana
PPP	Public Private Partnership
RAY	Rajiv Awas Yojana
SBM	Swachh Bharat Mission
SCs	Scheduled Castes
SD	Standard Deviation
SDI	Shelter Deprivation Index
STs	Scheduled Tribes
UIDSSMT	Urban Infrastructure Development Scheme for Small and Medium Towns
UIG	Urban Infrastructure & Governance
UN	United Nations
UPI	Unit Price Index
WHO	World Health Organisation

Chapter 1

INTRODUCTION

1.1. Introduction

Housing is one of the basic needs along with food and clothing. Access to quality housing determines human dignity, its living standard and level of socio-economic development, while ensuring safety, providing personal space, proper sanitation and health. Access to quality housing is a major indicator of a society's standard of living depicting overall socio-economic progress (Chen & Gao, 1993; Kurian & Thampuran, 2011). Without access to adequate housing, employment is difficult to secure and maintain, health is threatened, education is impeded, violence is more easily perpetrated, privacy is impaired, and social relationships are frequently strained, consequently affect human rights (Gomez & Thiele, 2005).

Article 25 of United Nations' Universal Declaration of Human Rights 1948 states that "Everyone has the right to a standard of living adequate for the health and well-being of himself and of his family, including food, clothing, housing and medical care...." However, due to a number of reasons, millions of people in the world are being denied of this right (UN Habitat, 2024). The largest and most prominent reason is poverty which is the cause and impact of housing deprivation. The problem of deprivation couples due to the increasing urbanization and rising costs. Urbanization is now a permanent and continuous trend with positive impact, but the biggest challenge would be providing the housing needs- including water, sanitation facilities of those living in cities and those who migrate to the cities (MoHUPA, 2015, United Nations, 2018).

According to The United Nations Committee on Economic, Social and Cultural Rights "adequate housing must provide more than four walls and a roof." A number of conditions such as security of tenure; availability of services, materials, facilities and infrastructure; affordability; habitability; cultural adequacy; etc., must be met before particular forms of shelter can be considered to constitute "adequate housing." These elements are just as fundamental as the basic supply and availability of housing.

Therefore, a housing or dwelling unit may be considered adequate if it is affordable even for weaker sections of the society, which guaranteed physical safety with available housing amenities, having basic public service nearby and even secure contract for renters. An individual or household without such shelter or housing which guarantee physical safety plus basic living amenities with basic public services may be consider as ‘housing poor’ (Purnachandrarao, 2017; Ayala & Navarro, 2023; Liu, et al., 2023).

Housing connects individual with its physical surroundings and social relations. The access to basic housing couple with other socio-economic status determine the degree of exclusion or participation in collective and civic life constitute basic urban dynamics. Due to this interconnection between housing access and social status, future approach to housing will largely determine urban prospects (World Cities Report, 2016).

1.2. Urbanization and the Housing Problem: The Global Context

The world witnessed significant and transformative change in the 21st Century where urbanization took centre-stage, changing economic frameworks including change in dominant occupation, global social structure though changes in social and physical infrastructure. Understanding its patterns and consequences is essential for steady growth, especially for India as it undergoes swift transformations from rural or agrarian economy to urban-service growth economy. More than half of the world’s population as of 2018 are living in urban areas (55 per cent, up from 30 per cent in 1950). It has been estimated that by the mid-century (2050), more than two thirds (68 per cent) of the world’s population will be living in urban areas. The global urban population is projected to grow by 2.5 billion between 2018 and 2050 (United Nations, 2018).

While urbanization offers opportunities for economic development, innovation, and improved living standards, serves as hubs for development, with younger, highly educated and skills, promising access to decent work, adequate housing and social

services, it also creates risks like rising inequality, environmental hazards like pollution and housing shortages (Tacoli, 2012). Though there are remarkable improvements in urban services in many countries, the number of people living in slum increases during the period of 2000 to 2014 and urban poor in the developed countries also faces increasing inequality in access to health and well-being (United Nations, 2018).

In case of housing, around 2.8 billion individuals globally encounter various forms of housing inadequacy, of which 1.1 billion persons live in informal settlements and slums, deprived of sufficient living conditions hindering their opportunities for development (UN Habitat, 2024). According to UN Habitat Annual Report, 2024, more than 318 million people in the world are homeless and 14 per cent of urban population lack drinking water and 2 out of 5 people lack safely managed sanitation service across the globe.

1.3. Overview of Urbanization and Urban Poverty in India

In recent years, India's economic structure has transitioned itself from predominantly agriculture to manufacturing/service-oriented economy (Steering Committee on Urbanization, 2011), along with this the rate of urbanization in India has been accelerated. India is now following the global trends of increasing urban population which saw steady growth over the last 60 years. India's urban population has grown from 27.8 per cent in 2001 to 31.2 per cent i.e., 377.10 million in 2011 (Census, 2011, Steering Committee on Urbanization, 2011), at a Compound Annual Growth Rate (CAGR) of 2.8 per cent over 2001-2011, over 2012-2050, the pace of urbanization is likely to increase at a CAGR of 2.1 percent (KMPG India & NAREDCO, 2014). It is estimated that urban growth contributed up to 73 per cent of increase in population by 2036 (NITI Aayog, 2021).

Along with the increase in urban population, poverty in urban areas has also increased. In 2004-05, 80.8 million people (i.e., 25.7 per cent of urban population), out of an estimated urban population of 309.5 million persons were below the poverty line, meaning their per capita monthly consumption was less than Rs. 538.6. From 2004-05

to 2011-12, urban poverty had declined in absolute and percentage term i.e., 53.1 million and 13.7 per cent (Planning Commission, 2011). The trend of change in urban poverty is presented in Table-1.1

**Table-1.1: Percentage and number of urban poor
(Tendulkar Methodology)**

Year	No. of urban poor (in millions)	Poverty Ratio (%)
1993-94	76.3	23.83
2004-05	80.7	26.78
2009-10	76.5	21.61
2011-12	53.1	19.68

Source: Planning Commission, 2014

It is evident from Table-1.1 that the number of populations living below poverty line in urban areas gradually decrease from 807.6 lakh in 2004-05 to 764.7 lakh in 2009 and to 531.2 lakh in 2011-12. In terms of percentage, the figure came down from 25.7 per cent to 20.9 per cent and further to 13.7 per cent during these periods.

The trend of urbanisation is also witnessed in north-east India as with increasing urbanization of the rest of the country, north-east's cities and urban centres also started to grow. According to 2011 Census, Assam, the largest state in terms of population turned out to be the least urbanized state in the region. Manipur, Nagaland and Tripura also show moderate level of urbanization, yet still under the national urbanization rate of 31.2 per cent. The only state where more than 50 per cent of population lives in urban areas is Mizoram with urbanization ratio of 51.51 per cent.

The incidence of urban poverty is spectacularly high in the state of Manipur where nearly 1/3rd of the of the urban population are classified as Below Poverty Line (BPL). The ratio is also high in the state of Arunachal Pradesh and Assam. Sikkim and Mizoram, on the contrary, show low level incidence of urban poverty.

Table-1.2: Urbanization in north-east India, 2011 & number and percentage of urban poverty, 2011-12

States	Total Population	Urban Population	Urban %	No. of Persons (BPL) in Lakhs*	Percentage of BPL*
Arunachal Pradesh	1382611	313466	22.67	0.7	20.33
Assam	31169272	4388756	14.04	9.2	20.49
Manipur	2721756	822132	30.21	2.8	32.59
Meghalaya	2964007	595036	20.08	0.6	9.26
Mizoram	1091014	561977	51.51	0.4	6.36
Nagaland	1980602	573741	28.97	1	16.48
Sikkim	607688	151726	24.97	0.1	3.66
Tripura	3671032	960981	26.18	0.8	7.42
North-East	45587982	8367815	18.36	15.6	

Source: Census, 2011, Planning Commission, 2014

*Tendulkar Methodology

1.4. Housing Shortages and Incidence of Housing Deprivation in Urban India and North-East India

As a result of growing urban population, the number of people residing in slums and squatter settlements has increased. Skyrocketing land price and increasing construction costs further marginalize the poor and economically disadvantaged group causing the problem of congestion and living in dilapidated dwelling unit among urban dwellers (KMPG India & NAREDCO, 2014). This ever-increasing population has also caused mismatch between supply and demand of the housing-causing price to rise and leading to shortage of housing supply (MoHUPA, 2015). Along with this growing population, rising middle income group, unavailability of land, lack of finance at reasonable rates, infrastructure and legal frameworks also deepens urban housing shortages (National Housing Bank, 2012).

According to Census 2011, the housing stock for urban areas stood at 78.48 million units for 78.86 million households. Though the gap between these household and housing stock is narrowing, actual housing shortage becomes more severe due to current housing stock being dilapidated and people living in congested dwelling. In

fact, 13.9 million households are homeless or living in slums in India (Census, 2011). In addition to this, 33.9 per cent of urban household lived in a rented or hired dwelling (NSS 76th Round, 2018). Planning Commission (2013) estimated that in 2012 housing shortage in urban areas was 18.78 million units as presented in Table-1.3 and an additional 23.33 units will be needed during 2012-17. It is also important to be noted here is that such housing shortage was more severe among Economically Backward Classes and Low-income Groups households (MoHUPA, 2015).

Table-1.3: Estimated urban housing shortage in India – 2012

Categories	As on 2012 (in Millions)
Households living in Non-Serviceable Katcha	0.99
Households living in Obsolescent Houses	2.27
Households living in Congested Houses requiring new houses	14.99
Households in Homeless condition	0.53
Total Urban Housing Shortage	18.78

Source: MoHUPA, 2013

In case of basic housing amenities like water, sanitation facilities like toilet, bathroom and electricity, the shortage or deficiency is huge. As per 76th Round of NSS (2018), while 97.4 per cent of urban households have access to improved source of drinking water, only 72 per cent received sufficient water from these sources, bathroom facility was not available for 8.8 per cent of urban household and 3.8 per cent of urban household have no toilet or latrine facility. In case of electricity, the access is nearly universal as 99.1 per cent of urban households have access to electricity. However, only 86.6 per cent have access to clean cooking fuel (LPG).

In case of north-east India, The Census, 2011 data reveal varied patterns in the condition of residential housing stock across its eight states of the north-eastern region as presented in Table-1.4

Table-1.4: Condition of Housing in North-East India, 2011

States	Residential Housing Stock	Conditions (%)		
		Good	Liveable	Dilapidated
Arunachal Pradesh	63290	58.34	38.75	2.87
Assam	972977	59.07	35.24	5.69
Manipur	166762	63.60	31.96	4.44
Meghalaya	114366	69.70	27.58	2.72
Mizoram	114397	73.75	24.75	1.50
Nagaland	112776	62.07	36.04	1.89
Sikkim	63290	58.34	38.75	2.87
Tripura	231422	63.83	31.95	4.22
Total	1839279	61.79	33.69	4.52

Source: Census, 2011

Overall, more than half of the housing stocks were classified as ‘good’ whereas 1/3rd are classified as ‘livable’ requiring minor repair and the other 4.52 per cent are ‘dilapidated’ requiring major repair or reconstruction. The percentage of housing units classified as goods is highest in the state of Mizoram and the percentage of housing units classified as dilapidated is highest in the state of Assam (5.69%). This data shows that deprivation is not only about quantity but also a quality issue.

The Report of Technical Group on Urban Housing Shortage (TG-12) estimated that in 2012 housing shortage in the eight states of North-East was 0.69 million unit due to congestion, dilapidated and deteriorating condition of the existing housing units and demand for new housing units. Of which Assam (1.47 % of the total national shortage) and Nagaland (1.11%) are the states with higher level of shortage.

1.5. Housing Policy Framework in India

Housing policy in India has evolved from a welfare-driven approach from the 1990s to a more market-enabled and demand-responsive framework in recent years. With an increasing need for state intervention due to rising affordability problem, the government has implemented several housing schemes and policy reforms to address

challenges of housing shortages, affordability, slums, and homelessness, specially directed at economically weaker sections (EWS) and low-income groups (LIGs).

1.5.1. Regulatory and Institutional Frameworks:

The first landmark legislation related to state intervention in the housing market was The Urban Land (Ceiling and Regulation) Act, 1976 (Repealed in 1999) which aimed to control land monopoly by enacting ceiling on land holding. The first National Housing Policy, announced in 1988 aimed to eradicate houselessness and improve the housing conditions which was revised in 1994 to suit the reforms initiated in 1991. Housing and Habitat Policy introduced in 1998 was another legislation introducing public-private partnership (PPP) to tackle housing problems. The National Urban Housing and Habitat Policy (NUHHP) formulated in 2007 with an objective of providing ‘affordable housing for all’ directly targeting vulnerable sections of society including Scheduled Castes/Tribes, Other Backward Classes, Minorities and the Urban Poor. Along with these, there are numerous land laws and building regulations enacted by states and municipalities across the country (MoHUPA, 2015).

An important institutional establishment in the field of housing would be the setting up of Housing and Urban Development Corporation (HUDCO) in 1970 and the establishment of The National Housing Bank (NHB) was set up as a wholly owned subsidiary of Reserve Bank of India (RBI), in 1988 under the National Housing Bank Act, 1987 to expand the base of housing finance. Along with these institutions, the Ministry of Housing and Urban Poverty Alleviation (MoHUPA) with its various departments and agencies implements various policy initiatives undertaken by the union government.

1.5.2. Key Policy Initiatives and Schemes:

The earlier housing policies and schemes, especially before 2014 are generally welfare oriented, subsidized, and supply driven public housing schemes generally targeting urban poor and slum dwellers (Biswas, 2024). The most popular scheme during these periods includes- Jawaharlal Nehru National Urban Renewal Mission

(JNNURM) launched in 2005 with its four components viz., Urban Infrastructure & Governance (UIG), Basic Services to the Poor (BSUP), Urban Infrastructure Development Scheme for Small and Medium Towns (UIDSSMT) and Integrated Housing & Slum Development Programme (IHSDP), Affordable Housing in Partnership (AHP) launched in 2009; Interest Subsidy Scheme for Housing the Urban Poor (ISHUP) launched in 2008-09; Rajiv Awas Yojana (RAY) announced on June 4, 2009 with a mission of ‘Slum-Free India’, etc. (NHB, 2012, MoHUPA, 2015).

On the other hand, post 2014 housing policies are mainly right-based, demand-driven, and emphasize inclusive and affordable housing for all. They are mission-based initiatives with broader inclusion. Pradhan Mantri Awas Yojana–Urban (PMAY-U), also known as ‘Housing for All’ introduced in 2015 was a key initiative to address the housing requirement of slum dwellers and people belonging to Economically Weaker Sections (EWS), Low-Income Groups (LIGs) and Middle-Income Groups (MIGs). The mission was implemented under four elements viz., Beneficiary-led Individual House Construction or Enhancement (BLC), Affordable Housing in Partnership with public or private sector (AHP), “In-situ” Slum Redevelopment (ISSR) and Credit Linked Subsidy Schemes (CLSS) (Ministry of Housing and Urban Affairs, Government of India, n.d.).

The schemes under Housing for All are launched in convergence with larger national urban missions including Swachh Bharat Mission launched in 2014, Atal Mission for Rejuvenation and Urban Transformation (AMRUT) launched in 2015, to improve urban infrastructure and sanitation facilities with a focus on basic services.

Along with these schemes dedicated to housing infrastructure, schemes related with amenities including gas connectivity for women from families belonging to below poverty line (Pradhan Mantri Ujjwala Yojana (PMUY) introduced in 2016); provision of electricity (Saubhagya Scheme- Pradhan Mantri Sahaj Bijli Har Ghar Yojana- introduced in 2017) aimed at achieving universal household electrification are the popular state funded programme in the field of energy.

1.6. Conceptual Framework

To enable better understanding of the analysis interpretation in this study, a brief definition and explanation of some of the commonly used concepts are given as follows:

Urban: Census of India 2011, defines of urban area as –

- i. Statutory towns or Notified Towns- all places with a municipality, corporation, cantonment board or notified town area committee, etc.
- ii. Census Town- all other places which satisfied the criteria of- a minimum population of 5,000; at least 75 per cent of the male main working population engaged in non-agricultural pursuits; and a density of population of at least 400 persons per sq. km.

Households: A group of persons normally living together and taking food from a common kitchen will constitute a household including temporary stay-aways but exclude temporary visitor and guests (Instructions to Field Staff, Vol. I: NSS 76th Round, page: A-11)

Poverty/Below Poverty Line: The national poverty line for the year 2011-12 using Tendulkar methodology is estimated at Rs. 816 per capita per month for rural and Rs. 1,000 per capita per month in urban areas. The poverty lines vary from state-state because of inter-state price differentials (Planning Commission, 2013).

Adequate housing: According to Office of the High Commissioner United Nations Human Rights, an adequate housing, other than four walls and a roof, must met the following seven criteria-

- i. security of tenure guaranteeing legal protection against forced evictions, harassment and other threats,
- ii. availability of services, materials, facilities and infrastructure such as safe drinking water, adequate sanitation, energy for cooking, etc,
- iii. affordability: housing which is not cost-threatens,
- iv. habitability - guarantee physical safety or provide adequate space, as well as protection against weather, threats to health and structural hazards,

- v. accessibility- ensuring specific needs of disadvantaged and marginalized groups are taken into accounts,
- vi. location- not cut off from employment opportunities, health-care services, schools, childcare centres and other social facilities, or not located in polluted or dangerous areas,
- vii. cultural adequacy which respects and takes into accounts the expression of cultural identity.

However, due to limitation of data, all these seven adequacy measures are not taken into accounts in the construction of Housing Deprivation Index. Meanwhile, due importance is given to these seven adequacy criteria while selecting indicators for the Index.

Economically Weaker Sections: EWS households are defined as households having an annual income up to Rs.3,00,000 (Rupees Three Lakhs) (MoHUPA, 2016).

Low-Income Groups (LIGs): LIG households are defined as households having an annual income between Rs.3,00,001 (Rupees Three Lakhs One) up to Rs.6,00,000 (Rupees Six Lakhs) (MoHUPA, 2016)

Housing poverty/housing deprivation: As of now, there is no universally accepted definition for the term ‘housing poverty’, and rather it is an emerging subject matter as frontier area of poverty studies. It may be defined as the inability on the part of individual, family or household to access quality housing unit which guaranteed his/their physical safety and enough living area with basic living amenities like water, sanitation facilities, cooking fuel, electricity, etc., and those individual or family may be classified as housing poor. *Housing poverty and housing deprivation are taken as synonymous and are used interchangeably in this study.*

In simple term, housing poverty refers to the condition wherein individuals or households are deprived of access to adequate, safe, secure, and affordable housing affecting not only shelter but also access to basic needs such as health, education, sanitation, and security (Purnachandrarao, 2017). Housing poverty is both a cause and consequence of broader socio-economic poverty, contributing to poor living conditions,

social exclusion, and entrenched inequality (Liu, et al., 2023, Ayala & Navarro, 2023)) It manifests in the form of overcrowding, informal settlements, insecure tenure, and lack of essential infrastructure and is linked to affordability, adequacy, and stability of housing (Dantzler, 2021).

1.7. Profile of North-East India

The north-eastern region of India, despite its abundant natural resources, remains one of the most underdeveloped regions of the country. It encounters numerous economic, social and political challenges, viz., inadequate infrastructure, particularly in terms of road, rail, and air connectivity, hilly and challenging terrains, high costs of living, lack of employment opportunities, reliance on subsistence agriculture, resource limitations, and extensive international borders, among others (NITI Aayog, 2021).

In terms of geographical area, the region covers 2.6 lakhs square kilometre, of which around 70 per cent of the landscape are hills. It accounts for about 7.98 per cent of the total geographical area of the country. Arunachal Pradesh is the largest in terms of geographical area. The region is home to 4,55,87,982 as per Census, 2011, of which 83,67,815 lives in urban areas. On average 18.36 per cent live in urban area with which way lower than the national urbanization rate of 31.16 per cent. Some geographical and demographic characteristics of the region is presented in Table-1.5

Characterised by rich diversity in customs, cultures, traditions and languages, the region is inhabited by various social, ethnic and linguistic groups (Ministry of Development of North-Eastern Region, 2008). These historical and cultural diversity, issues of local resources, migration, etc., along with the state of socio-economic development, resulted in fragile security situation and the region continuously experienced challenges of political violence, insurgencies, ethnic conflict, migration pressure and interstate disputes (NITI Aayog, 2021, Ministry of Home Affairs, North-East Division, n.d.).

Table-1.5: Basic Profiles of North-East India

States	Area (in Sq.km)	Total Population*	Urban %*	Density (Person per sq.km) *	Literacy Rate*	Sex Ratio*	Percentage of BPL#
Arunachal Pradesh	83,743	13,82,611	22.67	17	65.38	938	20.33
Assam	78,438	3,11,69,272	14.04	398	65.38	958	20.49
Manipur	22,327	27,21,756	30.21	115	79.21	992	32.59
Meghalaya	22,429	29,64,007	20.08	132	74.43	989	9.26
Mizoram	21,081	10,91,014	51.51	52	91.33	976	6.36
Nagaland	16,579	19,80,602	28.97	119	79.55	931	16.48
Sikkim	7,096	6,07,688	24.97	86	81.42	890	3.66
Tripura	10,486	36,71,032	26.18	350	87.22	960	7.42
North-East	2,62,179	4,55,87,982	18.36	-	74.48	-	-

Source: North-Eastern Council Secretariat-Basic Statistics of North-Eastern Region, 2015;
Planning Commission, 2014

*2011 (Reference Year)

#2011-12 (Tendulkar Methodology)

The economy of the north-east is largely agrarian with more than 70 per cent of its work force engaged in agriculture and related activities contributing 31.4 per cent of the domestic product. The manufacturing sector in the region has a small share contributing just over 18 per cent to the income, while the tertiary sector contributes around 50 per cent. The industries are mostly agro, mineral or forest-based (Ministry of Development of North-Eastern Region, 2008, NITI Aayog, 2021).

Despite all these drawbacks, with immense potential in natural resources, water resources, agriculture, and horticulture, the region is rapidly developing into a hub for sustainable tourism, medicinal plants, and a vibrant arts and handicraft sector (NITI Aayog, 2021).

1.8. Significance of the Study

Understanding the extent of housing poverty and deprivation of basic housing amenities is significant in economics because adequate housing is not only a basic

human need but also a key indicator of overall economic well-being and social equity. Housing poverty reflects multiple dimensions of deprivation, including inadequate physical structures and unequal access to essential services and infrastructure. Studying its extent and determining its contributing factors can help policymakers design targeted interventions to improve living standards, reduce urban and rural poverty, and promote inclusive growth.

Since poverty and poor housing always related to each other, any measures targeting poverty directly or indirectly affects the living condition of poor households. Improving income of household may lead to improving living conditions. There are some significant evident that there is strong relationship between these two. This study provides empirical evidence to the relationship between ‘income/expenditure-based poverty’ and ‘housing poverty’. It also attempts to show the real picture of poverty which the ‘income/expenditure-based poverty’ has fails to take into accounts.

The findings of this study provide inter-connection between housing poverty and inequality that access to housing and amenities is an important dimension that cannot be exclude measuring inequality.

1.9. Statement of the Problem

The north-eastern region of India which cover around 8 per cent of India’s geographical area is home to 3.77 per cent of the total population. The region shares over 5300 kms of international borders with several neighbouring countries, it is increasingly gaining significant strategic value. The region is home to at least 133 Scheduled Tribe groups out of a total of around 705 identified in India. The region experiences various political turmoil and issues including ethnic conflict, interstate dispute, etc. These demographic challenges, cultural diversity and political challenges further complicate the situation of poverty and deprivation (NITI Aayog, 2021). This complexity significantly impacts the region’s capacity of economic independence. Along with these, economic underdevelopment, and political marginalization, which limit both public and private investment in infrastructure further isolate the region.

Despite its strategic importance, the region continues to face prolonged challenges in urban housing, marked by inadequate housing, congestion, poor access to basic amenities, and rising informal settlements. Due to the increasing urbanization without matching progress in urban infrastructure or housing supply, a large proportion of the urban population lives in substandard housing, with limited access to basic services. To make it worse, informal settlement is rising as low-income households are systematically excluding low-income households from the ambit of formal housing market, denying them legal recognition and access to essential services. Limited coverage and inadequate implementation of national housing and urban infrastructure programmes and schemes, absence of accurate data, further aggravated the problems

Additionally, there is limited coverage of the region in academic and policy research focussing particularly on the housing sector. Consequently, there is limited understanding on the needs, scale, dimensions and determinant of housing disparity of the region. It is, therefore, an academic interest to explore the habitable conditions of the growing urban households in the region, showing the status, indicators, dimensions and establishing association between socio-economic status and access to quality housing. Therefore, this study is expected fill this gap and enhance the understanding of the region's complex economic constraints.

1.10. Objectives of the Study

1. To study the existing urban housing conditions and level of access to basic housing amenities.
2. To identify key indicators for measurement of housing poverty or housing deprivation
3. To construct housing deprivation index to complement the conventional measure of poverty and compare its estimates.
4. To explore various demographic and socio-economic factors associated with housing poverty among urban households

5. To study and compare the level of access to housing and basic housing amenities among different social groups or religious entities in the urban areas of north-east India.
6. To examine the significance of households' income on access to adequate housing
7. To examine the extent of inequality in access to adequate housing among urban population.

1.11. Hypotheses

1. There is significant relationship between housing poverty and income of the households
2. Ownership of land has significant impact on households' access to adequate housing. In other words, land ownership significantly help household move out of housing poverty in North-East India.

1.12. Methodology

1.12.1. Scope of the Study

The study focusses on assessing the different dimensions of housing incorporating not only physical structures, but also basic services needed for urban livelihood. Area-wise, the study is confined to the north-eastern region of India. North-east India comprising eight states viz., Assam, Arunachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, Tripura and Sikkim. The region is home to 4,55,87,982 as per Census, 2011, of which 83,67,815 lives in urban areas. On average 18.36 per cent live in urban area with which way lower than the national urbanization rate of 31.16 per cent.

The study adopts a multidimensional approach to examine housing poverty. It covers not only the physical aspects of housing but includes several indicators, such as congestion or overcrowding, access to safe drinking water, sanitation facilities,

availability of electricity, creating comparable quantitative measures to evaluate or assess housing access.

1.12.2. Data Sources

The study depends on both primary and secondary data collected from different sources and platforms.

(a) Primary data:

The study primarily depends upon the un-tabulated unit level data of 76th Round of National Sample Survey (NSS) data on *Drinking Water, Sanitation, Hygiene, and Housing Conditions* (2018). The survey collected detailed information relating to various aspects of housing conditions and availability of basic amenities including drinking water and sanitation facilities. The data were collected through a stratified multi-stage sampling system in urban India during July-December 2018 which covered a total of 43102 randomly selected urban households including 4776 in north-east India. These samples were collected following NSS complex sample design and estimation procedures. Since data was extracted from the micro-data and directly fit-in (merged and filtered) to suit the requirement of the study, the methods and procedure of sample design and estimation adopted by the NSSO have been considered the underlying designs of this study. The multipliers assigned to each household given in the NSS unit-level dataset have been used as weights in all the estimations. These multipliers are applied to each household in the sample to adjust for factors such as unequal probabilities of selection and non-response, ultimately providing a representative estimate of the entire population (Katy, et.al., 2013).

(b) Secondary data:

In addition to primary data, secondary data is collected from published sources such as Census data, reports of union and states government ministries and departments, other functional advisory or regulatory entities including NSS reports, economic

survey, National Family Health Survey, etc. Publication of international agency including United Nations, UN Habitat and real estate corporates also serve as an important source of information. Along with these various published research papers are the key sources of information especially for methodology and theoretical understanding and learning.

1.12.3. Analytical Framework

(a) Construction of Indices

To capture and examine the different aspects of housing deprivation in the region, 6 housing quality indicators are identified viz., structure adequacy or congestion, physical structure of the housing unit, availability of drinking water and sanitation facilities, access to clean energy, tenure security and affordability. After detailed analysis, the tenure security and affordability have to be dropped due to insufficient survey data. The final Housing Deprivation Index (HDI) was constructed using the remaining four indicators listed in Table 1.6.

Table – 1.6: Indices and variables

Sl.No	Index	Weight	Variables
1	Congestion	0.40	Floor Area per person (Sq.ft.)
2	Structure Adequacy	0.25	Roof status, Wall status, Floor status, kitchen, Structure condition, Ventilation types
3	Drinking Water & Sanitation	0.25	Principal source of drinking water, sufficiency of drinking water, access to water source, type of latrine, access to latrine, bathroom, and level of access to bathroom
4	Access to energy	0.10	Access to electricity, cooking fuel

Details on the construction of these indices, along with their internal consistencies, and allocation of weights to each index are all elaborated in detail in Chapter 4.

(b) Descriptive statistics

Simple descriptive statistics like mean, median, mode, standard deviation, percentages, etc., are used- to analyse the general trend, to summarise the basic

characteristics of housing, and housing condition of the region and states. These statistics are mainly presents in the form of tables- mostly in percentages- and figures whenever appropriate.

Further, taking into consideration the 25th percentile value of HDI and its value at one standard deviation below mean (i.e. *Mean – SD*), the cut-off point for adequate housing has been determined at 7.5 on the HDI score. This cut-off would indicate achieving 75% of the 10-point requirement for adequate housing, while below it would reflect a 25% shortfall from the full adequacy score. Households with score below 7.5 are classified as *housing poor or deprived*, falling short of the minimum adequacy score by at least 25%. This cutoff is applied uniformly across all states of northeastern India for determining housing poverty.

(c) Test statistics

To identify possible relationship between the variables and constructed index, statistical tests are conducted. Firstly, to test the level of interdependence or association between housing poverty and various socio-economic status of the urban households, Chi-Square test of independence is conducted. Secondly, to test the significance and nature of the relationship between the factors affecting housing poverty, the following binary logistic regression model has been estimated and significance of the coefficients examined:

$$\text{logit}(Y) = \ln\left(\frac{P(Y=1)}{1-P(Y=1)}\right) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_n X_n$$

which can be transformed into,

$$p = \frac{e^{\beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_n X_n}}{1 + e^{\beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_n X_n}} = \frac{1}{1 + e^{-(\beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_n X_n)}}$$

Where Y is the binary variable indicating household's housing poverty status, (i.e. 0 - housing poor / deprived & 1-adequate housing/not poor), and X₁, X₂, X₃ and

X₄ are the determining factors such as age, possession of land, level of education, and income distribution, respectively.

(d) Measures of Inequality

To enable understanding on the presence of inequality in access to adequate housing as given by HDI, Lorenz curve has been constructed for all 8 states of North-East India. To supplement the indicated inequality in the Lorenz curve, Gini Coefficients (or Gini Index) are calculated. It is understood that Gini Coefficient signifies the ratio of the area between the line of equality and the Lorenz Curve to the total area under the line of equality. Using Trapezoidal Rule of numerical integration to find out the area under the curve, the Gini Coefficient is calculated as follows:

$$Gini\ Coefficient = 1 - 2 \sum_{i=1}^n \frac{(y_{i-1} + y_i)}{2} \times (x_i - x_{i-1})$$

Where n is the number of points on the Lorenz Curve, i.e. (x_0, y_0) , (x_1, y_1) , ..., (x_n, y_n) , and, x_i and y_i are cumulative population share at point i and cumulative score share at point i . The Gini value ranges between 0 and 1 (or 0% to 100%). A Gini coefficient of 0 indicates perfect equality whereas a Gini of 1 indicates perfect inequality.

(e) Limitations of the Study

This study primarily depends on the unit level data of 76th Round of National Sample Survey on *Drinking Water, Sanitation, Hygiene, and Housing Conditions* (2018). Though the dataset provides extensive information, providing data for the whole country, covering all the relevant area in housing and basic service, there are certain unavoidable limitations. First, due to delayed released of the final report and data, the study, coupled with the outbreak of Covid-19 epidemic caused a serious setback consequently caused a delay in completion of this research. However, it is understood that housing, being a durable good, involves transactions that are slow and irregular due to high costs and market frictions (Malpezzi, 1990; Muth, 1960).

Therefore, it is believed that the given dataset adequately represents the present reality in most cases.

Second, a number of un-response or unanswered data for same variables, for instance, amount spent for construction, sources of finance, reason form movement, etc., causing improvisation had to be made in many cases. Despite these issues, a serious attempt has been made to produce credible research outcomes throughout this study.

1.13. Scheme of Chapterization

Chapter 1 – *Introduction*. Overall introduction, significance and statement of the problems, objectives, hypotheses, and methodology

Chapter 2 – *Review of Literature*. A brief outline of empirical literature on urban housing, poverty and related issues

Chapter 3 – *An overview of Urban Housing Conditions in North-East India*. A general patterns and profiles of urban housing conditions using available secondary sources like Population Census, 2011, NSS Survey Reports, and other technical survey reports

Chapter 4 – *Housing Poverty and Its Measurements in North-East India*. Different variables pertaining to adequate housing are elaborated and examined, and indices are constructed and analysed in this chapter

Chapter 5 – *Facets and Factors of Urban Housing Poverty – An Empirical Analysis*. Different factors affecting housing poverty, and inequality dimensions on access to adequate housing have been examined in this chapter.

Chapter 6 – *Summary of Findings and Conclusion*.

Bibliography

Chapter 2

REVIEW OF LITERATURE

2.1. Introduction

Poverty and ‘material deprivation’ of housing character are intertwined problems because housing acts both as a charge on income and as a source of income (Tunstall, 2013). Housing poverty or housing deprivation is a pressing global issue with far-reaching socio-economic implications including peoples’ health (WHO, 2018, Chen, 1993). The way to conceptualise housing poverty is by defining what constitutes adequate housing which covers basic amenities such as electricity, water supply, and mentally healthy, and economically and educationally productive” (D’Souza, 2019).

This chapter contains reviews of literature/research papers published in numerous journals relevant to the current study. It aims to provide an overview of the key concepts, causes, consequences, and policy responses related to housing poverty highlighting issues relating to poverty and housing showing different dimensions of the problems, different concepts, conclusions and different approaches to address the problems of housing poverty. These may be categorized as: quality of housing and access to services (Zainal, et.al., 2012; Gambo, et.al., 2012; Tacoli, 2012); affordability (Rao, 2021; Arnold, et. al 1989; Gopalan, 2015); housing poverty and inequality (Arundel, 2017; Tunstall, 2013; Saunders, 2016; Bradbury, et. al., 1986); housing poverty as an alternative measure of poverty (Chandrasekhar, et.al 2010; Littlewood, et.al 1997; Meng, et.al, 2006); government response to the problems of housing poverty (Hegedus, 2011; Mehta, 1987; D’Souza, 2019; Kumar, 2015; Sivam, 2002); rental housing and the issue of tenure security (Hulse, et. al., 2014; Harish, 2021; Gandhi, 2022; Kumar, 2001); the need for housing finance (Piyush, et, al., 2016; Kim, 1997; Buckley, et.al., 2016; Manoj 2024); and data and analytical methods to housing poverty (Kumar, 2015; Behr et. al., 2021; Fahey, 2014; Fiadzo, 2001)

These literatures/papers prove to be relevant and useful source of information to the present study

2.2. Quality of Housing and Access to Services

It is a well-known fact that housing is not only providing shelter but significantly affects a person's physical and mental health. Zainal, et.al., (2012) provides empirical evidence of positive relationship between housing conditions which includes conditions of dwellings, types of dwellings, housing tenure, surrounding environment and availability of amenities and quality of life. The quality of housing has a potentiality largely in promoting human welfare, social life, economic growth, health of community and various other aspects of human life (Kurian, 2011). Gambo, et.al., (2012) also stressed on this complex relationship between the housing condition and quality of life, that, those living in slum neighbourhood are paying varieties of hidden costs on health, poor quality of education, water, employment opportunity, etc which in turn adversely affect their economic productivity. Physical qualities of housing units and overcrowding problems are the main factor of housing disparities creating subsequent problems (Filali, 2012).

Tacoli (2012), asserted that accommodation even in inadequate and overcrowded housing takes up disproportionate part of poor's income. It is found that the poor who typically lived in the peripheral part of cities pay more for food, water and often have limited access to public service like schools, medical care and employment. They pay more for transportation for reaching to their workplaces, schools and clinics.

It is, therefore, necessary that beyond provision of adequate shelter, quality housing must provide enough space, separate rooms for different purposes and enough privacy, good climatic conditions such as enough sunlight, free passing of air and availability of water nearby, good drainage and sanitary facilities and thus must be so located and designed that they afford convenience, amenity, health and social life to community (Kurian, 2011). The availability of these extra amenities and residential quality has a significant impact in the livelihood as well as in the housing price (Kain, et.al., 1970).

There exist some variations or disparities in the level of access to amenities between rural and urban areas as level of access to such amenities are found to be higher

in cities shown by positive correlation between access to amenities and size of cities and towns (Bhagat, et.al, 2019). However, households in high-density cities are found to have lack characteristics needed for improve living standard (Coker, et.al., 2008, Adeyoe, 2015), overcrowding being the most popular problem.

One of the hindrances faces by the growing cities in India is access to quality housing and basic amenities. In most states, city dwellers living below the threshold level of residential deprivation are not very high, but the intensity of their deprivation is high (Deka, 2012).

2.3. Issues of Affordability

The issue of affordability in the housing market is a growing concern. Affordability not only means having a secure shelter, but housing can be affordable only if people are able to fulfil their non-housing need at an adequate level after paying for housing (Rao, 2021). The US Department of Housing and Urban Development defines housing affordability as “for a household to pay no more than 30% of its annual income on housing. Families who pay more than 30 per cent of their income for housing are considered cost burdened and may have difficulty affording necessities such as food, clothing, transportation and medical care.” (KMPG India & NAREDCO, 2014) The Ministry of Housing and Urban Poverty Alleviation defines housing affordability in terms of area for owners and not exceeding 30-40 per cent of gross monthly income of buyers for buyers and renters (MoHUPA, 2011).

Though basic housing has been considered as a basic thing for living, a number of people across the world are homeless and live in squatter. Growing concentration of people in urban areas has resulted in an increase in the number of people living in slums and squatter settlements. Around 1 billion people live in slum conditions today, lacking durable housing which fails to provide shelter from harmful elements; sufficient living space; security of tenure; sanitation (WHO, 2018). More than 13.9 million households with a total population of nearly 65.5 million people reside in slums (Census 2011) in India. Other factors that contribute to the growing affordability in the cities or urban

areas are population growth and transfer (migration), patterns of economic development, topographical and environmental factors, and ineffective government response to the housing problems - of which population growth, unemployment and low income has been the biggest contributors (Gauhan, 1977).

The issue of affordability becomes deeper with the increasing real estate price (Parrikar, 2018) with a mismatch between the growth of income and the price of real estate, housing becomes more unaffordable; subsequently leading to increased affordability problems for the lower income households (Arnold, et.al., 1989, Aziz, et.al., 2010). This has been confirmed by Rao (2021), that 96 per cent housing shortage in India is lying in EWS and LIG sectors that the cost of houses is much above the affordability limits of EWS and LIG.

The gap between the minimum required income to access standard housing is huge that to make standard housing available to these medium and low-income families, their income would have to increase a huge percentage or housing price would have to come down (Yang, et.al., 2008). Spending large proportion of their annual income left the low-income families little to tend their other households' needs like foods, medical bills, education (Joshua, et.al., 2014). For renters, increasing rent to income ratio affect the level of affordability as the ratio change with different accessibility, household characteristics, housing preference and housing market conditions (Ho & Chiu, 2002). Measuring the ability to pay for housing (rent for renters, social security receives, crowding conditions, etc for low-income families must be the some of the indicator for measuring affordability (Flood, 1993).

Addressing this issue of increasing problem of affordability is a challenge for every sovereign nation. To address this, critical issues such as land scarcity couple with the growing urban population, rising costs (of construction material and labour) and many regulatory constraints, needs to be overcome (Gopalan, 2015). To solve the problem on the supply side, policies like incentivizing through policy (extra floor space index, free sale areas and so on), schemes for slum redevelopment and rehabilitation, ensuring adequate availability of land, streamlining of land records, inclusion of mass housing zones in Comprehensive Development Plans (CDPs), encouragement to

private participation and partnership, are thereby suggested. In some instances, considering the growing needs and failed or inadequate government intervention to provide adequate housing needs, the participation of communities, private enterprises is encouraged, and self-help or informal housing is found to be more effective in providing low-cost housing. (Rodinneli, 1990; Balchin & Stewart, 2001).

2.4. Housing Poverty and Inequality

Housing equity can be considered as one component of the economic portfolio of households as it is the largest financial assets of the households. With minimal role of government in the housing sector, accumulating private housing equity has become a major means towards financial security that “home ownership is more equalizing sector of wealth accumulation” (Arundel, 2017). Housing is a major charge on income, source of income and makes a big contribution to material living conditions (Tunstall, 2013) implying deprived of housing means deprived of material well-being. Home ownership and housing affordability significantly affect distribution of wealth and income (Foster, 2013).

The increasing housing costs have contributed much to the increasing inequality and poverty (Tunstall, 2013) as higher housing costs represent a drain on the resources available to meet non-housing consumption needs and may result in poverty as (Saunders, 2016) found that housing cost leads to greater increases in poverty and inequality in Australia between 2003-04 and 2007-08. Bradbury, et.al., (1986) studies the impact of housing costs on poverty levels. This study argues that measuring “after housing poverty” enables some account to be taken of differential outlays on accommodation. All people require shelter, but some need to pay considerably more for it than others.

Pal, et. al., (2015) analyse the inequality in the access to housing and basic amenities in India for two time period 2008-09 and 2012 and find that economic and social background of the households are the major determinant of housing condition in both rural and urban India showing unequal distribution of housing with the rich having

higher access to better housing, The analysis also suggest that the access to basic amenities such as drinking water and sanitation, is highly correlated with the economic status of the households that the poor and socially deprived classes are having less access to these amenities.

The fact that home ownership increased strongly among higher income categories and remained stable or even decreased among low-income households proved that inequality increase if measure in terms of access to housing. Further, average housing costs increased more for low-income households than for high- income households widening the difference (Van Dam, et.al., 2003).

Therefore, it necessary to provide every household with adequate housing as access to it directly affects other human rights. Without access to adequate housing, securing and maintaining employment is difficult, access to health and education is threatened and impeded, privacy is undermined, and thereby affecting social relations (Gomez & Thiele, 2005).

2.5. Housing Poverty as an Alternative Measure of Poverty

Conventional measurements of poverty-income or expenditure base- though unchallenged in many aspects may, sometimes fail to reflect the magnitude of poverty and its root causes as Ha (2003) rightly stressed that measurements of poverty that are based solely on economic needs have been criticized as it failed to portray well-being accurately. Chandrasekhar, et. al., (2010) believed that urban poverty in India is likely to have been seriously underestimated since costs of meeting basic needs in housing have been ignored in the official poverty lines. Even the official figures given by Census of India underestimated the extent of housing problem by not recognizing more than 46 million people who are deprived of at least one parameter of the UN-Habitat (Patel, et.al., 2020).

Littlewood, et. al., (1997) also concluded that income alone does not provide an adequate proxy for the quality of housing outcomes and that multiple housing measures are more satisfactory than the use of any single indicator. Hutto, et. al., (2011) who

proposed a new ‘Supplementary Poverty Measure’ also founded that, by considering expenditures for shelter, food, clothing, and utilities, the rate of poverty is estimated to be higher than the rate calculated in the ‘traditional manner’.

Therefore, several researchers and writers proposed an alternative measure that reflect more accurate measure of poverty, taking into accounts broader range of human development indicator including non-economic dimensions such as housing poverty in the form of multidimensional poverty index, housing inadequacy index and many others, incorporating housing as key parameters. Salahuddin, et. al., (2012) calculate the incidence of multidimensional poverty in Pakistan using the Alkire-Foster Measure which takes into accounts indicators like living standard-housing, electricity, health, water and sanitation, education, etc. They concluded that these multidimensional poverty index present clearer picture on poverty than income-based poverty which they called a mere head count of poor. Other studies on multidimensional poverty factors into housing variables or housing characteristics viz., bath or shower facility, indoor flushing toilet, heating facilities, adequacy or material of roof, wall and floor shortage of space or congestion problem, ownership status, etc (Dewilde, 2004; Jamal, 2011).

The Housing Quality Index constructed by Fiadzo (2001) using data of Ghana and Meng, et. al., (2006) of Peru were also another attempted to quantify poverty through measuring the extent or magnitude of housing deprivation showing different angle of poverty. While Fiadzo’s used 13 indicators to measure structure quality, physical quality and accessibility of location and finds that clearly differentiated quality distribution between rural and urban areas that urban areas has a much Housing Quality Index Score with higher predicted incomes generally results in higher quality housing; that of Meng’s used 8 categories of indicators to measure housing quality which includes-physical sustainability; overcrowding; housing services; extra amenity; tenure, safety; accessibility and; housing price and finds that the poor economic conditions of the households make it difficult for them to participate in the formal housing market. Ahmad (2015) also tries to expand poverty definition from a mere income (or consumption expenditure) base to physical and social capital such as housing incorporating housing components such as floor area consumption, price per unit, etc and finds that demand for quality housing comes mainly with high income.

Chopra (2018) also constructed Shelter Deprivation Index is constructed using three approaches-Market or Exchange Value Approach (MEV), Equal Weights (EW) Approach and Multiple Correspondence Analysis Approach (MCA) comparing two periods-2008-08 and 2012 (of NSS). The intensity of housing poverty as per the index shows dismal picture of India's urban in terms of housing indicating slow progress in some areas of deprivation, no evident progress in some areas during the two period (2008 and 2012).

Slum Severity Index constructed by Patel, et. al., (2020) is another attempt to quantify the extent of multiple housing deprivations at the state and national levels and to estimate slum population considering 4 of the 5 UN Habitat (2002) criteria of housing deprivations. The study empirically demonstrated Census of India tends to underestimate the extent of the country's housing problems by reducing it to enumerating slum households clustered in larger slums. Its estimates suggested that official statistics have not recognized additional 46 million people who are deprived of at least one of the four parameters that the UN-Habitat definition recommends. Access to kitchen and clean cooking fuel remains a leading type of housing deprivation, with a third of urban residents in India suffering from it, sanitation and water are the second and third largest deprivations.

To introduced uniform methodology to measure housing inadequacy or deficit across emerging economies, the Adequate Housing Index (AHI) was developed (Behr et. al., 2021). The Index allows for comparability across countries, provides an assessment of the general state of housing within a given economy, and allows to raise awareness regarding the overall housing situation within a given country. It presents the Adequate Housing Index (AHI), which is based on seven adequacy parameters/dimensions that are held constant across all countries and provides a comparable assessment of adequate housing. The adequacy parameters were derived and harmonised from current household expenditure and consumption surveys in each country.

These housing poverty indexes or indicators may not be substitute for conventional measurements of poverty but may supplement or complement and give

alternative ways to assess the causes and impact of poverty. Mimura (2007), however, finds that although housing cost burden may play a part in economic hardship among low-income families, poverty status was found to better explain the economic hardship of low-income families. Also, Fahey (2004), by comparing the poverty rate before housing and After Housing Income which showed the inter-relationship between these poverty levels and the level of housing expenditure, home ownership and receipt of housing allowances by renters, found that home ownership generally do not have poverty reducing effect within the EU countries. These two findings indicates that measurement of poverty in terms of housing cost or housing conditions may not be considered to measure the economic well-being of any society, community or economy.

2.6. Government Policy Responses to the Problem of Housing Poverty

Questions may be raised to whether the government should actively involve in fully or partially funding the housing sector even though it is the general belief that affirmative government assistance largely solves urban housing problems and slum conditions. Ensuring proper function of the housing sector, building and financing the industry, urban development and redevelopment-on the supply side and providing affordable and adequate housing-on the demand side is a major responsibility of a government (Flood, 1993). Failure on the parts of government (in Central and Eastern European (CEE) countries) to ensure stable social housing coupled with increasing poverty, huge affordability issues arose as relatively high percentage of household faced difficulty in paying not only rent but also housing related bills-water charge, electricity, etc. Efficient welfare system to ensure narrowing the difference between ‘market rent and social rent’, tenure security, transparent allocation to solve the increasing issues of affordability (Hegedus, 2011).

Failure on the part of the state or government to actively participate in the housing supply may be the deepening cause of slum growth or urban housing problems in India. Mehta (1987), by examining the role of state or public participation in the housing supply process, concluded that with increasing commercialization of the housing sector and minimal participation from the government, the target population

for public housing programmes is not reached, and the urban poor do not have access to land or dwellings. In a more recent analysis, D'Souza (2019) believed that government housing policies such as the construction of affordable houses or the facilitation of such construction by providing financial assistance are not compatible with the character of urban poverty faced by the country and failed to address the phenomenon of slum proliferation.

The increasing housing poverty may be a result of numerous factors such as high demographic changes, unplanned urban growth and other macroeconomic factors. Mainardi (1994), by evaluating housing policies of South Africa, concluded that the problems can be solved by the upgrading the existing (housing) stocks supported by employment generation programme initiated by the government which could cover the increasing high cost of building materials, land and infrastructure in cities. Obeng-Odoom, et. al., (2011) also believed that the state holds the key to overcome the problem of inadequate housing and 'the pervasive problem of inadequately maintained housing and its attendant socioeconomic and health consequences.'

The importance of government policy intervention is believed to be more crucial in a socialist economy like erstwhile Soviet Union. Buckley, et. al., (1997) examined effects of socialist housing allocation on the distribution of income in Russia. They show that housing allocation had a progressive effect on the distribution of income and proved that considering or including imputed value of housing as income significantly reduced the increase in income inequality. Gilbert (2000) also believed that widespread poverty, along with inefficient government and lack of political will is the main problem of housing poverty and concluded that housing problem in Third World countries thus, is about politics and economic and require appropriate political and economic measures.

Kumar (2015), who overviewed the situation of the availability of housing amenities to the India's urban households, also argued that to ensure a better quality of life in urban India immediate attention is required and recent policies relating to these provisions need to be strengthened with inclusive and socio-spatial perspective and believed that it would help to deliver an equal access to basic housing amenities and

services. The failure of formal housing agencies - the public and the private sector to meet demand to supply at a cheaper price enough to reach the poor led to the emergence of an informal sector in almost all cities in India (Sivam, 2002). To provide basic housing infrastructure, institutional factors like well define constitutional rights and housing policies need to be integrated with financial system well-integrated with capital market and various level of government as the problem cannot be addressed in isolation. Both the housing and non-housing sector needs to participate effectively.

Therefore, government policy intervention in the housing sector is essential not only to solve the increasing housing problems and housing poverty but plays significant role in the process of economic growth in developing countries. Government policy on subsidy and regulation (on housing market) made housing supply highly inelastic however, contribute to volatility in housing prices (Kim, 2003). Policy changes in this sector have implications for overall growth of economy and macro policies can influence housing activity to a good extent that it provides good amount of income and employment and strong linkages with other sectors (Shah, 2019). Many countries acknowledge this, as Arku (2006) found that investment in housing sector have been key components of the economic development strategies in the new industrialized countries (NICs) in the Asia Pacific region. He stressed the economic significance of housing in the form of its contribution in economic growth, employment, its role in savings and domestic financial mobilization, and its health effects and then concluded that the housing sector needs to be given serious consideration in economic growth strategies.

2.7. Rental Housing and the Issue of Tenure Security

Rental housing is a vital and growing need for diverse group of people who relocates due to varieties of reasons-for work, education and, more importantly for low-income groups, daily wagers, and other informal migrants, rental housing is the only affordable option in the expensive urban housing market (Jha, 2020). In view of the of the expanding population, increasing housing supply is necessary, the growing demand

is not met by the supply of housing unit for a variety of reasons resulting in housing shortages (Sarkar, et.al., 2016).

Demand for rental housing comes from ‘stable permanent households’ (who are unable to buy), ‘transient households’ who moves to other regions for employment, education, etc., and other temporary migrants (Kaur, et.al., 2022). It is a platform that enables various households to access works and opportunity (Kaur, et.al., 2022, Harish, 2021). Access to adequate and reasonably priced rental housing or accommodation is essential for tenants who are unable or unwilling to become owners in their pursuit of urban livelihood, particularly for migrants looking to minimize housing costs and maximize remittances to balance their rural-urban obligations and responsibilities (Kumar, 2001).

One of the main issues relating to growing needs of rental housing is security of tenure as access and security are found to be the foremost priority from the point of view of prospective tenants (Harish, 2021). Security of tenure, simply, is the legal terms and conditions of lease agreement which comes with tenant’s ability to pay the rent as legal contract may not result in in security if the tenant cannot pay the rent (Hulse, et.al., 2014).

Access to tenure security addressed the issue of basic needs, leading to improved quality of life, reducing deprivation and enhances social status (Mahadevia, 2010). Housing insecurity- ‘residential limited capacity to determine how long they remain in their home’ (Morris, 2017) may lead to deteriorating problem of the housing unit as tenants usually do not care about the future asset value of the housing unit. In other circumstances study found that that cost of maintenance tends to decline more security (Iwata, 2008).

To ensure tenants get security by imposing stringent laws and regulations to protect eviction and rent control otherwise may change rental market dynamics adversely leading to inefficient outcome. Laws that could pose risks reduces landlords’ incentives to engage in rental contract (Gandhi, et.al., 2022). The private rental market in urban India is found to respond well to the demand of poor households providing tenure security and rent flexibility (Harish, 2021).

Speaking of the quality, tenant occupied housing unit are found to be lower in quantity (Iwata, 2008) and higher rent-income ratio (implying paying higher rent ensure higher quality unit) ensure higher quality of housing unit as the ratio change with change in accessibility and housing characteristics (Joshua, 2014). However, heavy spending on housing cost or rent adversely affects the standard of living as lesser proportion of income is left for foods, medical and other needs.

Provision of affordable housing has been the priority area for the Government of India. However, providing housing to all on ownership basis is difficult and may not be possible (Draft National Urban Rental Housing Policy, MoHUPA, 2015). Recognizing the growing urban housing shortage. National Urban Housing and Habitat Policy, 2007, intended to promote sustainable development of ownership as well as rental housing stock with a view to ensuring equitable supply of rental housing at affordable price to all sections of the society.

2.8. The Need for Housing Finance

In view of the escalating land price and increasing cost of construction, housing finance (formal or informal) plays a significant role in stimulating affordable housing and improving housing quality (Piyush, et. al, 2016). A well-functioning housing finance system is essential in expanding effective demand and improving housing conditions as poor performance of the sector has far reaching implications for the nations' economy (Kim, 1997). The increasing affordability problems and failure to deliver it ignited the needs for significant increases in investment in the sector (Buckley, et. al., 2016).

While there are numerous sources of finance available in the formal sector equipped with government policy for subsidies and regulations, there are some environmental, socio-economic and political factors that shape the characteristics of housing finance market (Gauhan, 1977) that limit the accessibility of the most vulnerable sections to access these sources. These factors include - bad status of credit score/worthiness, insufficient income, absence of collateral, low repayment capacity,

etc., on the demand side and the fear of inability to recover loans, high operating costs, risks of high defaulters, etc., on the supply side (Ebekozen, 2019, Manoj, 2024). Since most of the rules and system established and the requirement needed for accessing these formal sources of finance are mostly fit and created with the needs of middle income and above and, the poor or low-income groups were considered 'risky clients' with low repayment capacity (Smets, 1997).

Therefore, the provision of finance or raising funds required for housing become unaffordable for the masses in the formal market and the informal sector struggles to finance the needs of the low-income groups due to high costs. The problem of affordability is still a critical issue that needs to be addressed (Manoj, 2024).

One key solution to the increasing affordability problem in view of lack of underperforming formal financial market may be promoting participation of communities, private enterprises-thereby promoting self-help or informal housing as it is found effective in providing low-cost housing (Gauhan, 1977). However, the role of government cannot simply be written off since modern urban growth involves a number of regulations requiring environmental and safety measures in addition to skyrocketing prices of land and construction materials. Therefore, government finance is inevitable in many ways that special housing loans or assistance is needed (Ebekozen, 2019) and credit mechanisms based on incentives is essential (Smets, 1997). A well-functioning institution with provisions of constitutional right, inclusive housing policies, integrated financial market of both housing and non-housing is the need of the hour to solve the problem of affordability.

Therefore, provision of various incentives and subsidies for public housing, social housing etc. for the homeless poor are governmental priorities worldwide (Manoj, 2024). Many developing and emerging countries have seen sudden and extraordinary increases in housing subsidies worth billions of dollars (Buckley, et. al, 2016). India is not an exception to this increasing government investment in housing sector. It has formulated many policies for housing (which includes Jawaharlal Nehru National Urban Renewal Mission, Basic Services for the Urban Poor (BSUP), Rajiv Awas Yojana, and the latest Housing For All launched in 2015), bodies like the National

Housing Bank (NHB) and Housing & Urban Development Corporation (HUDCO) had been created to facilitate the implementation of such policies (Sarkar, et.al., 2016).

2.9. Data and Analytical Methods on Housing Poverty

The predominant source of data for the Indian researcher in housing studies has been reports of National Sample Survey (NSS) issued by National Sample Survey Office, Ministry of Statistics and Programme Implementation (MoSPI) Government of India. To estimate of differences in living standard and housing demand, Ahmad, 2015 used the 65th Round National Sample Survey (which was collected through stratified multi-stage sampling in urban India during 2008-09) on housing condition and amenities in India taking incorporating variables viz., floor area consumption, average monthly consumption expenditure, principal occupation, household size, etc. Pal, et.al., 2015 analyse and estimate access to housing and basic amenities by the Indian households using reports of two Rounds of the NSS, considering indicators of residential crowding and three variables to represent household's access to basic amenities. The residential crowding is measure in terms of per capita floor area in square feet. The variables representing basic amenities are drinking water, toilet facility and electricity.

Shelter Deprivation Index constructed by Chopra (2018) to measure the shelter deprivation across different sections was also based on NSS 2008 and NSS 2012 data. The Index is constructed by adopting three approaches-Market or Exchange Value Approach (MEV), Equal Weights (EW) Approach and Multiple Correspondence Analysis Approach (MCA) based on three sets of weights using five variables-security of tenure, structural quality and durability of dwellings, access to safe water, access to sanitation facilities and, sufficient living area. The SDIs calculated range from 0 to 1, higher value showing higher intensity of shelter deprivation

Using variables like drinking water, sanitation facilities, electricity and drainage system Kumar (2015) also tried to show the gaps in the provision of housing amenities, for which targeted focus is required, and shows the urban spaces where attention is

required immediately. This research is also based on data of Housing Census data, Census of India (2001 and 2011) and Housing Conditions Round 1, along with the National Sample Survey (NSS) 1993 and 2008-09).

The Adequate Housing Index (AHI) was developed by Behr et.al, (2021) with an attempt to introduced uniform methodology to measure housing inadequacy or deficit across emerging economies. The Index is based on seven adequacy parameters/dimensions which includes access to improved water; access to improved sanitation; adequate living space; durable material and good structural quality; security of tenure; access to electricity; and access to clean cooking. It was constructed based on harmonized Household Consumption and Expenditure Survey (HCES) of different countries.

The Housing Quality Index constructed by Meng, et. al (2006) used disaggregate housing and housing data of census of population and dwellings (of Peru) and the housing quality indicators are rank and weight using Multi- Criteria Analysis (MCA). 8 categories of indicators to measure housing quality which includes-Physical Sustainability (roof, wall, floor material); Overcrowding; Housing Services; Extra Amenity; Tenure, Safety; Accessibility and Housing Price were incorporated in the Index.

Many of the research relating to housing in western or other countries are based on the government and other sources of data which includes European Community Household Panel Survey 1996 drawn from 14 European countries (Fahey, 2014), Core Welfare Indicator Questionnaire survey of Ghana (Fiadzo, 2001), House Condition Survey (Littlewood, et.al 1997), Russian's Longitudinal Monitoring Household Survey (Buckley, et.al, 1997)

2.10. Concluding Notes

By analysing literatures relating to housing and housing poverty from various perspectives and angles, it can be concluded that housing poverty is a multifaceted issue with profound implications for individuals, families, and society.

Housing is not only about providing shelter as it has a far more significance and implications to physical quality of life and mental health and has a positive relationship with the quality of life (Arku, 2006), level of education, employment, productivity of labour (Zainal, et.al, 2012; Gambo, et.al, 2012). Failure to secure quality housing costs the households- numbers of hidden cost. The increasing intensity of housing deprivation is the main hindrances to the growing cities and urban centres in India (Deka, 2019)

Ensuring that all individuals have access to safe, affordable, and adequate housing is a serious concern since a large number of population (around the world) still lacking basic housing facilities and living in slum condition (WHO, 2018). With the increasing cost of real estate, cost of construction, the problem of affordability is growing for low-income households (Parrikar, 2018; Arnold, 1989; Rao, 2021). To address to problem, challenges like land scarcity, growing urban population needs to be overcome (Gopalan, 2015)

As economic and social background is the determinant of housing condition, there exist unequal distribution in favour of the rich having higher access to better housing (Pal, et.al., 2015). Also, higher housing costs leads to increase poverty thereby widen inequality (Saunders, 2016; Bradbury, et.al, 1986)

To complement or supplement the traditional measurement of poverty or to introduce a new index measuring housing deprivation, a number of measures and Index have been constructed. The Housing Quality Index measuring housing quality with physical quality, sustainability, extra amenity, etc, ((Fiadzo, 2001; Meng, et.al., 2006), Shelter Deprivation Index (Chopra, 2018) and Slum Severity Index (Patel, et.al., 2020) are some examples.

Addressing housing poverty requires a comprehensive approach, involving policy interventions, economic reforms, and social initiatives to create a more equitable housing for all. It is believed that the state needs to play proactive role in delivering adequate housing through policy intervention (Mainardi, 1994; Obeng-Odoom, et.al., 2011; Buckley, et.al., 1997). Lack of policy intervention, political will on the part of the state is the main problem of housing poverty (Gilbert, 2000) causing the emergence of

the informal sector (Sivam & Karuppannan, 2002). In some case, the government intervention failed to address the core problem (D'Souza, 2019).

With the growing rental housing necessitated by urban expansions and escalating cost, security of tenure has been key issue that needs to be addressed (Sarkar, et.al., 2016). The demand for rental housing mostly comes from migrants-seeking employment, education and other urban facilities and low-income urban dwellers (Jha, 2020; Kaur, et.al., 2022). For them, tenure security is their priority which could reduce their deprivation and uplift their social status (Harish, 2021; Mahadevia, 2010).

Rising land prices and construction costs make housing finance vital for affordability and quality (Piyush, et. al., 2016). Formal systems, despite subsidies, often exclude low-income groups due to barriers like low repayment capacity and lack of collateral, while informal financing remains costly (Ebekozen, 2019; Manoj, 2024). Addressing affordability requires community participation, private enterprise, (Gauhan, 1977) and government support through incentives, subsidies, and inclusive policies (Ebekozen, 2019; Smets, 1997). Nations like India have responded with significant investments and programs, such as "Housing for All," supported by institutions like the National Housing Bank and HUDCO (Sarkar, et.al., 2016).

To conclude, from the above reviewed literature, it is clear that poverty, housing problems and deprivation are interrelated, also in some literature level of housing deprivation is adopted as a measure of multi-dimensional poverty Although there are number of literature and research papers related to housing, housing finance, housing quality, etc, housing studies related to poverty especially in case of India and India's north-east is not a very common area of research and even clear definition of housing poverty is still vague. Therefore, in view of the growing urbanization and the increasing housing problems in India and the North-East, there is a gap for empirical study.

Chapter 3

AN OVERVIEW OF URBAN HOUSING CONDITIONS IN NORTH-EAST INDIA

3.1 Introduction

India is a part of the global trend toward greater urbanization as over half of the world's population (around 55%) resides in towns and cities as on 2018 (United Nations, 2018). As Census, 2011, thirty-one percent of India's 1.21 billion people reside in urban areas (Census, 2011). Thus, real data on housing—including the stock of housing, investments in housing, housing conditions (structure, congestion, obsolescence), and the availability of basic facilities is considered essential to analyse the actual condition and the reality of the housing sector in the country. The most comprehensive sources of data for housing and its related characteristics in India are decennial population census and special periodical reports by National Sample Survey Organisation (NSSO). Significant housing characteristics that determine general standard of living viz., dwelling unit's types, tenurial status, types of structure, etc., as well as the types of amenities that the households have access to - such as drinking water, sanitary facilities, etc are obtained from these two sources.

Numbers of researchers (Kumar, 2015; Ahmad, 2015; Pal, et.al, 2015; Chopra, 2018) used these two important sources of data measuring or exploring various dimensions of housing research taking into account various housing characteristics into their analysis and estimation. Based on data of Housing Census data of 2001 and 2011, Kumar (2015) also tried to show the gaps in the provision of housing amenities, Shelter Deprivation Index constructed by (Chopra, 2018), to measure the shelter deprivation across different sections was also based on NSS 2008 and NSS 2012 data.

Attempt is made in this chapter to understand the general status of housing in urban areas of the eight (8) states of North-East India with comparison against the All-India data whenever appropriate. Census-2011, being the latest population census, is used to analyse the general housing conditions. Exclusive analysis on housing

characteristics and basic amenities is based on the report of 76th Round of National Sample Survey entitled “Drinking Water, Sanitation, Hygiene and Housing Condition in India 2017-18”. This chapter presents only the general urban housing profiles among the states of north-eastern India using the final reports of Population Census, 2011; National Family Health Survey; and NSS 76th Round on Drinking Water, Sanitation, Hygiene and Housing Conditions; then, detailed analysis on the housing deprivation or poverty and other dimensions will be made in the next two chapters.

3.2. Housing Shortages

Housing shortage may be defined in two ways: *need based*- where estimation is made to measure “shortfall from certain normative standard of adequate accommodation,” and *demand based* where estimation is made to measure “Quantity and quality of housing which households will choose to occupy given their preferences and ability to pay (at given prices)” (Sarkar, et.al., 2016). The Report of Technical Group on Urban Housing Shortage (TG-12), using the need-based classification, estimated housing shortage considering three factors: obsolescence factor-the number of households living in unacceptable dwelling unit taking into accounts the ages of housing unit; congestion factor-households residing in unacceptable physical or social conditions considering overcrowding and houseless households.

Table-3.1: Distribution of urban housing shortage among different Socio-Economic Group in India

Category	Distribution of Housing Shortage as on 2012	
	No. (In Million)	%
Economically Weaker Section (EWS)	10.55	56.18
Low Income Group (LIG)	7.41	39.44
Middle Income Group and Above	0.82	4.38
Total	18.78	100

Source: Report of the Technical Group on Urban Housing Shortage (TG-12), 2012

Note: EWS and LIG can be defined as households having an annual income up to Rs 300000 and between Rs 300001 and Rs 600000 respectively (MoHUPA, 2016)

By using this method, accounting households living in a congested condition, housing units which are non-serviceable (obsolescence), and homeless households, the Report estimated that housing shortage at the time (2012) at 18.78 million. As indicated in Table-3.1, the shortage is much more severe among the Economically Weaker Section (EWS) and Low-Income Group (LIG) accounting more than 80 per cent of the shortage.

Taking into accounts factors such as houseless households, households living in congested dwelling units and obsolescence factor (bad houses aged less than 40 years and all houses aged more than 80 years), The Report of Technical Group on Urban Housing Shortage (TG-12), estimated that in 2012, housing shortage in the eight states of North-East was 0.69 million units

Table-3.2: Estimation of urban housing shortages in North-East India

State	Housing Shortage-2012 (in Million)
Arunachal Pradesh	0.03
Assam	0.28
Manipur	0.08
Meghalaya	0.03
Mizoram	0.02
Nagaland	0.21
Sikkim	0.01
Tripura	0.03
All India	18.78

Source: Report of the Technical Group on Urban Housing Shortage (TG-12), 2012

As presented in Table-3.2 Assam needs additional 2.8 lakh units to covered housing shortage in 2012. Nagaland (2.1 lakh units) and Manipur (8 thousand units) also faced significant housing shortages. At the same time, Sikkim is reported to have only 1000 units short of its housing needs.

There is a severe lack of basic housing amenities like electricity, water, and sanitary facilities like toilets and bathrooms. As per NSS 76th Round Report, about 90.9 per cent of the households in the urban areas had sufficient drinking water throughout

the year from the principal source; about 91.2 percent and 96.2 of the households in the urban areas had access to bathroom and access to latrine respectively.

In North-east India, out of 1839279 residential housing stock, 83115 units (4.5%) is in a dilapidated condition, were in needs of major repair. While a majority is in 'good' condition, still a large portion is classified as 'livable' and 'dilapidated' (Census, 2011).

3.3. Urban Housing Profile in India as per Census 2011

Of all the reports and research data available relating to housing and housing conditions in India, Decennial population census and periodical special data regularly collected by National Sample Survey Office appear to be the main source of data regarding housing. The decennial population census provides a wealth of information on housing. The number of homes, the purposes for which they are used, the type of construction, the number of rooms, and the state of the homes are all covered by censuses. Since Census 2011 data is the latest available, the housing conditions of north-east India is examined using these data.

3.3.1. Number of Total Census Houses in North-East India

Assam being the largest state in terms of geographical area and population recorded highest number of Total Census House in total (rural + urban i.e., 9074000) and Total Census Houses in urban areas (1485000) followed by Tripura (1076000 in totals and 318000 in urban) and Meghalaya (721000 in totals and 168000 in urban). Sikkim (169000), Mizoram (269000) and Arunachal Pradesh (376000) have recorded lowest totals reflecting smaller population and geographic size.

Table-3.3: Number of census houses in North-East India**('000')**

State	Total			Urban		
	Total Census Houses	Occupied (%)	Vacant (%)	Total Census Houses	Occupied (%)	Vacant (%)
Arunachal Pradesh	376	91.22	8.78	105	87.62	12.38
Assam	9074	96.8	3.21	1485	91.92	8.08
Manipur	610	98.69	1.31	212	97.64	2.36
Meghalaya	721	95.42	4.58	168	91.67	8.33
Mizoram	269	95.91	4.09	146	94.52	5.48
Nagaland	534	92.88	7.12	174	87.36	12.64
Sikkim	169	90.53	9.47	54	87.04	12.96
Tripura	1067	96.06	3.94	318	94.03	5.97
All India	330836	92.54	7.46	110140	89.93	10.07

Source: Census 2011 (Series H: Tables on Houses, Household Amenities & Assets)

Manipur shows the highest occupancy rate at 98.69 per cent, indicating nearly all houses are in use. Sikkim has the lowest occupancy rate (90.53%), with a relatively high vacancy rate (9.47%). The national occupancy rate is 92.54 per cent which most states exceed excluding Arunachal Pradesh (91.22%). In urban areas, occupancy rates are lower across all states compared to the total. Manipur still leads urban occupancy at 97.64 per cent, while Sikkim (12.96%), Nagaland (12.64%), and Arunachal Pradesh (12.38%) show higher urban vacancy rates, all above the national urban vacancy rate (10.07%).

3.3.2. Distribution of Urban Census Houses by Material of Structure

Housing quality and its durability, to some extent can be measured and expressed in terms of the material used in its construction. Census of India 2011 classified total census houses according to material used for roof, wall and floor. While certain percentage of house were constructed using katcha material viz., grass, bamboo, mud, wood and plastic material; some percentage used pucca or concrete materials such

as cement, brick, metal, tiles, etc; the remaining were constructed using a combination of these pucca and katcha materials which includes burnt brick, stone, asbestos sheet and other concrete material which can be classified as 'Semi Pucca'. The classification of roof, wall and floor of census houses according to material used is shown in Table-3.4.

For roofing, GI metal/Asbestos sheet/concrete is the most commonly used material as more than 80 per cent of urban census houses in all states of the north-east were constructed using these materials. Arunachal Pradesh (81.11%) is the state with lowest per cent using these materials which is still higher than the national percentage of 69.1 per cent. A significant per cent of roof material use are 'Grass/ Thatch/ Bamboo/ Wood/Mud/ plastic/polythene, etc.,' that at least 15 per cent of urban house in Arunachal Pradesh used these materials for roof. The least material for roof is Tiles (Handmade/Machine made) with almost all states using less than 1 per cent of these materials for Roof material.

Typical wall materials for house construction in urban northeast are 'GI/Metal /Asbestos Sheet/ Burnt Brick/ Concrete' and 'Grass/ Thatch/ Bamboo/ Wood/ Plastic/ Polythene/ Unburnt Brick'. For the state of Mizoram (86.6%) and Sikkim (85%), 'GI/ Metal/Asbestos Sheet/Burnt Brick/Concrete' are the most common materials which is higher than the All-India percentage (72.5%) and more than half of houses in Assam Meghalaya and Nagaland also used these materials for their wall. For Arunachal Pradesh (45.66%), Manipur (69.1%) and Tripura (49.2%) 'Grass/ Thatch/ Bamboo/ Wood/ Plastic/ Polythene/Unburnt Brick' are the most common wall materials.

In case of Floor material, 'Burnt Brick/Stone/Cement is the conventional material since all states except the states of Manipur and Mizoram where 60.9 per cent and 54.4 per cent of the urban houses used 'Mud/Wood/Bamboo' for Floor material respectively

Table-3.4: Percentage Distribution of Urban Census Houses by Material (Roof, Wall and Floor)

Roof Material									
Roof Material	Arunachal Pradesh	Assam	Manipur	Meghalaya	Mizoram	Nagaland	Sikkim	Tripura	All India
Grass/Thatch/Bamboo/Wood/Mud/Plastic/Polythene, etc,	15.56	3.91	4.85	3.33	5.07	6	2.17	2.02	4.96
Tiles (Handmade/Machine made)	1.1	0.96	0.97	0.27	0.22	0.67	0.22	0.34	12
Burnt Brick/Stone/Slate	3.33	2.8	4.37	3.33	1.45	4	2.17	3.7	13.5
GI/Metal/Asbestos Sheet/Concrete	81.11	92.2	90.3	91.7	93.5	89.3	97.8	94.3	69.1
Any other Material	1.11	0.22	0.15	1.33	0.07	0.33	0.07	0.34	0.45
Wall Material									
Grass/Thatch/Bamboo/Wood/Plastic/Polythene/Unburnt Brick	45.66	36.5	69.1	31.3	13	44.7	11.6	49.2	11.8
Stone not-pack with mortar	2.22	1.77	0.28	2	0.29	0.67	2.13	0.67	2.73
Stone pack with mortar	3.34	4.73	0.97	4.67	0.36	1.33	1.06	1.01	12.3
GI/Metal/Asbestos Sheet/Burnt Brick/Concrete	38.89	56.5	29	58.7	86.2	52.7	85	48.8	72.5
Any other material	8.89	0.55	0.48	3.33	0.72	1.33	0.25	0.34	0.62
Floor Material									
Mud/Wood/Bamboo	33.33	34.3	60.9	30.7	54.4	38.7	8.51	46.8	11.9
Burnt Brick/Stone/Cement	65.56	60.6	37.2	67.3	44.2	59.3	85.1	51.9	61.9
Mosaic/Floor Tiles	1.11	5.09	1.93	2	1.45	2	6.38	1.68	25.3
Any other material	0.11	0.15	0.1	0.2	0.14	0.07	0.06	0.07	0.94

Source: Census 2011 (Series H: Tables on Houses, Household Amenities & Assets)

3.3.3. Distribution of Urban Census Houses by Habitable Conditions.

As presented in in Table-3.5 the habitable condition of urban census houses were classified into Good – “houses which do not require any repair and are in fairly good condition”; Livable – which need minor repairs’; and, Dilapidated – “houses which show signs of decay or those breaking down and required major repairs and are far from being in condition that can be restored or repaired”, taking into account the construction material, its durability, availability of ventilation and other factors. These data shows assessed the economic status and disparities in the access to quality housing or standard of living.

Table-3.5: Percentage distribution of urban census houses by Habitable Condition

State	Total House occupied for Residence/Residential cum other use	Condition of Urban Houses		
		Good	Livable	Dilapidated
Arunachal Pradesh	66000	59.09	37.88	3.03
Assam	993000	58.91	35.45	5.64
Manipur	171000	63.74	32.16	4.10
Meghalaya	116000	69.82	27.59	2.59
Mizoram	116000	74.14	24.14	1.72
Nagaland	115000	62.61	35.65	1.74
Sikkim	36000	80.55	16.67	2.78
Tripura	225000	63.40	32.34	4.26
All India	78866000	68.44	28.68	2.88

Source: Census 2011 (Series H: Tables on Houses, Household Amenities & Assets)

Among the eight (8) states, Sikkim (80.55%) recorded the highest percentage of house classified as ‘Good’ followed by Mizoram (74.14%) and Meghalaya (69.82%) and registered higher percentage than the national average. Around 30 per cent of the house in all states are classified as ‘Livable’. In case of houses requiring major repaired or cannot be restored or repaired (classified as dilapidated), the state of Mizoram recorded the lowest percentage of only 1.72 per cent followed by Nagaland (1.74%) and Sikkim (2.78%). Therefore, in these category, Sikkim and Mizoram showed promising conditions.

3.3.4. Distribution of Urban Census Households by Tenurial Status

Tenurial security is part of an important indicator of affordable housing (Behr, et.al, 2021, Meng, et.al, 2006). Relating to Tenurial Status of Census Houses, the data presented in Table-3.6 show that while around 70 per cent of urban household live in their own dwelling unit (as indicated in the All-India data), high percentage of urban household lives in a rented unit in the north-east states. In some state, for example Arunachal Pradesh, home ownership is as low as 28 per cent and only one-third of the household in Sikkim lived in their own home while the rest lived and depended on rented house signifying increasing rising land and construction costs.

Table-3.6: Percentage Distribution of urban census houses by Tenurial Status

State	Owned	Rented	Any other
Arunachal Pradesh	28.79	56.06	13.64
Assam	64.05	30.92	5.04
Manipur	88.89	9.36	1.75
Meghalaya	43.97	50.86	5.17
Mizoram	48.28	49.14	2.59
Nagaland	40.87	54.78	4.35
Sikkim	33.33	63.89	2.78
Tripura	82.13	15.32	2.98
All India	69.16	27.55	3.3

Source: Census 2011 (Series H: Tables on Houses, Household Amenities & Assets)

One notable data given in the table (Table-3.6) is that in the state of Arunachal Pradesh, as high as 13.64 per cent houses were classified as ‘Any other’. One possible reason being higher percentage of household living in housing units owned by relatives which did not fall under the category of ‘owned’ or ‘rented’.

More than 50 per cent of urban households lived in a rented units in the states of Sikkim, Arunachal Pradesh, Nagaland, Meghalaya which along with Mizoram registered more household lives in a rented unit than owned dwelling unit. At the same time, percentage of households live in a rented unit is only 27 per cent for All-India

3.3.5. Distribution of Urban Census Households by Access to Drinking Water

Availability and access to drinking water has been one of the key indicators of human development and key factor to determine the standard of living. Accessing improved drinking water has the potential to improve level of sanitation affecting overall health of community and population (Kurian, 2011, Gambo, et.al, 2012). This section focusses on two aspects-sources of drinking water which includes- tap water, wells, hand pumps, other sources etc. and location and access of drinking water showing whether the households were able to access drinking water within their premises or away from the premises of their dwelling unit.

Relating to source of drinking water, out of the 8 states, four states-Sikkim (69.44%), Meghalaya (68.1%), Mizoram (62.07%) and Manipur (50.88) received drinking water from 'Tap water from improved source' and only three states-Sikkim, Meghalaya and Mizoram recorded higher percentage than the All-India figure i.e., 62.01. While significant percentage of households in states likes Arunachal Pradesh, Tripura and Assam secured their drinking water from this source, Nagaland was able to connect only 6.09 per cent of its households with this improved source of drinking water which is considered to be the most desirable and most safe source of drinking water. The state, however, was managed to provide 29.57 per cent of its households with 'Tap water from untreated source'.

The second most important source of drinking water in the region is 'Tap water from untreated source' that 37.88 per cent of households in Arunachal Pradesh and 22.22 per cent of households in Sikkim draws their drinking water. The different sources of drinking water in the region as per Census 2011 is presented in Table-3.7.

Table-3.7: Percentage Distribution of urban census houses by Source & Location of Drinking Water

Source of Drinking Water	Arunachal Pradesh	Assam	Manipur	Meghalaya	Mizoram	Nagaland	Sikkim	Tripura	All India
Tap Water from Treated Source	46.97	27.39	50.88	68.1	62.07	6.09	69.44	43.4	62.01
Tap Water from Untreated Sources	37.88	2.72	5.26	9.48	12.93	29.57	22.22	10.64	8.62
Covered Well	1.52	4.73	2.34	3.45	2.59	10.43	0.83	1.28	1.65
Uncovered Well	3.03	13.09	2.92	4.31	1.72	18.26	0.03	5.11	4.5
Handpump Tubewell Borehole	7.58	47.94	4.39	2.16	1.72	16.52	0.1	37.87	20.76
Spring River/Canal Tank/Pond/Lake	3.33	3.02	26.9	10.6	15.52	15.65	5.75	0.43	0.72
Other Sources	0.76	1.01	6.43	1.72	5.17	5.22	0.28	1.28	1.74
Access/Location of Drinking Water Source									
Within Premises	69.7	78.75	31.58	57.76	53.45	52.17	80.56	69.79	71.22
Near Premises	22.73	12.79	36.26	28.45	33.62	26.96	16.67	16.6	20.74
Away from Premises	7.58	8.36	32.16	13.79	12.93	20.87	5.56	13.62	8.05

Source: Census 2011 (Series H: Tables on Houses, Household Amenities & Assets)

A significant percentage of urban households received their drinking water from untreated sources i.e., 47.94 per cent in Assam, 16.52 per cent in Nagaland and 37.87 per cent in Tripura received their drinking water from ‘Handpump/Tubewell/Borehole’ source; and Manipur (26.9%), Mizoram (15.52%) and Nagaland (15.65%) received from ‘Spring/River/Canal/Tank/Pond/Lake’. More than 5 percent of households in Manipur, Mizoram and Nagaland received drinking water from ‘Other Sources’.

Mode of delivery or proximity of drinking water source is another factor that needs to be considered while assessing drinking water condition. As evidenced in Table-3.7, the state of Sikkim and Assam registered highest percentage of providing drinking water to ‘Within Premises’. All the states except Manipur (31.58%) were able to deliver drinking water to more than half of their urban dwellers within their premises. In

contrast, more than 30 per cent in the state of Manipur and more than 20 per cent in the state Nagaland draws their drinking water ‘Away from Premises’.

3.3.6. Distribution of Urban Census Households by Access to Latrine

Another key indicator of sanitation and hygiene facilities and improve living condition is access to latrine facilities. In this area, the region achieves significant improvement in compare with the national data.

Table-3.8: Percentage Distribution of urban census houses by Types of Latrines and Access to Latrine Facility

Types of Latrines	Arunachal Pradesh	Assam	Manipur	Meghalaya	Mizoram	Nagaland	Sikkim	Tripura	All India
Flush/Pour Flush Latrine connected to Piped-sewer system, Septic tank, other system	74.24	70.1	64.3	82.8	81	78.3	91.7	49.8	72.6
Pit Latrine with Slap/Ventilated improved pit	15.15	21	23.4	12.9	17.2	15.7	4.17	46.8	7.1
Service Latrine night soil removed by human, service by animal	0.3	0.91	2.57	0.34	0.03	0.14	0.02	0.17	0.49
Night Soil disposed into open drain	0.3	0.7	6.43	0.17	0.43	0.35	0.03	0.85	1.2
Access to Latrine									
Facility within Premises	89.39	93.7	96.5	95.7	98.3	94.8	94.4	97.9	81.4
Public Latrine	3.03	1.31	1.75	1.72	0.86	3.48	2.78	0.85	6.02
Open	6.06	5.04	2.34	2.59	0.86	2.61	2.78	1.28	12.6

Source: Census 2011 (Series H: Tables on Houses, Household Amenities & Assets)

By types, all most all household in the 8 states uses ‘Flush/Pour Flush Latrine connected to Piped sewer system, Septic tank, other system’ and ‘Pit Latrine with Slap/Ventilated improved pit’ and a larger percentage use the former one. Sikkim has recorded the highest percentage of households using ‘Flush/Pour Flush Latrine connected to Piped sewer system, Septic tank, other system’ followed by Meghalaya and Mizoram. The percentage of households having access to these types of latrine

facilities in Tripura is less than half or 50 per cent. In terms of access, all states recorded a higher percentage than the national average that more than 90 per cent of household have access to latrine facility within their premises in the states excluding Arunachal Pradesh (89.39%). Household with no access to latrine facility or ‘Open’ as classified in Table-3.8 is more than 5 per cent in two states-Arunachal Pradesh and Assam. Their percentage is still much lower in comparison with the All-India figure of 12.6 per cent.

3.3.7. Distribution of Urban Census Households by Access to Bathroom

Again, access to bathroom is another important determinant of housing quality and living standard affecting privacy, hygiene and community development. Table-3.9 shows state-wise percentage distribution of urban household by access to bathroom facility.

While in states like Sikkim, Mizoram and Nagaland, more than 80 per cent of urban households managed to access ‘Bathroom within the House’, in Manipur and Tripura less than half of the household were able to access bathroom within their dwelling unit. Percentage of bathroom of ‘Enclosure without Roof’ is also high in these two states.

Table-3.9: Percentage distribution of urban census houses by Access to Bathroom Facility

State	Bathroom within the House	Enclosure without Roof	No bathroom
Arunachal Pradesh	66.67	13.64	19.7
Assam	71.7	12.89	15.51
Manipur	48.54	16.96	34.5
Meghalaya	74.14	6.03	19.83
Mizoram	83.62	6.03	10.34
Nagaland	80.87	13.91	5.22
Sikkim	88.89	2.78	8.33
Tripura	46.38	17.45	36.17
All India	77.52	9.46	13.02

Source: Census 2011 (Series H: Tables on Houses, Household Amenities & Assets)

High percentage of households without bathroom is a matter of high concern that barring Nagaland and Sikkim, the percentage of household with 'No bathroom' is more than 10 per cent in all the states. For the state of Tripura and Manipur, the percentage is as high as 36.17 and 34.5 respectively.

3.4. Housing Conditions as given in National Sample Survey Reports

Since its founding, the NSSO has been collecting information on "Housing Conditions and other Amenities.". The latest, in the 76th Round survey, NSSO carried out a survey on 'Drinking Water, Sanitation, Hygiene and Housing Condition' during July - December 2018 covering the entire country. Prior to NSS 76th round, comprehensive surveys on housing condition carried out by NSSO in 28th round (October 1973 - June 1974), 44th round (July 1988 - June 1989), 49th round (January - June 1993), 58th round (July - December, 2002), 65th round (July 2008 - June 2009) and 69th round (July - December, 2012).

The surveys collected information about the households' dwelling units, which are significant factors in determining the general standard of living for the household members. These include the dwelling unit's type (viz. independent house, flat, etc.), its tenurial status (viz. owned, hired, no dwelling, etc.), its structure (viz. pucca, semi-pucca, katcha), its condition (viz. good, satisfactory, bad), its floor area, the age of the house owned by the household, etc., as well as the amenities that the households have access to, such as drinking water, sanitary facilities, etc.

3.4.1 Percentage Distribution of Urban Households by Tenurial Status

The tenurial status of household has been broadly classified into three-Owned, Employer Quarters and Hired and some household with no dwelling unit. The 'Owned' dwelling units are further categorised into 'freehold', and 'leasehold' and 'Hired' into with written contract or without written contract. The tenurial status of household in the 8 states is presented in Table-3.10

The percentage of households living in owned dwelling unit is highest in the state of Manipur where more than 90 per cent owner lived in their owned ‘freehold’ units with negligible per cent of employer quarters, followed by Tripura (86.6 % i.e., freehold + leasehold) and Mizoram (72.4%). The ownership rate is lowest in the state of Arunachal Pradesh (29.5 + 1.5=31%) followed by Sikkim (32.2%), and Meghalaya (46%).

For households living in hired unit, written contract is considered essential to prevent exploitation and unlawful practices and to create better relationship with the owners. In the state of Sikkim which shows highest percent of households living in hired dwellings, 12.3 per cent of households secured written contracts. There are 34.1 per cent of households living in hired dwellings without written contracts in the state of Arunachal Pradesh with 7 per cent lives in hired dwellings with written contracts. Meghalaya which registered more than 50 per cent of households living in hired dwelling recorded only 0.8 per cent secured written contract.

Table-3.10: Percentage distribution of urban household by Tenurial Status

State	Household with Dwelling Unit						Households with no dwelling Unit
	Owned		Employer Quarters	Hired		Others	
	Freehold	Leasehold		Hire with Written Contract	Hired without Written Contract		
Arunachal Pradesh	29.5	1.5	21	7	34.1	6.8	0.2
Assam	67.3	2.1	5.3	4.2	18.3	2.7	0
Manipur	93.11	0	0.2	1.5	5	0.2	0
Meghalaya	45.9	0.1	0.8	0.8	50.4	2.1	0
Mizoram	69.1	3.3	2.3	0.9	23.5	0.8	0
Nagaland	64.7	0	1.5	0.2	30.9	2.8	0
Sikkim	31.7	0.5	2.4	12.3	47.5	5.6	0
Tripura	86.1	0.2	1.9	0.7	8.8	2.2	0
All India	62.6	1.2	3.4	6.3	23.1	3.3	0

Source: NSS Report (76th Round, 2018): Drinking Water, Sanitation, Hygiene and Housing Condition in India page-137

The percentage of urban household living in ‘employer quarters is spectacularly high in Arunachal Pradesh (21%). Another notable data given in Table-3.10 is that only Arunachal Pradesh recorded ‘Household with no dwelling unit i.e., 0.2 per cent.

3.4.2. Percentage Distribution of Urban Households by Types of Structure

Durable material and good structural quality (Behr, et.al., 2021) and Physical Sustainability-roof, wall, floor material (Meng, et.al., 2006) are an important indicator of housing condition. The physical condition of the structure of buildings has been classified into pucca, semi-pucca and kutchra based on materials used in the construction of roof, wall and floor of the dwelling unit. Table-3.11 shows the distribution of urban household of the 8 states of the north-east and All India data.

‘Pucca’ has been the most popular types of structure in the urban areas of the region as more than 70 per cent of structure in urban areas are classified as ‘Pucca’ in all states barring Manipur where about 45 per cent of structure are classified as Pucca. Nearly all of the structure in Sikkim (98.4%) are recorded in this category.

Table-3.11: Percentage distribution of urban households by Types of Structures

Types of Structure/State	Pucca	Semi-Pucca	All Katcha (Serviceable/Non-Serviceable)	Total
Arunachal Pradesh	78.2	12.9	8.9	100
Assam	85.9	13.7	0.4	100
Manipur	45.3	54	0.7	100
Meghalaya	95	5	0	100
Mizoram	93.7	5	1.3	100
Nagaland	81.4	17.9	0.7	100
Sikkim	98.4	0.4	1.2	100
Tripura	70.9	26.9	2.2	100
All India	96	3.2	0.8	100

Source: NSS Report (76th Round, 2018): Drinking Water, Sanitation, Hygiene and Housing Condition in India page-152

Semi Pucca comes second as the most common types of structure with Manipur registered more than half (54%) of its structure in this category. Nagaland (17.9%) and Arunachal Pradesh (12.9%) also recorded a significant percentage of their structure as ‘Semi Pucca’

There are some percentages of structure recorded as Katcha, typically considered as lower quality for urban structure. State with the highest percentage of structure with Katcha are Arunachal Pradesh (8.8%), Tripura (2.2%) and Sikkim (1.2%).

3.4.3. Percentage distribution of urban households by Condition of Structure

The condition of urban dwelling units is classified into three categories viz., Good, Satisfactory and Bad. If the structure did not require any immediate repairs, major or minor, it was considered as in ‘good’ condition whereas if the structure required immediate minor repairs but not major repairs, it was considered as in ‘satisfactory’ condition. If the structure of the building required immediate major repairs without which it might be unsafe for habitation or required to be demolished and rebuilt, it was considered as in ‘bad’ condition.

Focussed is also given to another factor that determine housing quality condition of ventilation. The condition of the overall structure based on the mentioned categories and that of ventilation is presented in Table-3.12

More than half or 50 per cent of structure in the region were classified as ‘Good’ in all states excluding Manipur (where less than one-third of structures were classified as ‘Good’) and Tripura (47.1%). Mizoram with 72.2 per cent of structure under ‘Good’ category top the region followed by Meghalaya (67.6%) and Sikkim (66.2%). These states with Arunachal Pradesh (60.5%) secured higher percentage than the All-India data recorded ad ‘Good’ category. Around 30-60 per cent of the housing structure are categorised under ‘Satisfactory’ for all states of the region

Table-3.12: Percentage distribution of urban households by Condition of Structure & Ventilation

State	Arunachal Pradesh	Assam	Manipur	Meghalaya	Mizoram	Nagaland	Sikkim	Tripura	All India
Condition of Structure									
Good	60.5	51.8	27.7	67.6	72.2	56.9	66.2	47.1	58.2
Satisfactory	34.1	42.8	59.3	27.3	26.4	39.5	32.9	45.9	35
Bad	5.4	5.4	13	5	1.4	3.6	0.9	7	6.9
Condition of Ventilation									
Good	56.2	47.6	18.1	66.5	68.3	50.3	62.3	47	53.8
Satisfactory	36.9	45.7	64.1	29	27.4	34.1	34.3	46.4	37.7
Bad	6.9	6.7	17.8	4.5	4.3	15.6	3.4	6.6	8.5

Source: NSS Report (76th Round, 2018): Drinking Water, Sanitation, Hygiene and Housing Condition in India page-143, 155

Mizoram also recorded only 1.4 per cent of its total housing units as ‘Bad’ only after Sikkim which registered less than 1 per cent of its housing units as ‘Bad’.

3.4.4 Percentage Distribution of Urban Households by Access to Drinking Water

Access to basic amenities such as drinking water and sanitation, is highly correlated with the economic status of the households that the poor and socially deprived classes are having less access to these amenities (Pal, et.al., 2015). It is expected that by analysing the level of access to drinking water that the certain socio-economic conditions of the region can be highlighted. The percentage distribution of household by Source of Drinking water and access to drinking water is presented in Table-3.13 and Table-3.14

The most common principal sources of drinking water in the region as given in Table-3.13 are ‘piped water into dwelling’ and ‘piped water to yard/plot’ and a significant percentage of urban household draws drinking water from ‘tube well/borehole’, ‘well-protected’ and ‘spring-protected’.

Urban households depending on ‘bottled water’ as principal source of drinking water in north-east is minimal, only Manipur (2.6%), Assam (2%) and Meghalaya (0.2%) recorded household depending on this source against 12.2 per cent of the All-India data.

Table-3.13: Percentage distribution of urban households by Source of Drinking Water & Access to Drinking Water

Principal Source of Drinking Water	Arunachal Pradesh	Assam	Manipur	Meghalaya	Mizoram	Nagaland	Sikkim	Tripura	All India
Bottled water*	0	2	2.6	0.2	0	0	0	0	12.2
Piped water into dwelling*	69.6	21.1	8.5	43.8	94.7	16	82.1	15.7	40.9
Piped water to yard/plot*	13.3	9.8	34.1	17.7	0.8	27.8	10.6	31.1	16
Piped water from neighbour	0.4	0.4	3.4	0.4	0.1	0.2	0	1	1
Public tap/standpipe*	0.4	1.4	12	10.1	3.5	1.1	0	5.1	7.1
Tube well/borehole*	14.1	35.8	0.1	2.7	0	9.2	0	13.1	10.4
Hand pump	0.9	22.7	0	0	0	3.3	0	30.1	6.7
Well: protected*	0	4.1	5.7	6.9	0.1	28.9	0	1.8	1.7
Well: unprotected	1.1	1.5	0	0	0	1.1	0	1.6	2.4
Tanker-truck: public	0	0	0.8	0.4	0	0	0	0	0.8
Private	0	0.3	9.9	7.6	0	0	0	0	0.5
Spring: protected*	0	0	3.8	10.1	0.3	5.5	7.3	0	0.1
Spring: unprotected	0	0	0.1	0	0.3	0.3	0	0	0
Rainwater collection*	0	0	0	0	0	3.6	0	0	0
Surface water: tank/pond	0	0.6	4.6	0.2	0.1	2.2	0	0	0
Other surface water (river, dam, stream, canal, lake etc.)	0.4	0.2	1.7	0	0.1	0.9	0	0.5	0
Others (tanker-truck, cart with small tank or drum, etc)	0	0	12.8	0	0	0	0	0	0.2
Improved Source	97.4	74.2	66.8	91.5	99.4	92.1	100	66.8	88.4

Source: NSS Report (76th Round, 2018): Drinking Water, Sanitation, Hygiene and Housing Condition in India pp-64

Note: *improved source of drinking water

Mizoram with a remarkably high percentage of 94.7 per cent used ‘piped water into dwelling’ as principal source, followed by Sikkim and Arunachal Pradesh using

this source. ‘Piped water to yard/plot’ is also another important source of drinking water through which a significant percentage of household draws their drinking water in the region.

Table-3.14: Percentage distribution of urban households by Access to Principal Source of Drinking Water

Principal Source of Drinking Water	Arunachal Pradesh	Assam	Manipur	Meghalaya	Mizoram	Nagaland	Sikkim	Tripura	All India
household's exclusive use	85.9	73.1	36.5	49.8	89.8	63.9	82	63.9	57.5
common use of households in the building	11.9	20.4	12.3	16.4	5.8	24.6	10.7	24.1	16.3
neighbour's source	1.4	1.6	5.2	2.2	0.1	1.1	0	2.6	1.7
community use: public source restricted to particular community	0	0	3.5	0.1	2.6	0	0	1	0.5
public source unrestricted	0.4	2	10.1	13.4	0.7	1.1	0	6.9	10.3
private source restricted to particular community	0	0.2	2.1	0	0	0	0	0	0.1
private source unrestricted	0	0	4.8	6.4	0	0	0	0	0.6
others	0.4	2.6	25.5	11.8	0.9	9.3	7.4	1.5	12.9

Source: NSS Report (76th Round, 2018): Drinking Water, Sanitation, Hygiene and Housing Condition in India pp-94

Majority of urban households in most of the states in the region reports having exclusive access to drinking water, with particularly high proportions in Mizoram (89.8%), Arunachal Pradesh (85.9%), and Sikkim (82%), significantly exceeding the national average of 57.5 per cent. In contrast, Manipur (36.5%) and Meghalaya (49.8%) falling behind in this regard, indicating potential gaps in water infrastructure in these regions.

Table-3.14 also reveals considerable reliance on shared or public sources in certain states. For instance, Tripura (24.1%) and Nagaland (24.6%) show relatively high usage of ‘common use of households in the building’, compared to the national figure of 16.3 per cent. Additionally, Manipur (10.1%) and Meghalaya (13.4%) show heavy dependence on ‘unrestricted public sources’, far above the national average of 10.3 per cent. Notably, Manipur also records unusually high percentages for categories like ‘others’ (25.5%), suggesting less conventional or insecure water sources, a trend also visible, though to a lesser extent, in Meghalaya and Nagaland.

Overall, while some northeastern states surpass national averages in providing private access to drinking water, others rely more heavily on community, public, or informal sources. These differences highlight uneven progress in urban water infrastructure within the region,

3.4.5. Percentage Distribution of Urban Households by Access to Latrine

Six categories were used to gather data on latrine access viz., exclusive use of household; common use of households in the building; public/community use without payment; public/community use with payment; others; and no latrine. If the majority of the household members had the ability to use the latrine regardless of whether they did so or not, the household was classified as "having access to latrines."

Households having latrine facility with ‘exclusive use of household’ is highest in the state of Mizoram (99.1%) followed by Assam (86.4%) and Arunachal Pradesh (85.6%). More than 80 per cent of the household in all states have exclusive use of latrine facility which is higher than the national average of 77.6 per cent.

Table-3.15: Percentage distribution of urban household by Access to Latrine Facilities

States	Arunachal Pradesh	Assam	Manipur	Meghalaya	Mizoram	Nagaland	Sikkim	Tripura	All India
Exclusive use of household	85.6	86.4	83.5	78.6	99.1	82.8	84.1	83.6	77.6
Common use of households in the building	13.5	12.5	15.4	21.2	0.6	17	15.9	15.2	15.6
Public/community use without payment	0	0	0	0	0	0.3	0	0.4	1.5
Public/community use with payment	0	0	0	0	0	0	0	0.1	1.2
Others	0.9	0.4	1.1	0.2	0.3	0	0	0.7	0.4
Household with access to Latrine	100	99.3	100	100	100	100	100	100	96.3
No Latrine	0	0.6	0	0	0	0	0	0.1	3.8

Source: NSS Report (76th Round, 2018): Drinking Water, Sanitation, Hygiene and Housing Condition in India pp-97, 100

Significant percentage of households in Sikkim (21.2%), Meghalaya (15.9%) and Manipur (15.4%%) are recorded to have use share or common use of latrine facility in the building or in the same premises whereas Tripura (0.4%) and Nagaland (0.3%) recorded ‘public/community use without payment’.

Therefore, household having access to latrine is 100 per cent all states of north-east India except in the state of Assam and Tripura which recorded 0.4 per cent and 0.1 per cent of its households as not having access to latrine facility respectively.

3.4.6. Percentage Distribution of Urban Households by Access to Bathroom

Information regarding access type of bathroom was collected in terms of four categories-attached to the dwelling unit, detached to the dwelling unit but within the household premises, others and not used as presented in Table-3.16. Information on access to bathroom facilities is also presented in the table.

Table-3.16: Percentage distribution of urban households by Access to Bathroom Facility

State	Arunachal Pradesh	Assam	Manipur	Meghalaya	Mizoram	Nagaland	Sikkim	Tripura	All India
Percentage Distribution of Households by Access to bathroom									
exclusive use of household	75.8	71.6	58.9	89.1	97.3	80.1	70.3	40.8	75
common use of households in the building	21.4	15.8	16.2	10.3	2.3	19.6	29.7	13	15.9
public/community use without payment	0	0	0.3	0	0	0	0	0	0.2
public/community use with payment	0	0	0	0	0	0	0	0	0
Others	1.2	0.8	0.6	0.1	0.1	0	0	0.5	0.2
Household with access to Bathroom	98.4	88.2	76	99.5	99.7	99.7	100	54.3	91.3
No Bathroom	1.7	11.7	23.9	0.5	0.3	0	0	45.7	8.8
Percentage Distribution of households by type of bathroom used									
attached to the dwelling unit	73	51.6	35.2	79	97.6	52.8	72.5	45.9	74.8
detached to the dwelling unit but within the household premises	25.8	47.9	64.2	20.5	2.3	47.2	27.4	52.6	24.7
others	1.1	0.5	0.5	0.5	0.1	0	0	1.3	0.5
not used	0.1	0	0	0	0	0	0.1	0	0.1

Source: NSS Report (76th Round, 2018): Drinking Water, Sanitation, Hygiene and Housing Condition in India pp-94, 96

The percentage of households having exclusive use of bathroom in all states of north-east India is higher than the All-India (75%) figure excluding Tripura (40.8%) (all states figures exceed 70 per cent in this category). Mizoram (97.3%), Meghalaya (89.1%) and Nagaland (80.1%) registered the highest percentage of households having exclusive use of bathroom. 'Common use of households in the building' is another

significant type of access to bathroom that nearly one-third (29.7%) of the household in Sikkim, 21.4 per cent in Arunachal Pradesh and 19.6 per cent in Nagaland are recorded under this category. Public/Community use is reported only in the state of Manipur with 0.3 per cent.

Overall, the percentage of households having access to bathroom is high in the region. Sikkim recorded 100 per cent access followed by Meghalaya, Arunachal Pradesh, Mizoram and Nagaland. At the same time, Tripura (54.3%), Manipur (76%) and Assam (88.2%) recorded lower than the All-India (91.3%) level. Tripura (45.7.9%) registered the highest percentage of households with no bathroom. followed by Manipur (23.9%) and Assam (11.7%).

Mizoram, Meghalaya and Arunachal Pradesh recorded the highest percentage in terms of households having attached bathroom within their premises. In the state of Tripura, the percentage of households having bathroom ‘attached to the dwelling unit’ (45.9%) is lower than the percentage of households having bathroom ‘detached to the dwelling unit but within the household premises’ i.e., 52.6 per cent.

3.4.7. Comparison of North-East Averages-All India data of selected Housing Characteristics.

Although there are many other characteristics that can provide detail context of housing characteristics of urban areas in north-east region of India, the selected characteristics of housing conditions and basic amenities discussed in section 3.3 and 3.4 provides extensive living condition of the urban population in the region. The ownership status of the dwelling or housing units, types of structures and condition of structures details state of security of the urban dwellers and the habitable conditions of the structure whereas the level of access to drinking water, latrine and bathroom facilities render extensive information on the level of sanitation and hygienic environment of the urban population. Table-3.17 present the comparison of these characteristics among the states of north-east India with All-India data.

Table-3.17: Selected Housing Characteristics-State Wise

State	Percentage of Household					
	Living in owned dwelling unit	Living in a Pucca house	Dwelling unit classified as 'Good'	Improved Principal Source of Drinking water	With Access to Latrine	With Access to Bathroom
Arunachal Pradesh	31	78.2	60.5	97.4	100	98.4
Assam	69.4	85.9	51.8	74.2	99.3	88.2
Manipur	93.11	45.3	27.7	66.8	100	76
Meghalaya	46	95	67.6	91.5	100	99.5
Mizoram	72.4	93.7	72.2	99.4	100	99.7
Nagaland	64.7	81.4	56.9	92.1	100	99.7
Sikkim	32.2	98.4	66.2	100	100	100
Tripura	86.3	70.9	47.1	66.8	100	54.3
NE Average	61.89	81.10	56.25	86.03	99.91	89.48
All India	63.8	96	58.2	88.4	96.3	91.3

Source: NSS Report (76th Round, 2018): Drinking Water, Sanitation, Hygiene and Housing Condition in India

First, as mentioned in Section 3.4.1, the percentage of household living in owned dwelling unit is highest in Manipur followed by Tripura and Mizoram. On average, 61.89 per cent of urban households were living in owned units which is lower than the national figure of 63.8 per cent. The state of Arunachal Pradesh, which along with Sikkim and Meghalaya recorded less than 50 per cent of household living in owned dwelling unit and are the states which registered lower ownership rate than the national average. The north-east average and the All-India data, on the percentage of urban household living in owned housing unit is slightly different with the finding of National Family Health Survey-05 of 2019-21 (NFHS-5) which recorded 65 per cent of urban households living in owned dwellings.

Second, the percentage of urban households living in 'pucca' structure in north-east India is also lower than the All-India percentage (81.10<96) which is higher than the NFHS-5 finding of 84.9 per cent. Only Sikkim (98.4%) registered higher percentage

than the All-India level in contrast, only 45.3 per cent of housing unit in Manipur is registered as 'pucca'.

Third, the average percentage of housing units classified as 'Good' (which did not require immediate major or minor repair) of the 8 north-east state is slightly lower than the All-India percentage 56.25<58.20). Only Mizoram, Meghalaya and Sikkim logged higher percentage than the All-India percentage whereas Manipur and Tripura entered less than 50 per cent of their housing unit as 'Good'.

Fourth, the percentage of urban households having access to improved source of drinking water in the region is nearly the same, but still lower than the All-India percentage. While states like Sikkim, Mizoram, Arunachal Pradesh registered nearly all the urban households as having access to improved source of drinking water, Tripura, Manipur and Assam recorded lower percentage than the All-India average.

Fifth, percentage of urban households having access to latrine facility is the only characteristic where the north-east average is higher than the All-India data (i.e., 96.3 per cent, which is nearly the same with the finding of NFHS-5 i.e., 95.6 per cent) with 100 per cent of household have access to latrine facility in all states excluding Assam.

Sixth, in case of household having access to bathroom facility, the average of the 8 states is nearly the same with the All-India percentage. However, 5 out of 8 states registered a higher percentage than the national average.

Overall, northeastern states display a diverse range in housing conditions, with some states showing considerable gaps compared to the national average.

3.5. Conclusion

Despite the fact that there are some differences in the definitions, classifications and approaches in the two-importance source of housing conditions and amenities-Census, 2011 and report of the 76th Round of National Sample Survey, 2018, the discussion and data shown in section 3.3 and section 3.4 exhibit similar patterns, though

not the exact the figures and per cents. Though the two studies are conducted more than five years apart, the findings in most of the housing characteristics are consistent.

Comparison between the eight states has shown that there are some degrees of disparity and uneven growth and progress among the states on habitable conditions of the urban population in terms of physical structure, sanitation and basic amenities. States like Manipur and Tripura lag others in almost all characteristics discussed. The data indicates that states viz., Sikkim, Mizoram and Meghalaya are more effective in providing the urban population with better living conditions especially in case of sanitation facilities like latrine and bathroom.

Comparing the north-east average to the national average, the region generally meets or exceeds the national standards for sanitation facilities but falls slightly short in housing durability and safe drinking water access. These data highlights both the successes in sanitation infrastructure across northeastern states and the areas needing improvement, especially in sustainable access to quality drinking water and housing conditions. This shows that the special treatment or exemption given to all the eight states of the region in some government fundings and developmental programmes is justifiable.

Chapter 4

HOUSING POVERTY AND ITS MEASURES IN NORTH-EAST INDIA

4.1. Introduction

Poverty is a state of deprivation of basic needs, and the idea of housing poverty is defined by setting certain sets of standards or minimum levels of requirements for access to water supply, electricity, minimum amount of space, sanitation and hygiene (D.Souza, 2019). According to Ha (2004), “The extent to which the quantity and quality of existing accommodation falls short of the required to provide each household or person with accommodation of the specified minimum standard and above” is called housing deprivation. Housing quality standards are usually related to the grade or level of acceptability of the dwelling unit and basic service provision (Meng, et.al., 2006). Therefore, the key factor in determining what constitutes housing poverty is determination of minimum standards or acceptable levels that must be met (Ulman, 2020; Souza, 2019).

It is therefore necessary to consider the basic problem of housing shortage, poor physical conditions, overcrowding, suitability of the dwelling stock in terms of tenure, size, location and other qualitative aspects in defining what constitutes housing poverty (Ha, 2004) and the inability to meet these housing needs at an appropriate level is the essence of housing poverty (Ulman, 2020)

In an attempt to quantify or estimate housing adequacy or to scale the level of deprivation, researchers constructed indexes which takes into account a number of indicator or adequacy parameters which includes: structural quality or durability of the dwelling unit (Chopra, 2018, Behr, et.al., 2021, Meng.et.al., 2006) measuring roof, wall and floor quality or durability; overcrowding or congestion usually measured by floor capita consumption (Ahmad, 2015), per capita floor area (Pal, et.al., 2015), sufficient living area (Behr, et.al., 2021; Meng.et.al., 2006); access to basic amenities including drinking water and sanitation facilities (Pal, et.al., 2015; Kumar, 2015; Chopra, 2018; Behr, et.al., 2021; Meng, et.al., 2006); tenure security (Chopra, 2018; Behr, et. al., 2021;

Meng, et.al, 2006); and, in some cases, access to electricity and clean cooking fuel are also taken into accounts (Kumar, 2015; Behr, et.al., 2021).

Despite these available research and studies, quantifying the level of housing shortage accurately or estimating housing poverty is not an easy task in any country. One of the most significant limitations is the absence of uniform measurement, indicator and parameter coupled with absence of uniform data collection methods results in lack of comparability between countries. While the quantitative dimension of housing quality can be easily measured from the performance of the housing sector i.e., the number of housing units with pucca structure or katcha structure can be easily identified, the qualitative part-the comfort or satisfaction, the quality of life, cultural or social adaptability cannot be measured in quantitative terms. The most prominent limitation being the difficulty of defining one standard set of criteria to evaluate housing adequacy or to determine minimum standard or acceptable level of housing quality. As a result, numerous objective indicators have been employed worldwide depending on different perspectives (Meng.et.al, 2006).

Despite these limitations and inconsistencies in data and indicators, numerous research shows that housing poverty and its related problems clearly exist and entice further research. An attempt is made in this chapter to measure the various facets of housing poverty by constructing suitable indices; and combined index to measure the overall housing poverty status of the households. The whole analysis is based on the un-tabulated unit level data of 76th Round of National Sample Survey (2018) on Drinking Water, Sanitation, Hygiene and Housing Condition in India. The multiplier generated to each sample household by the NSSO has been used as the weights in the estimation.

4.2. Measurement of Housing Poverty

To examine the different dimensions of housing problems, it is essential to first establish a set of indicators and parameters carrying a set of criteria. In view of indicator used in different literature and data available, the study first attempt to estimate housing poverty using a set of six (6) indicators viz., housing congestion (Pal, 2015; Kim, 2017;

Meng, et.al, 2006; Ahmad, 2015; Fiadzo, et.al, 2001), housing structure (Chopra, 2018; Behr, et.al, 2021; Meng, et.al, 2006); drinking water and sanitation (Pal, et.al, 2015; Kumar, 2015; Chopra, 2018; Behr, et.al, 2021; Meng, et.al, 2006); tenure security (Chopra, 2018; Behr, et. al, 2021; Meng, et. Al., 2006); fuel used (Kumar, 2015; Behr, et.al, 2021) and level of affordability. These indicators are being selected as they are found to best reflect the housing conditions of the urban dwellers given the availability of the data. Detailed elaboration of these indicators is given as follows:

4.2.1 Congestion

One of the critical issues in measuring or estimating housing poverty or housing shortage would be quantifying number of households living in congested dwelling units or overcrowded houses. Considering climatic and socio-cultural condition, it is nearly impossible to determine ‘cut-off value’ for congestion ensuring comparability across countries and regions (MoHUPA, 2012). Person per room and person per bedroom are the most commonly used indicator of congestion or overcrowding (Kim, 2017; Meng, et.al., 2006; Chopra, 2018) with a threshold of 1.5 to 2 people per bedroom in New Zealand, 2 to 3 person per bedroom in Australia and more than 1.5 person per room and 2 persons per bedroom in developed world are considered to be overcrowded (Meng, et.al., 2006) while floor area per person (Behr, et al., 2021; Pal, et.al., 2015) and room density are also considered in many cases (Ahmad, 2015; Fiadzo, et.al., 2001). The Report of Technical Group on Urban Housing Shortage (TG-12) considered dwelling units wherein married couples do not have separate rooms to themselves or a unit having less than 300 sq.ft of built-up space as congested unit (MoHUPA, 2012).

Considering these criteria and thresholds limits set in different literature and the availability of data, it is found most suitable to follow Behr, et.al, (2021) criteria of 9 Square metre per person (which is then converted to 96.8751938 square feet or 97 sq.ft approximately) to calculate housing congestion as presented in Table-4.1. Consequently, the total floor area, which is the total floor area of living room, other rooms, covered verandah and uncovered verandah is divided by the household size given in the data to calculate area sufficiency. Then, area sufficiency of urban household

is estimated by classifying household having space of less than 97 sq.ft per person as ‘*Inadequate*’ and more than or equal 97sq.ft are classified as ‘*Adequate*’ with a score of ‘0’ and ‘1’.

Table-4.1: Summary of housing congestion indicator and adopted criteria

Sl. No	Indicators	Criteria	Label
1	Floor Area per person (Sq.ft)	≥ 97 Sq.ft	1-Adequate 0-Inadequate

4.2.2 Housing Structure

76th Round of National Sample Survey collected detailed information on different aspects of housing structure ranging from, types of structure of dwelling unit, condition of structure, uses of housing units, material uses for roof, wall and floor, types or condition of ventilation, plinth level, floor area, number of rooms, availability of kitchen, etc. Structure quality or physical sustainability are usually measured by durability of material use for roof, wall and floor material (Meng, et.al, 2006; Behr, et.al, 2021; Fiadzo, et.al, 2001). While Fiadzo, et.al, (2001) assigned ordinal value or rank based on durability of material, Behr, et.al, (2021) simply classified these materials into durable or finished materials and non-durable material (unfinished, rudimentary or natural material) which is nearly in line with Patel, et. al (2020) classification of materials into ‘*temporary*,’ ‘*semi-permanent*’ and ‘*permanent*’. Along with these structure measures, objective observation by the NSS investigator (on the dwelling unit which rated and classified the physical structure and ventilation of the dwelling unit into ‘*good*’ ‘*satisfactory*’ or ‘*bad*’) is taken into account (Instructions to Field Staff, Vol. I: NSS 76th Round C-68, C-79).

Therefore, to determine the structure condition or adequacy, 6 indicators viz., Roof Status, Wall Status, Floor Status, Availability of Kitchen, Structure condition and Ventilation as given in NSS 76th Round were identified and assessed using a number of criteria and assigned score based on these criteria. The indicators and adopted criteria are given in Table-4.2.

Table-4.2: Summary of housing structure indicators and adopted criteria

Sl.No	Indicators	Criteria	Code/Label
1	Roof Status	Durable (cement, burnt brick, tiles, iron sheets, polished wood, etc)	1-Durable
		Non-Durable (natural materials including cane, straw, bamboo)	0-Non-Durable
2	Wall Status	Durable (cement, burnt brick, tiles, iron sheets, polished wood, etc)	1-Durable
		Non-Durable (natural materials including cane, straw, bamboo)	0-Non-Durable
3	Floor Status	Durable (cement, burnt brick, tiles, iron sheets, polished wood, etc)	1-Durable
		Non-Durable (natural materials including cane, straw, bamboo)	0-Non-Durable
4	Access to Kitchen	Access to Kitchen	1-Access
		Lack of Access to Kitchen	0-Not Access
5	Structure Condition	Good-not require any immediate major or minor repair	3-Good
		Satisfactory-require immediate minor repair	2-Satisfactory
		Bad-unsafe for habitation, required to be demolished and rebuilt	1-Bad
6	Condition of Ventilation	Good- majority of rooms with two or more windows with cross ventilation	3-Good
		Satisfactory- majority of rooms with two or more windows without cross ventilation	2-Satisfactory
		Bad- majority of room with only one window without cross ventilation or no window	1-Bad

4.2.3. Drinking Water and Sanitation

Housing amenities including drinking water and sanitation facilities are crucial for ensuring a better quality of life in urban areas and there is a need to set up the ‘minimum standards’ for the amenities in realistic terms (Kumar, 2005). Among other indicators, access to improved water source of drinking water, latrine or toilet facilities and access to bathroom were counted as an important indicator of housing quality (Behr, et.al, 2021; Pal, et.al, 2015; Deka, 2012; Kim, 2012; Patel, et.al, 2020). Of these, drinking water is generally categorised into improved or non-improved base on their source (Behr, et.al, 2021; Deka, 2012; Patel, et.al, 2020; Fiadzo, et.al, 2001) and their modes or level of access e.g., whether the water source is available within or near the dwelling unit or the distance to the source (Pal, et.al, 2015; Kim, 2012) and assigned scores accordingly.

In case of sanitation facilities viz., latrine and bathroom, two types of classification are made – types of facility and level of access (whether the facility is within dwelling unit or within the premises). Latrine facilities are usually classified into improved and unimproved by their types or their hygienic conditions viz., piped sewer systems, septic tanks, pit latrines, etc., (Behr, et.al, 2021; Fiadzo, et.al, 2001) and the level of access or the exclusivity or sharing of their uses (Pal, et.al, 2015; Kim, 2012) and in some case a mere access to the facilities is considered having access to latrine irrespective of quality or hygienic condition (Deka, 2012).

Access to bathroom is generally categorised based on level of access or the exclusivity or sharing of their uses (Pal, et.al, 2015; Kim, 2012; Deka, 2012) where exclusive use, sharing within the premises or nearby household is given the highest score and uses of public or community facility is usually classified as deprived of bathroom facility.

Therefore, following the different methodologies and classification found on different studies or literature and considering the available data, different criteria were adopted, and scores were assigned to construct Drinking Water and Sanitation Adequacy Index as presented in Table-4.3

Drinking water and sanitation made a key part of the 76th Round of NSS that information related to households' access to these facilities has been collected in detail. Data on principal sources of drinking water, supplementary sources of drinking water, distance to the source, sufficiency of drinking water, level of access, how it is stored, etc., were available. Of these Principal Source of Drinking Water, Sufficiency of Principal Source of drinking water, level of access to the principal source are identified as key indicator in this category. Relating to sanitation facilities, types of latrines and the level of access, access to bathroom and level of its access are key indicators identified for this category as presented in Table-4.3.

Table-4.3: Summary of drinking water and sanitation indicators and adopted criteria

Sl. No	Indicators	Criterion	Code
1	Principal Source of Drinking Water	Access to Improve Source	1-Access
		Not Access to Improved Source	0-Not Access
2	Sufficiency of Drinking Water	Sufficient	1-Sufficient
		Not Sufficient	0-Not Sufficient
3	Level of Access to Water Source	Exclusive use	3-Exclusive use
		Community use	2-Community use
		Private use-restricted/unrestricted	1-Private use
4	Types of Latrines	Improve Latrine-piped sewer, septic tank, pit latrine with slap	1-Improved latrine
		Unimproved Latrine-Pit latrine without slap, open	0-Unimproved latrine
5	Access to Latrine	Exclusive/Common use of household	3-Exclusive
		Community use	2-Community use
		No Latrine	1-No Latrine
6	Access to Bathroom	Access to Bathroom facility	1-Access
		No Access to Bathroom facility	0-Not Access
7	Level of Access to Bathroom	Exclusive/Common use of household	3-Exclusive
		Community use	2-Community use
		No Bathroom	1-No Latrine

The most important source of water for the last 365 days (at the time of collection of data) from which the household received its drinking water is considered principal source of water (Instructions to Field Staff, Vol. I: NSS 76th Round, C-37). The information on principal source of drinking water of the household was collected in terms of the thirteen categories viz., bottled water, piped water into dwelling, piped water to yard/plot, public tap/standpipe, tube well/borehole, protected well, unprotected well, protected spring, unprotected spring, rainwater collection, tank/pond, other surface water (river, dam, stream, canal, lake, etc.) and others (tanker-truck, cart with small tank or drum, etc.). Of these the sources -bottled water, piped water into dwelling, piped water to yard/plot, public tap/standpipe, tube well/borehole, protected well, protected spring and rainwater collection are considered as improved sources of drinking water and the rest as unimproved source (Behr, et.al, 2021; Patel, et.al, 2020). Code 1 and 0 is then assigned to improved and unimproved sources respectively.

Regarding the sufficiency of drinking water, households are recorded having received sufficient water from the principal sources throughout the year if availability of drinking water was sufficient in each calendar month of the last 12 months (Instructions to Field Staff, Vol. I: NSS 76th Round, C-40). The level of access to 'principal source' is categorized into three- Exclusive use (combining 'exclusive use of household' and 'common use of households in the building'), 'community source' (restricted or unrestricted) and 'private source' (restricted or unrestricted and 'others' and score of 3, 2 and 1 assigned respectively.

Following classification by Patel, et.al (2020), Behr, et.al (2021), types of latrine facility access by urban households is also classified into improved (with a score of '1') and unimproved (with a score of '0')- where improved latrine includes 'piped sewer system', 'septic tank', 'ventilated improve pit latrine' and 'pit latrine with slap' and the remaining were classified as unimproved. The level of access to latrine is then rated into three categories-exclusive/common use of household in the building (3), community use-public/community use with or without payment (2) and no latrine (1).

The same principle is followed in rating access to bathroom facilities. It is first classified into- access and no access, following Patel, et.al (2020) methodology. Household having bathroom ('attached to the dwelling unit' and detached to the dwelling unit but within the premises') are considered as 'Access to the bathroom facility' and those unit classified as 'not used' and 'others' are considered as 'No access to bathroom facility'. The level of access to bathroom is again rated into three categories- exclusive/common use of household in the building (3), community use-public/community use with or without payment (2) and no bathroom including 'others' (1).

4.2.4. Sources of Energy

Access to clean fuel is another important indicator of housing adequacy or quality (Fiadzo, et.al 2001; Kumar, 2015). The International Energy Agency (IEA) defines energy access as "a household having reliable and affordable access to both clean cooking facilities and to electricity, which is enough to supply a basic bundle of

energy services initially, and then an increasing level of electricity over time to reach the regional average" (IEA, 2017). Electricity may be used for lighting or cooking or both.

While Behr, et.al, (2021) and Patel, et.al, (2020) follows the IEA definition of access to electricity and classified the electricity source as ‘adequate’ (if they are connected to an electricity grid, have a renewable stand-alone system, or have a mini-grid connection of enough capacity to deliver the minimum bundle of energy services) and ‘inadequate’ (if electricity is available through private agency or households’ own arrangement, either through generator or solar panel, firewood, kerosene, torches, or gas lamp); Pal, et.al (2015) and Deka (2012) simple differentiate households having electricity for domestic consumption as not deprive or having access to electricity. It however, is needed to follow the methodology of the latter as it is impossible to classify these sources since the main database (76th Round NSS) marked all of the sources as access (‘Yes’)

Table-4.4: Summary of sources of energy indicators and adopted criteria

Sl. No	Indicators	Criteria	Code
1	Access to electricity	Access to electricity	1-Access
		Not access to electricity	0-Not access
2	Access to cooking fuel	Adequate Access-Gas and electricity	1-Adequate access
		Inadequate Access-biomas, wood, coal, kerosene	0-Inadequate access

Access to clean cooking facilities means “access to (and primary use of) modern fuels and technologies, including natural gas, liquefied petroleum gas (LPG), electricity and biogas, or improved biomass cookstoves, as opposed to the basic biomass cookstoves and three-stone fires used in developing countries” (IEA, 2017). With respect to cooking fuel, the basic fuel used for domestic cooking as per the 76th Round of NSS includes firewood, chips & crop residue, LPG, other natural gas, dung cake, kerosene, coke, coal, gobar gas, other biogas, charcoal, electricity (incl. generated by solar/wind power generators), solar cooker, and others. Of these access to LPG and electricity is considered adequate access (Patel, et.al, 2020; Behr, et.al, 2021).

4.2.5. Tenurial Security

Addressing tenurial security is one of the key factors in delivery of basic needs, improving quality of life, reducing deprivation and upgrading social status of the urban dwellers (Mahadevia, 2010). Measuring tenure security and assigning any values or scores is a complex process as studies or research usually depends on perceived security, which is a perception-based survey (Behr.et.al, 2021) which is unavailable in most of the households' surveys. In some cases, households living in owned dwelling unit plus households living in hired dwelling unit with written contract or given by employer are considered to have secure tenure (Chopra, 2018; Fiadzo, et.al 2001) and in unconventional case, level of income is taken as income may influence likelihood of ownership and regular payment of rent which secure the tenancy (Van Dam, et.al, 2003). Therefore, bearing in mind these methods and the availability of data, the sample households were classified into four categories with scores ranging from 0 to 3.

Information on this item is very limited that 76th Round of NSS collected information only tenurial status (showing whether the household lives in owned dwelling or a hired unit, whether with a written contract is available for renter, etc) and monthly rent paid by the renters. Due to this limited data, the tenurial security is estimated by taking into account only tenurial status of the household.

Table-4.5: Tenurial security indicator and adopted criteria

Sl. No	Indicators	Criterion	Code
1	Tenurial Security	Secure	3-Secured
		Partially Secured	2-Partially Secured
		Not secure	1-Not secured
		Homeless	0-Homeless

The tenurial security of the urban household is, therefore classified into four categories-*secure*, *partially secure*, *not secure* and *homeless*, improvising methods of Chopra (2018). Secure households include those households recorded as 'owned' under 'freehold' (sample household with permanent heritable possession with or without the right to transfer, owner-like possession under long term lease or assignment) and 'leasehold' (household without ownership right but has right for long term possession

under perpetual lease, hereditary tenure, long term lease for 30 years or more) as classified in the 76th Round of NSS.

Partially Secure households include those sample households recorded as living in ‘employer quarter’ (sample household lives in dwelling unit provided by his/her employer) and ‘hired dwelling unit with written contract’ (sample households with written contract with its owners). Further, ‘Not Secure’ households are households recorded as ‘hired dwelling unit without written contract’ and ‘others’ (all other types of possession of the dwelling unit, e.g., encroached one).

Any household or family which are identified as living more or less regularly under staircase, in tents, in pipes, under bridges, in purely temporary flimsy improvisations built by the roadside (which are liable to be removed at any moment) may be considered to have no dwelling and classified as homeless.

4.2.6. Affordability

Affordability in case of housing is simply defined as “provision of adequate shelter on substantial basis and affordable housing is that provided to those whose need is not met by the open market” (Jones Lang Lasalle India, 2012). It is also defined in terms of three main parameters -income level, size of dwelling and affordability which is correlated to income and property price (KMPG India & NAREDCO, 2014). Housing affordability is therefore classified in terms of housing price-income ratio or rent-income ratio that less than or equal to 3 is considered affordable (Kim, 2017). Though there may be several objective measures available to estimate the level of housing affordability, there are issues due to limitation of data availability. It is accurately stated that housing can be affordable only if people are able to fulfil their non-housing need at an adequate level after paying for housing (Rao, 2021). Following this statement, the cut-off for affordability of housing by urban dwellers has been fixed by estimating percentage of monthly or annual income as rent.

Table-4.6: Affordability indicators and adopted criteria

Sl. No	Indicators	Criterion	Code
1	Rent-Income ratio/Rent as a percentage of monthly income	Afforded- ≤ 30 per cent of monthly income as rent	1-Afforded
		Unafforded- >30 per cent of monthly income as rent	0-Unafforded

Therefore, the cut-off for affordability is fixed as household spending more than 30 per cent of their monthly income or expenditure for housing purposes are considered ‘Unafforded’ (MHUPA, 2011). Since data for monthly income is not available ‘Usual monthly consumer expenditure’ is used for estimating housing affordability. Since rent-income ratio or rent as a percentage of monthly income is adopted as the main criteria for measuring the affordability, households living in owned dwelling unit or employer’s quarters and households not paying rents will automatically be nullified or not counted in this measure.

4.3. Results and Discussions

Contemplating different methodologies, approaches and procedures and subsequently assigning scores and criteria to the 6 (six) indicators of Housing Adequacy/Poverty Index discussed in section 4.2, the next step is fitting the data and testing the validity of each indicator and tabulating the results. Attempts is also made to compare the results and findings with the findings of previous research and studies whenever appropriate.

4.3.1. The Problem of Congestion

The most common indicator used to measure congestion or overcrowding of dwelling unit has been person per room and person per bedroom, floor area per households (Kim, 2017; Meng.et.al, 2006; Ahmad, 2015; Fiadzo, et.al., 2001). Considering different methods and cut-off set by different researchers, Behr.et.al (2021)

method of 97 square feet per person is adopted and the area sufficiency of urban household is calculated by total floor area by total household size. And therefore, categorized as ‘Adequate’ and ‘Inadequate’ (housing unit with less than 97 square feet per person is classified as Inadequate) The percentage distribution of area sufficiency or per capita floor area of urban household in North-East India is presented in Table-4.7 following classification discussed in Section 4.2.2.

Table-4.7: Area sufficiency/per capita floor area of urban household in north-east India

State	Percentage of Households		
	Inadequate	Adequate	Total
Arunachal Pradesh	38.1	61.9	100
Assam	18.2	81.8	100
Manipur	10.3	89.7	100
Meghalaya	51.3	48.7	100
Mizoram	11.6	88.4	100
Nagaland	12.4	87.6	100
Sikkim	22.7	77.3	100
Tripura	19.3	80.7	100
Total	19.8	80.2	100

Source: Computed

Table-4.7 reveals that, overall, 80.2 per cent of households across the region have adequate area sufficiency, while 19.8 per cent face inadequacy. States like Manipur (89.7%), Mizoram (88.4%), and Nagaland (87.6%) exhibit high proportions of households living in adequate living space, reflecting favourable living conditions. In contrast, Meghalaya stand out as the only state where a majority (51.3%) of households live in inadequate living area. The data highlights regional variations, with most states demonstrating predominantly adequate conditions, except for Meghalaya, where inadequacy is significant. Chopra (2018) calculated the sufficiency of living area with a criterion of more than 3 person per living room as ‘insufficient’ found that 28 per cent in 2008 and 27 per cent in 2012 of India’s urban household lived in ‘Insufficient living space’ This finding is not far-off from the percentage for the north-east region presented in Table-4.7 regardless of differences in methodology and year of study.

To supplement the observations given in Table-4.7, the average living area of the houses in each of the states have been calculated and presented in Table-4.8. It may be noted that the area includes total floor area of living room, other room, covered verandah and uncovered verandah. Overall, the average per capita floor area of the urban dwelling unit is 178.83 sq.ft. The highest average is recorded in the state of Mizoram with 204.87 sq.ft followed by Assam (187.15 Sq.ft) and Manipur (179.29 sq.ft). The rest of the states recorded lower averages than the region's average with the lowest being the state of Meghalaya (121.17 Square feet).

Table-4.8: Average Floor area of the house in urban areas of North-East India (Square feet)

State	Mean	Std. Deviation	Min.	Max.
Arunachal Pradesh	149.99	102.50	15.83	620.00
Assam	187.15	160.58	23.33	1175.00
Manipur	179.29	88.73	27.43	975.00
Meghalaya	121.17	91.07	21.60	1025.00
Mizoram	204.87	117.08	43.20	865.00
Nagaland	174.78	87.10	34.00	620.00
Sikkim	161.13	95.65	33.33	710.00
Tripura	169.56	108.23	20.89	782.00
Total	178.33	137.27	15.83	1175.00

Source: Computed

Calculating the per capita availability of floor area for urban households, Pal, et. al (2015) found, in 2012, the mean for Uttaranchal (222 sq.ft) is the highest among different states (of India) and Haryana with 93 square feet per person is lowest. The average per capita floor area in urban areas (as on 2012) is 123.85 square feet (Deka, 2012). Comparing the findings of these studies with the computed mean for the states of north-east and the region's aggregate i.e., 178.33 square feet, the problem of congestion may be relatively insignificant as the mean for many of these states are much lower than the north-east average and states like Mizoram, Assam and Sikkim are among the highest mean across the country.

4.3.2. Structure Adequacy

Structure adequacy as mentioned in section 4.2 is measured by adopting 6 indicators with a total score of 10 viz., roof status, wall status, floor status, access to kitchen, condition of structure and condition of ventilation. The first four indicator were given score of 0 and 1 based on their adequacy status whereas the last two were rank with a score ranging from 1 to three where 3 is the best or highest score.

Table-4.9 examines the distribution of urban households based on the durability of roofing materials across the states. It reveals that 98.9 of urban households across the states utilize durable roofing materials, indicating a robust trend toward quality and sustainable housing construction in urban areas. In contrast, only 1.1 per cent of households rely on non-durable materials, reflecting minimal prevalence of substandard roofing.

Table-4.9: Distribution of urban household by housing material-roof status

State	Percentage of Household		
	Non-Durable	Durable	Total
Arunachal Pradesh	9.0	91	100
Assam	0.5	99.5	100
Manipur	0.7	99.3	100
Meghalaya	0	100	100
Mizoram	1.4	98.6	100
Nagaland	0.7	99.3	100
Sikkim	1.4	98.6	100
Tripura	2.2	97.8	100
Total	1.1	98.9	100

Source: Computed

Among the states, Meghalaya demonstrates the highest standard, with 100 per cent of households adopting durable roofs. Similarly, Manipur (99.3%), Assam (99.5%), Nagaland (99.3%), and Sikkim (98.6%) showcase high levels of durable roofing, signifying strong infrastructure and access to better construction materials in these regions. State with the lowest percentage, Arunachal Pradesh, with 91 per cent of households using durable roofs. Despite these variations, the overall predominance of

durable roofing materials suggests a positive trajectory toward improved urban housing conditions in the states.

Table-4.10 reveals that 81 per cent of urban households in North-East India use durable wall materials, while 19 per cent rely on non-durable materials, indicating that a significant proportion of households still face challenges in accessing high-quality wall materials. Among the states, Sikkim display the highest adoption of durable walls, with 98.6 per cent of households utilizing such materials, followed by Meghalaya (95%), Mizoram (93.8%), and Assam (86.0%), reflecting strong housing infrastructure in these regions.

Table-4.10: Distribution of urban household by housing material- wall status

State	Percentage of Household		
	Non-Durable	Durable	Total
Arunachal Pradesh	21.6	78.4	100
Assam	14.0	86.0	100
Manipur	54.7	45.3	100
Meghalaya	5.0	95.0	100
Mizoram	6.2	93.8	100
Nagaland	18.6	81.4	100
Sikkim	1.4	98.6	100
Tripura	29.1	70.9	100
Total	19.0	81.0	100

Source: Computed

In contrast, Manipur shows the highest reliance on non-durable materials, with 54.7 per cent of households lacking durable walls, highlighting critical gaps in housing quality. Tripura (29.1%) and Arunachal Pradesh (21.6%) also demonstrate significant reliance on non-durable materials, indicating a need for targeted interventions to improve wall durability in these states. Overall, while the majority of households across the states exhibit access to durable wall materials, there exist notable disparities between states, particularly in regions like Manipur and Tripura.

Same pattern of distribution can be seen in case of floor material (presented in Table-4.11) that more than 80% of urban household lives in a unit constructed using

‘durable materials’ in the region. The percentage of households living in housing unit with durable materials is nearly hundred in Meghalaya, Sikkim and Mizoram followed by Arunachal Pradesh where significant percentage of relies on durable materials.

Table-4.11: Distribution of urban household by housing material- floor status

State	Percentage of Household		
	Non-Durable	Durable	Total
Arunachal Pradesh	14.4	85.6	100
Assam	16.7	83.3	100
Manipur	39.5	60.5	100
Meghalaya	0.6	99.4	100
Mizoram	1.1	98.9	100
Nagaland	16.1	83.9	100
Sikkim	0.7	99.3	100
Tripura	27.5	72.5	100
Total	17.7	82.3	100

Source: Computed

Households using ‘non-durable’ floor material is highest in the state of Manipur (39.5%) which is more than doubled of the region’s average of 17.7 per cent. Nearly 1/3rd of the households in Tripura also lived in housing unit with ‘non-durable’ materials. The percentage of urban households using non-durable floor materials is also high in the state of Assam and Nagaland which recorded nearly 1/5th of housing unit using non-durable floor material.

Another factor which significantly affect rate of structure adequacy has been the availability of kitchen within or outside the dwelling unit. Overview of the accessibility of kitchen facilities among households in eight north-eastern states of India reveals significant inter-state variations as presented in Table-4.12.

Table-4.12: Distribution of urban household by access to kitchen in north-east India

State	Percentage of Household		Total
	Inadequate	Adequate	
Arunachal Pradesh	9.4	90.6	100
Assam	12.2	87.8	100
Manipur	9.3	90.7	100
Meghalaya	12.7	87.3	100
Mizoram	72.7	27.3	100
Nagaland	19.8	80.2	100
Sikkim	12.4	87.6	100
Tripura	8.8	91.2	100
All State	15.3	84.7	100

Source: Computed

Overall, 84.7 per cent of households across all states have adequate access to a kitchen, with states such as Tripura (91.2%), Manipur (90.7%), Arunachal Pradesh (90.6%), and Sikkim (87.6%) showing the highest levels of adequacy. Conversely, Mizoram display a substantial gap, with only 27.3 per cent of households reporting adequate kitchen access, while 72.7 per cent experience inadequacy. These findings highlight notable disparities in household kitchen accessibility across the region that Mizoram which registered better percentage in other aspect of housing structure recording substantially low percentage in access to kitchen is a critical outlier in the region.

As mentioned in Section 4.2.2 the structure adequacy is also measured using the ‘condition of structure’ and ‘condition of ventilation’ of the dwelling unit which is based on the objective observation of the field investigator (whether the housing unit need immediate minor or major repairment is taken to rank or grade the condition of structure; and, number of windows and cross ventilation is taken to grade or classify the housing unit into ‘good’, ‘satisfactory’ or ‘bad’).

Table-4.13: Distribution of urban household by condition of structure in north-east India

States	A. Condition of Ventilation (%)				B. Condition of Structure (%)			
	Bad	Satisfactory	Good	Total	Bad	Satisfactory	Good	Total
Arunachal Pradesh	6.9	36.9	56.2	100	5.4	34.1	60.5	100
Assam	6.7	45.7	47.6	100	5.4	42.8	51.8	100
Manipur	17.8	64.1	18.1	100	13	59.3	27.7	100
Meghalaya	4.4	29	66.5	100	5	27.3	67.6	100
Mizoram	4.2	27.4	68.3	100	1.4	26.4	72.2	100
Nagaland	15.6	34.1	50.3	100	3.6	39.5	56.9	100
Sikkim	3.4	34.3	62.3	100	0.9	32.9	66.2	100
Tripura	6.6	46.4	47	100	7	45.9	47.1	100
Total	8	44.2	47.8	100	5.9	42.1	52	100

Source: Computed

Table-4.13 (Column-A) shows that a substantial proportion of urban households in the region enjoys adequate ventilation (44.2% classified as ‘satisfactory’ and 47.8% classified as ‘good’) while a significant per cent (8%) falls under the category of ‘bad’. State-wise analysis reveals marked disparities as Mizoram (68.3%), Meghalaya (66.5%) and Sikkim (62.3%) shows highest proportions of households with ‘good’ ventilation, indicating relatively favourable living conditions. Arunachal Pradesh also performs well, with 56.2 per cent classified as having ‘good’ ventilation.

Manipur (17.8%) and Nagaland (15.6%) are the only two states which recorded more than 10 percent of households with ‘bad’ ventilation. In Manipur since 64.1 per cent of households falls under the category of ‘satisfactory (the highest), only 18.1 per cent of households are classified as ‘good’ ventilation (the lowest).

In case of condition of structure (presented in Table-4.13 Column-B), 52 per cent of households are classified as having ‘Good’ structures, while 42.1 per cent are ‘Satisfactory’, and 5.9 per cent fall under the ‘Bad’ category across the states which indicates that more than half of the households possess optimal structure conditions based on this observation, whereas a smaller but significant proportion requires substantial improvement. State-wise analysis indicates notable disparities in structure conditions.

The state of Mizoram exhibits the highest percentage of ‘Good’ structures (72.2%), followed by Meghalaya (67.6%), and Sikkim (66.2%), suggesting better housing structure adequacy in these states. Combined with the percentage of households falls under the “satisfactory” category, these states registered a minimal percentage of structure recorded under the category of ‘bad’. In contrast to these, states like Manipur, with only 27.7 per cent of ‘Good’ structures, 59.3 per cent of ‘satisfactory’ and 13 per cent classified as ‘Bad’. The percentage of structure recorded as ‘bad’ is also high in Tripura (7%) and Assam and Arunachal Pradesh (5.4%).

While states such as Mizoram, Sikkim, and Meghalaya demonstrate strong performance with minimal representation in the ‘Bad’ category, Manipur shows the lowest percentage of ‘Good’ structures and the highest percentage of ‘Bad’ structures among all states.

Having analysed the different indicators of housing status, it is now possible to estimate the overall structure adequacy index by summing scores on the above 6 indicators. The different indicator carries different score viz., 0-1 for Roof, Wall and Floor status and access to Kitchen and 1-3 for condition of structure and ventilation, and then the sum will have a maximum of 10. Table-4.14 shows the summary scores of housing structure adequacy indicators.

Table-4.14: Summary scores on housing adequacy indicators

States	Mean	Std. Dev.	Min.	Max.
Arunachal Pradesh	8.50	1.87	2	10
Assam	8.44	1.63	3	10
Manipur	7.11	1.73	3	10
Meghalaya	9.06	1.28	4	10
Mizoram	8.53	1.12	3	10
Nagaland	8.33	1.55	3	10
Sikkim	9.08	1.07	5	10
Tripura	8.13	1.77	2	10
Total	8.33	1.67	2	10

Internal Consistency measure (Cronbach's Alpha) = 0.682

Source: Computed

Table-4.14 presents a statistical summary of housing adequacy across the eight states. The mean scores indicate a moderate level of adequacy overall (Mean: 8.33; Std. Dev: 1.67), with significant inter-state variability. The average housing adequacy scores range from 7.11 (Manipur) to 9.08 (Sikkim). Along with Sikkim, Meghalaya, Mizoram, Arunachal Pradesh and Assam has higher mean score than the region's average, indicating better housing adequacy. Manipur with the lowest mean score (7.11), shows relatively poorer housing adequacy followed by Tripura and Nagaland.

The standard deviation values range from 1.07 (Sikkim) to 1.87 (Arunachal Pradesh). States with lower standard deviation-Sikkim and Mizoram show lower variability and more consistent housing adequacy. At the same time, Tripura and Assam show higher variability, suggesting greater disparity in housing adequacy among households. The internal consistency of indicators as measured by Cronbach's Alpha shows a value of 0.682, indicating a moderate level of internal consistency in the housing adequacy indicators. While acceptable for exploratory research, this suggests room for improvement in the reliability of the measures used.

The overall structure adequacy indicators are further classified into 3 scale level of adequacy or inadequacy ranging from 'highly inadequate', 'inadequate' and 'adequate' using standard deviation of the distribution. Households scores less than 6.66 (i.e., less than $Mean - SD$) are classified as '*Severely Inadequate*'; between 6.66-8.33 ($Mean - SD$) as '*Inadequate*', while households scoring 8.33 (Mean) and more are classified as '*Adequate*'. The distribution of households based on this classification is presented in Table-4.15.

As presented in Table-4.15, only half of the urban households in north-east India managed to secure adequate housing structure while the rest in the region are classified as 'inadequate' (34.37%) and 'severely inadequate' (15.46%). The percentage of households with adequate structure is highest in the state of Sikkim (70.17%) followed by Meghalaya (68.84%) and Mizoram (63.85%).

Table-4.15: Estimates of the incidence of housing structure inadequacy in north-east India

States	Severely Inadequate	Inadequate	Adequate	Total
Arunachal Pradesh	11.99	29.94	58.07	100
Assam	13.86	34.65	51.49	100
Manipur	38.34	40.79	20.86	100
Meghalaya	4.21	26.95	68.84	100
Mizoram	4.64	31.51	63.85	100
Nagaland	13.25	36.77	49.98	100
Sikkim	2.09	27.74	70.17	100
Tripura	20.15	34.67	45.17	100
Total	15.46	34.37	50.17	100

Source: Computed

State recording lowest percentage of households having adequate structure- Manipur is the state showing highest percentage of households falling under ‘severely inadequate’ category with more than 1/3rd of the households falls under this category. Other states registering high percentage of ‘severely inadequate’ are Tripura (20.15%) and Assam (13.86%).

4.3.3. Drinking Water and Sanitation

Access to clean drinking water and sanitation facilities like latrine and bathroom facilities are crucial to improve living standard and the level of access to these facilities forms a key part in housing adequacy indicators. (Kumar, 2005; Behr, et.al., 2021; Pal, et.al., 2015; Deka, 2012). This index includes three indicators of drinking water, two indicators of latrine and bathroom facilities. Access to drinking water is measure by its sources, exclusivity of uses and sufficiency whereas latrine facilities is measured by its types and exclusivity of uses and bathroom is rank based on the mere access of the facility and the exclusivity of uses.

With respect to source of water, households’ principal source of drinking water is classified into ‘improve source’ and ‘unimproved source’ as presented in Table-4.16.

It presents distribution of urban household in north-east India based on their principal source of drinking water in absolute and percentage term. The overall data shows that the nearly 4/5th of the urban household in the region have access to improved source of drinking water while the remaining households are deprived of improved source of drinking water. The high overall percentage reflects exceptional performance by the state of Sikkim where all households are recorded to have access to improved source of drinking water; following this, Mizoram, Arunachal Pradesh, Nagaland and Meghalaya showing high percentage of more than 90 per cent having access to improved source of drinking water.

The remaining three states-Tripura (66.7%), Manipur (66.8%) and Assam (74.3%), in contrast, shows a relatively lower percentage in terms of access to improved source of drinking water indicating more than 1/3rd of the households in Tripura and Manipur and 1/4th of urban households in Assam are deprived of improved source of drinking water.

Table-4.16: Access to improved sources of drinking water

States	Percentage of Household		Total
	Improved Source	Unimproved Source	
Arunachal Pradesh	97.3	2.7	100
Assam	74.3	25.7	100
Manipur	66.8	33.2	100
Meghalaya	91.4	8.6	100
Mizoram	99.3	0.7	100
Nagaland	92.0	8.0	100
Sikkim	100.0	0.0	100
Tripura	66.7	33.3	100
Total	77.8	22.2	100

Source: Computed

The percentage of urban households having access to ‘improved source’ in the region as presented in Table-4.16 is way lower than the national or all India average of 97.4 per cent in 2017-18 (NSS Report No. 584: Drinking Water, Sanitation, Hygiene

and Housing Condition in India page-26) and 98.7 per cent as per NFHS-05 (2019-21) showing the region's limitations in access to clean drinking water. State-wise comparison with the NFS-05 findings also revealed that states like Manipur and Tripura recorded significant change (increase) in the percentage, while Sikkim and Mizoram recorded a slight reduction bringing the overall north-east percentage to 88.25 per cent (NFHS-05 Report, 2021 page-42). It is important to note that the data for NSS 76th Round was collected two-three years ahead of the NFHS-05.

Sufficiency of drinking water from the principal source has been defined in the sense that only households, having received sufficient water supply from their principal source in each month of the calendar year, are classified as 'sufficient'. The data on level of access to improved source of drinking water is complemented by looking into the level of sufficiency of water received from these principal sources.

Table-4.17: Sufficiency of drinking water

States	Percentage of Household		
	Sufficient	Not Sufficient	Total
Arunachal Pradesh	91.8	8.2	100
Assam	98.1	1.9	100
Manipur	78.5	21.5	100
Meghalaya	79.0	21.0	100
Mizoram	95.2	4.8	100
Nagaland	57.7	42.3	100
Sikkim	99.6	0.4	100
Tripura	92.0	8.0	100
Total	91.4	8.6	100

Source: Computed

As presented in Table-4.17, the state of Sikkim, Mizoram and Arunachal Pradesh shows consistent performance on access to clean or improved drinking water that these states registered high percentage of improved source of drinking water and high percentage of 'sufficient' water supply from these sources. All states, excluding the state of Nagaland, shows high rate of sufficiency of drinking water from their principal sources which get reflected in the total or all state percentage of 91.4 per cent. The all-state percentage for the region in case of sufficiency of drinking water from

principal source is consistent, slightly higher than the national average of 90.9 per cent for urban households (NSS Report No. 584: Drinking Water, Sanitation, Hygiene and Housing Condition in India page-25)

It is important to note that states having relatively lower percentage of improved source of drinking water viz., Tripura and Assam (Table-4.16) recorded a high percentage of 92.0 and 98.1 respectively in terms of sufficiency. In contrast, Nagaland, having recorded 92 per cent of its principal source as 'improved source', only 57.7 per cent received 'sufficient' water supply from these improved sources. Nagaland, thereby, is state where the insufficiency rate is the highest (42.3%) followed by Manipur (21.5%) and Meghalaya (21.0%) implying dependence on secondary source of drinking water will be much higher in these states.

The level of access to the principal source of drinking water or the level of sharing or exclusivity of uses is classified into three categories viz., Exclusive Use: 'Individual Households/shared in the building'; 'Community Use: Restricted/Unrestricted' and 'Private Source: Restricted/Unrestricted' and are rank and scores were given as 3, 2 and 1 respectively.

Overall, the percentage of households having water source for exclusive use of the household including common use in the building is 86.6 per cent in the region. In this aspect, Arunachal Pradesh with 97.8 per cent top the list followed by Mizoram with 95.7 per cent and Assam with 93.5 per cent. All states, excluding Manipur (48.8%) and Meghalaya (66.1%) recorded higher percentage than the region's average.

The percentage of urban households using community source is highest in the state of Manipur (18.8%), Meghalaya (15.7%) and Tripura (10.6%) and the percentage for the whole region is calculated at 6.5 per cent. It is interesting to note that household recorded to have use 'community source' for drinking water is minimal in Arunachal Pradesh (0.4%) and Mizoram (0.9%).

Table-4.18: Level access to principal source of drinking water

States	Percentage of Household			Total
	Exclusive use	Community use	Private Source	
Arunachal Pradesh	97.8	1.8	0.4	100
Assam	93.5	3.6	2.8	100
Manipur	48.8	18.8	32.4	100
Meghalaya	66.1	15.7	18.2	100
Mizoram	95.7	3.4	0.9	100
Nagaland	88.5	2.3	9.3	100
Sikkim	92.6	0.0	7.4	100
Tripura	87.9	10.6	1.5	100
Total	86.6	6.5	7.0	100

Source: Computed

Urban household using ‘private source’ as principal source of drinking water in the region is found to be around 7 per cent. In the state of Manipur, around 1/3rd of the households is recorded to have use ‘private source’ as the main source of drinking water. Meghalaya (18.2%) and Nagaland (9.3%) also recorded a significant percentage of household under this category.

Urban households in the north-east are also classified -by the type of latrine or toilet used- into ‘improved’ and ‘unimproved’. The classification is made base-on the hygienic condition of the latrine facilities access (Behr, et.al, 2021, Fiadzo, et.al, 2001) as discussed in section 4.2.3.

As presented in Table-4.19, nearly 90 percent of the households in the region use ‘improved’ latrine (piped sewer system’, ‘septic tank’, ‘ventilated improve pit latrine’ and ‘pit latrine with slap’) while the rest 11.5 per cent are recorded to have use ‘unimproved’ types of latrines. State-wise analysis exhibit that the percentage is nearly 100 in the state of Sikkim and Mizoram, more than 90 per cent in Arunachal Pradesh and Meghalaya. The percentage of urban household using ‘improved’ latrine is lower than the region’s average in the state of Assam, Tripura Manipur, and Nagaland (84.6%, lowest). Four states- Nagaland (15.4%), Manipur (14.0%), Tripura (13.8%) and Assam

(13%), shows that more than 10 per cent of urban households are using ‘unimproved’ latrine types.

Table-4.19: Distribution of urban households by types of latrine use

State	Percentage of Household		Total
	Improved Latrine	Unimproved Latrine	
Arunachal Pradesh	96.4	3.6	100
Assam	87.0	13.0	100
Manipur	86.0	14.0	100
Meghalaya	95.6	4.4	100
Mizoram	97.5	2.5	100
Nagaland	84.6	15.4	100
Sikkim	99.5	0.5	100
Tripura	86.2	13.8	100
Total	88.5	11.5	100

Source: Computed

The NFHS-05 (2019-2021) finding on the percentage of urban households (all-India) having improved latrine facility (69.3) was much lower from region’s average as presented in Table-4.19. The state-wise percentage of household having ‘improved’ latrine facilities is also lower in all states as per the report (NFHS-05 Report, Table-2.7).

The level of access to latrine facility can also be analyse by looking into the rate or level of exclusivity of latrine use or level of sharing. Higher the level of exclusive use is taken to imply independent and better privacy and hygienic for individual or household. Table-4.20 presents data on urban households' access to latrines in eight north-eastern states of India. Across all states, majority of households have exclusive use latrines (99.1%). The highest percentage of exclusive-use latrines is observed in Sikkim, where 100 per cent of households have access to their own latrines, followed closely by Meghalaya (99.8%), Mizoram (99.7%), and Nagaland (99.7%).

Table-4.20: Distribution of urban households by access to latrine

State	Percentage of Household			Total
	Exclusive	Community Use	No Latrine	
Arunachal Pradesh	99.1	0.0	0.0	100
Assam	99.0	0.0	0.9	100
Manipur	98.9	0.0	0.0	100
Meghalaya	99.8	0.0	1.1	100
Mizoram	99.7	0.0	0.3	100
Nagaland	99.7	0.3	0.7	100
Sikkim	100.0	0.0	0.2	100
Tripura	98.8	0.4	1.0	100
Total	99.1	0.1	0.8	100

Source: Computed

The percentage of households without latrines ('No Latrine' in Table-4.19) is relatively low, at 0.1 per cent overall in the region. The highest proportions of households without any latrine facilities are observed in Meghalaya (1.1%), Tripura (1.0%), and Assam (0.9%), Record of household without latrine is minimal in the rest of the states. The use of community latrines is also low, accounting for only 0.1% of total urban households across the eight states. Only 0.4 per cent in Tripura and 0.3 per cent in Nagaland in total reported using shared community latrines.

It can be observed from Table-4.19 and Table-4.20 that the level of sanitation coverage in the urban areas of these northeastern states is very high with high percentage of households using 'improved' latrine facility with 'exclusive use' being the dominant form of access. While some gaps remain, particularly in states like Tripura and Manipur, the overall picture indicates that there exists high level of access with respect to latrine facilities in the region.

Classifying urban households into 'fully access' and 'not fully access' provides another detailed overview of urban households' access to bathroom facility in eight north-eastern states of India. Household having bathroom ('attached to the dwelling unit' and detached to the dwelling unit but within the premises') are considered as 'fully

access' to the bathroom facility and those unit classified as 'not used' and 'others' are considered as 'not fully access' to the bathroom facility.

Table-4.21 reveals significant disparities in bathroom accessibility across the region, with states exhibiting varying degrees access. Overall, 85. 3 per cent have full access to bathrooms and only 14.7 per cent fall into the "not fully access" category, indicating a lack of adequate bathroom facility.

State-wise, Sikkim emerges as the leader in bathroom accessibility, with 100 per cent of households having full access to bathrooms. Other states, such as Nagaland (99.7%), Mizoram (99.6%), and Meghalaya (99.5%), also recorded a near-universal access. Similarly, Arunachal Pradesh and Assam demonstrate relatively high levels of access, with 96.88% and 83.56% of households having fully access bathrooms facility, respectively.

Table-4.21: Distribution of urban households by access to bathroom

State	A. Level of Access (%)			B. Types of Access (%)			
	Fully Access	Not Fully Access	Total	Exclusive use	Community use	No Bathroom	Total
Arunachal Pradesh	97.2	2.8	100	97.2	0.0	2.8	100
Assam	87.5	12.5	100	87.5	0.0	12.5	100
Manipur	75.1	24.9	100	75.1	0.3	24.6	100
Meghalaya	99.5	0.5	100	99.5	0.0	0.5	100
Mizoram	99.6	0.4	100	99.6	0.0	0.4	100
Nagaland	99.7	0.3	100	99.7	0.0	0.3	100
Sikkim	100.0	0.0	100	100.0	0.0	0.0	100
Tripura	53.8	46.2	100	53.8	0.0	46.2	100
Total	85.3	14.7	100	85.3	0.0	14.6	100

Source: Computed

In contrast, states like Tripura and Manipur face significant challenges as Tripura has the highest proportion of households under 'not fully access' category (46.2%) Manipur also has a substantial proportion of households i.e.,24.9 per cent under this category. Overall, the data indicates a clear divide in bathroom accessibility among the northeastern states. While some states, such as Sikkim, Nagaland, Mizoram, and

Meghalaya, have achieved near-universal access, others, particularly Tripura and Manipur, lag significantly behind.

As in case of level of access to latrine facility, the types of access to bathroom facility can be examined by looking into the rate or level of exclusivity of bathroom use or level of sharing. Higher the level of exclusive use is taken to imply independent and better privacy and hygienic for individual or household.

Consistent with the classification and observation of households into ‘fully access’, 85.3 per cent have exclusive use of bathrooms, reflecting significant progress in sanitation infrastructure in urban areas. However, 14.6 per cent falls under the category of ‘no bathroom’, while a negligible number rely on community-use bathrooms as presented in Table-4.21

State wise analysis shows Sikkim leads with 100 per cent of households having exclusive-use bathrooms, demonstrating exemplary sanitation coverage. Nagaland (99.7%), Mizoram (99.6%), and Meghalaya (99.5%) also show near-universal bathroom access, with minimal or no households lacking bathroom facilities.

Manipur with 24.9 per cent of households lacking access to bathrooms, and only 75.1 per cent having exclusive-use facilities; and Tripura with 46.2 per cent of households lacking access to bathrooms, while only 53.8 per cent have exclusive-use facilities; are the two states facing challenges in providing adequate bathroom access, as a considerable proportion of households remain without facilities in these two states.

The six indicators discussed can be summed up now and give a broader picture of drinking water and sanitation facilities in the eight north-eastern states of India. These indicators carry 13 (thirteen) points- 5 points for drinking water and 4 points each for latrine and bathroom facility. The summary score of Access to Sanitation is presented in Table-4.22.

Out of the maximum 13 points, the mean score for the whole region in access to sanitation is 11.92 with standard deviation of 1.65. State-wise observation shows that Mizoram with a mean score of 12.85 is highest in this Index, closely followed by Sikkim with a mean score of 12.84 with a smaller standard deviation of 0.54 indicating

smaller variation or disparities among households. Other than these two, mean score of Arunachal Pradesh (12.73), Meghalaya and Nagaland (12.12) and Assam (12.11) are also significantly higher than the rest of the states.

Table-4.22: Average scores in access to drinking water & sanitation

State	Mean	Std. Deviation	Min.	Max.
Arunachal Pradesh	12.73	1.00	4	13
Assam	12.11	1.51	5	13
Manipur	10.71	2.18	4	13
Meghalaya	12.12	1.09	7	13
Mizoram	12.85	0.56	5	13
Nagaland	12.12	1.03	8	13
Sikkim	12.84	0.54	10	13
Tripura	10.91	1.94	4	13
Total	11.92	1.65	4	13

Internal Consistency measure (Cronbach's Alpha) = 0.603

Source: Computed

Manipur (10.71) and Tripura (10.91) are the two lowest mean score reflecting significant challenges face by the two states in all aspects of the indicators. High standard deviation score of Manipur and Tripura also indicates that there exists high variation on access to drinking water and sanitation facilities among urban households in these states.

Using the mean and standard deviation score presented in Table-4.21, the overall adequacy indicator of drinking water and sanitation can be categorised into three-scale level of adequacy: 'Severely Inadequate' (less than Mean-Std Deviation i.e., less than 10.27), 'Inadequate' (Between Mean-Std Deviation i.e., 10.27-11.92) and 'Adequate' (Mean Score i.e., 11.92 and above). Table 4.23 presents the incidence of inadequacy in access to drinking water and sanitation facilities across the north-eastern states of India, classifying urban households into three categories: 'severely inadequate', 'inadequate', and 'adequate'.

Overall, the data reveals that 18.65 per cent of the urban household experience 'severe inadequacy' in access to drinking water and sanitation, while another 4.98 per

cent falls under the ‘inadequate’ category. Consequently, nearly one-fourth of the urban households (23.63%) encounters some degree of access limitations, indicating persistent gaps in water supply and sanitation infrastructure. Nonetheless, majority of the households (76.37%) are classified as having ‘adequate’ access.

Table- 4.23: Estimates of the Incidence of inadequacy in access to drinking water & sanitation

States	(Percent)			
	Severely Inadequate	Inadequate	Adequate	Total
Arunachal Pradesh	3.03	0.65	96.31	100
Assam	13.64	3.94	82.42	100
Manipur	44.80	7.92	47.28	100
Meghalaya	10.70	16.42	72.88	100
Mizoram	0.61	0.38	99.00	100
Nagaland	11.01	6.47	82.53	100
Sikkim	0.36	6.99	92.65	100
Tripura	46.61	3.15	50.24	100
Total	18.65	4.98	76.37	100

Source: Computed

Tripura exhibits the highest proportion of its urban household facing ‘severe inadequacy’, with 46.61 per cent of households experiencing extreme difficulties in accessing drinking water and sanitation. An additional 3.15 per cent in the state falls into the ‘inadequate’ category, meaning that around half of the state’s urban households (49.76%) lacks full access to these basic amenities. Similarly, Manipur demonstrates concerning figures, with 44.80 per cent of the urban household classified as ‘severely inadequate’ and another 7.92 per cent in the ‘inadequate’ category indicating a substantial portion of the household (52.76%) in urban areas faces challenges in securing reliable access to safe drinking water and sanitation facilities.

Assam, Nagaland, and Meghalaya recorded relatively moderate levels of access to drinking water and sanitation facilities compared to Tripura and Manipur. Among them Assam has 13.64 per cent of urban households classified as ‘severely inadequate’ and Meghalaya registered 16.42 per cent as ‘inadequate’.

In contrast to these, states such as Arunachal Pradesh, Sikkim, and Mizoram demonstrate significantly better conditions. Arunachal Pradesh reports 96.31 per cent of its urban household having adequate access, with only 3.03 per cent in severely inadequate and 0.65 per cent in inadequate category. Sikkim, which recorded only 0.36 per cent as severe inadequacy, demonstrates robust performance, with 92.65 per cent of its urban household enjoying adequate access. Mizoram emerges as the best-performing state, with 99 per cent of its urban household categorized as having adequate access and only a negligible proportion experiencing any form of inadequacy.

Overall, the findings from this analysis highlight the uneven distribution of access to drinking water and sanitation across North-East India. While some states have achieved near-universal access, others continue to struggle with severe inadequacy.

4.3.4. Sources of Energy

Access to clean energy for electricity and cooking are an essential characteristic of improved living conditions (Fiadzo, et.al 2001, Kumar, 2015) and lack of these resources is considered significant indicators of housing deprivation or housing poverty (Behr, et.al, 2021). The level of access to electricity is simply classified into ‘access’ and ‘no access’ and households having access to electricity from any sources or any type-whether it is through grid or generator or solar or biomass-all are classified as having access to electricity.

The main criteria to use to classify households’ uses of cooking fuel is whether the households have access to clean fuel or energy for cooking purpose or not. As described in section 4.2.4, LPG and electricity are considered as clean cooking fuel and household having used these two as their main source of fuel for cooking purpose are classified as ‘adequate’ and the rest – using solid fuel and other sources are classified as ‘inadequate’. The level of access to electricity is, therefore, presented in Table- 4.24

Table-4.24: Distribution of urban households in north-east India by access to electricity & cooking fuel

State	Access to Electricity (%)			Access to Cooking Fuel (%)		
	Access	No Access	Total	Adequate	Inadequate	Total
Arunachal Pradesh	98.9	1.1	100	94.4	5.6	100
Assam	98.8	1.2	100	91.4	8.6	100
Manipur	99.6	0.4	100	87.7	12.3	100
Meghalaya	98.1	1.9	100	86.9	13.1	100
Mizoram	100.0	0.0	100	97.4	2.6	100
Nagaland	100.0	0.0	100	90.3	9.7	100
Sikkim	100.0	0.0	100	94.8	5.2	100
Tripura	99.5	0.5	100	78.8	21.2	100
Total	99.1	0.9	100	89.8	10.2	100

Source: Computed

Access to electricity in the region is nearly universal as the percentage in Table-4.24 shows, that 99.1 per cent of urban households get access to electricity. Three states Mizoram, Nagaland and Sikkim registered 100 per cent electricity access while the remaining states shows a few or minimal percentage of households lacking access to electricity. This finding is consistent with the findings of NFHS-05 which registered 99 per cent of urban households (all-India) having access to electricity while 1 per cent denied access to electricity

The case of cooking fuel is slightly different than the access to electricity that a significant percentage of households in the region lacks ‘adequate’ clean cooking fuel although nearly 90 per cent have ‘adequate’ access to it. That implies more than 10 per cent of households lack adequate cooking fuel for domestic consumption.

State-wise analysis shows that the rate of ‘Inadequate’ access to clean cooking fuel is highest in the state of Tripura (21.2%), Meghalaya (13.1%) and Manipur (12.3%) while ‘adequate’ access is highest in the state of Mizoram followed by Sikkim and Arunachal Pradesh. Underpinning this finding, NFHS-05 (2019-2021) data shows 89.7 per cent of urban households in India have access to clean fuel for cooking purposes which is only a two-percentage difference from the region’s average of 87.94 per cent NFHS-05 Report pp-40).

To sum, the level of access to energy by states of the region is presented in Table-4.25

Table-4.25: Distribution of urban household on access to energy

State	Percentage of Household		
	Fully Access	Partially Access	Total
Arunachal Pradesh	93.3	6.7	100
Assam	90.7	9.3	100
Manipur	87.4	12.6	100
Meghalaya	86.3	13.7	100
Mizoram	97.4	2.6	100
Nagaland	90.3	9.7	100
Sikkim	94.8	5.2	100
Tripura	78.6	21.4	100
Total	89.3	10.7	100

Source: Computed

Table 4.25 presents a disaggregated account of urban household access to energy across eight north-eastern states of India, categorizing them into ‘partially accessed’ and ‘fully accessed’ segments. It illustrates considerable inter-state variation in the degree of energy accessibility. States such as Mizoram (97.4%), Sikkim (94.8%), and Arunachal Pradesh (93.3%), suggesting a near-universal access.

Conversely, the data reveals that states like Tripura (21.4%), Meghalaya (13.7%), and Manipur (12.6%) exhibit relatively higher proportions of urban households with only partial access to energy. The aggregated statistics across all eight states indicate that 89.3 per cent of urban households have fully accessed, while 10.7 per cent remain partially accessed clean energy for lighting and cooking.

4.3.5. Tenure Security

There are some complexities and limitations in measuring tenure security as discussed in section 4.2.3. Despite these limitations, tenure security is indispensable

part of housing studies and is therefore not feasible to exclude in this study. Therefore, partially following NSS classification and improvising Chopra, (2018), Fiadzo, et.al (2001) classification, four categories of tenure secure is suggested and households are thereby classified accordingly.

While analysing the security of tenure for urban households in north-east India, it is important to note that only 97.1 responds to this part i.e., 2.9 per cent shall be counted as missing value.

Table-4.26: Distribution of urban households by security of tenure

States	Percentage of Household			Total
	Secured	Partially Secured	Not Secured	
Arunachal Pradesh	33.2	30.0	36.8	100
Assam	71.3	9.8	18.9	100
Manipur	93.3	1.7	5.0	100
Meghalaya	46.9	1.7	51.4	100
Mizoram	73.1	3.2	23.7	100
Nagaland	66.5	1.7	31.7	100
Sikkim	34.2	15.6	50.3	100
Tripura	88.3	2.7	9.0	100
Total	71.4	7.6	20.9	100

Source: Computed

The data for the whole region suggested 71.4 per cent of urban households in the region are recorded as having secure tenure as they are mostly household living in owned housing unit (see section 4.2.3). In contrast the remaining 28.6 per cent were classified as either ‘partially secured’ (7.6%) mostly of households living in employer’s quarters and households living in hired dwelling unit with written contract; or ‘not secured’ (20.9%) generally of households living in hired unit without written contract and no report of ‘homeless’ is registered. The percentage of households living in secured tenure as presented in Table-4.26 is consistent with the all-India data of household living in owned unit (69.16%) as per Census 2011 (see Chapter-3, Table-

3.6). Compared with the national percentage of home ownership (Chapter-3, Table-3.10), the region's percentage is slightly higher.

State wise, Manipur recorded the highest percentage of household living in a secure tenure followed by Tripura and Assam whereas Arunachal Pradesh and Sikkim registered only 1/3rd of the urban households lived in secure tenure. The percentage households classified as 'not secured' is significantly high in the state of Meghalaya and Sikkim where more than half of the urban households lived in a hired housing unit without written document or contract of agreement regarding the rate of rent, duration of hiring, etc., and mostly dependent on mutual consent based on oral agreement. The percentage of households recorded in this category is also high in the state of Arunachal Pradesh (36.8%), Nagaland (31.7%) and Mizoram (23.7%).

4.3.6. Affordability

Affordability as mentioned in section 4.2.5 and shown in Table-4.6 is measured in terms of percentage of monthly household expenditure on housing purposes where 'Usual monthly consumer expenditure' is used for estimating housing affordability. Households spending more than 30 per cent of their monthly income or expenditure for housing purposes are considered 'Unafforded'. Table-4.27 shows (in percentage term) the level of affordability among urban households of north-east India. It should be noted that all homeowners and households who are not-paying rent are automatically counted as afforded since the percentage of household expenditure on rent is used as the main measure of affordability in Table-4.27.

It is important to be noted that 27.2 per cent of the urban households lived in a hire dwelling unit and paying rent in the whole region and the estimated made in Table-4.27 applies only to these paying renters since the affordability status is calculated based on rent-expenditure ratio of the urban households. The overall data indicated that out 78 per cent of these urban rent-paying households in all states are categorized as 'afforded', while 23.75 per cent fall under 'no afforded' category. States with the highest proportions of 'afforded' household include Nagaland (91.7%), Mizoram (87.9%), and Manipur (87.0%), indicating strong affordability levels. On the other

hand, Sikkim, with a nearly equal split between ‘afforded’ (50.3%) and ‘no afforded’ (49.7%) households, showing the lowest affordability. Meghalaya (62.6%) and Assam (66.5%) also show relatively lower affordability compared to other states.

Table-4.27: Distribution of urban household based on level of housing affordability

State	Percentage of Household		
	Afforded	Not Afforded	Total
Arunachal Pradesh	75.5	24.5	100
Assam	66.5	33.5	100
Manipur	87.0	13.0	100
Meghalaya	62.6	37.4	100
Mizoram	87.9	12.1	100
Nagaland	91.7	8.3	100
Sikkim	50.3	49.7	100
Tripura	78.0	22.0	100
Total	69.7	30.3	100

Source: Computed

The percentage of households falling under the category of ‘not afforded’ is highest in the state of Sikkim followed by Assam and Meghalaya where more than 1/3rd of the households spend more than 30 per cent of their monthly income on rents. The state with lowest percentage of households under this category are Nagaland (8.3%), Mizoram (12.1%), and Manipur (13%) indicating that in these states there are lesser number of households paying more than 30 per cent of their income on rent.

4.4. Measuring Overall Housing Deprivation or Poverty

To capture, examine and quantify households’ access to quality housing and its related amenities and to create a unique measure to compare housing adequacy or inadequacy within a defined geographical or political boundary (north-east India, in this case), Housing Deprivation index (HDI) is constructed. To construct the Index, it is necessary, first, to identify effective housing indicators with an established set of criteria which is discussed in section 4.2 above. These selected indicators and assigned criteria may not expose the housing deprivation fully considering diverse socio-

economic condition and cultural values and practices of the region, it however, is expected to be valid and credible measurement of housing poverty independent of places or states or region as the main objective is to define minimum standards or acceptable levels (of housing quality) that must be met (Ulman, 2020; D.Souza, 2019).

The 6 (six) indicators presented in the preceding section, such as congestion, physical structure, drinking water and sanitation, sources of energy, security of tenure and affordability, showing different characteristics of housing, have been examined carefully for possible inclusion in the HDI. In case of tenure security, the analysis of the given dataset showed that more than two-thirds of the households living in rented houses occupied the house without written contract with the landlords. It is a well-known fact that urban poor and low-income groups rent mainly in the informal sector, tenants' rights are poorly protected since there are no formal agreements between the tenant and the landlords (Desai, et. al., 2012). Since the inclusion of tenure security in the form of contract agreement with landlord in the overall housing poverty index is likely to be bias towards a few cases who have the attribute, it is decided to exclude it in the construction of final HDI.

Similarly, the implication of affordability measured in terms of the amount of rent needs to be paid as a percentage of the total income (expenditure) is further examined. It may be noted that, except for tenure security, all the other indicators indicate the availability of physical (material) nature which represents housing quality. Affordability is not an indicator representing housing and amenities. It is based on income and expenditure, which is more of the socio-economic status of the family. It implies households' ability to access or attain better housing status. Further, most of the previous literature on estimation of housing poverty does not include affordability in their calculation of housing poverty index. Though it is admitted that tenure security and affordability have implications for the households' access to better housing and amenities, for the sake of analytical simplicity and consistency, it is decided to exclude them in the overall measure of housing poverty. At the same time, as it is understood that the two indicators have implications on the other factors, their interrelationships with housing poverty will be further analysed in the next chapter.

Finally, out of the 6 indicators elaborated above, four indicators, such as congestion (area adequacy), physical structure, drinking water and sanitation and sources of energy have been considered for construction of final HDI.

The next complex step to the construction of HDI is to assign weights to the selected indicators. To reflect the relative importance of each indicator, weights are assigned to the indicators (Behr, et. al., 2021). While Housing Quality Index (constructed using four indicators) by Meng, et. al., (2006) and Adequate Housing Index (using seven adequacy dimensions) by Behr, et.al., (2021) follows equal weightage scheme-giving equal-weight to each indicator. In contrast Chopra (2018) follows two methods-using equal weights to 5 of each indicator and expenditure-based weightage system where highest weightage is assigned to indicator where the gap in median monthly per capita expenditure between deprived and non-deprived households is given highest.

The problem of congestion has been considered the most consistent indicators being selected in many of the housing-quality measures and the shortage of demand for housing emanates mostly from this characteristic. To reflect the relative importance of this, it is decided that congestion shall be assigned the highest weightage among the four selected indicators. Accordingly, the other indicators were also assigned solely on this reasoning as presented in Table-4.28

Table-4.28: Allocation of Weighs to different Indicators

Indicators	Weights
Congestion Index	0.40
Structure Adequacy	0.25
Drinking Water and Sanitation	0.25
Source of Energy	0.10

It may be noted that the congestion index has been made according to the minimum area requirement of 97 square feet per person, and housing achieving this threshold are considered to have adequate space and assigned 1, and 0 otherwise (in Table 4.7 & Table 4.8). However, it is necessary to make the variable continuous and

comparable to other indices. Therefore, the standardized score for each household is calculated using the following formula:

$$\frac{\text{Area per person for individual household (sq.ft)}}{97 \text{ sq.ft}} \times 10.$$

Here 10 or above points would indicate household having more than minimum threshold area per person; and below 10 would indicate the relative distance of the household from the minimum requirement measured in 10 points scale. Accordingly, all households scoring 10 or more are assigned 10 points; and all other households are given a score in 10 points scale based on their relative distance from the minimum requirement of 97 sq. ft. per person.

Similarly, the structure adequacy has a maximum score of 10, while 13 for drinking water and sanitation and 2 for access to clean energy. These scores are also standardized to 10 points using the following formula:

$$\frac{\text{Scores of the Household in the index}}{\text{Maximum possible score}} \times 10.$$

After standardization of scores for each indicator, it is now possible to sum the overall score by applying weigh given in Table 4.27 to each indicator. The sum would indicate the overall housing conditions in the region. The summary of scores for the overall housing index is presented in Table-4.28. It may be noted that households achieving 10 points are considered to have fully adequate housing or achieving full housing adequacy, thereby they are considered out of housing poverty. Meanwhile, a score of less than 10 points indicates deprivation of the households from achieving adequate housing and amenities. The relative severity of deprivation would be measured by their distance from 10 points.

Overall, out of the maximum score of 10, the mean score of the entire north - eastern region stood at 8.60, suggesting generally high or moderate levels of housing conditions with less deprivation on access to these basic housing characteristics. While the mean is high, there exists notable variability in housing quality as indicated by the high standard deviation (1.24).

Table 4.29: Averages scores of aggregate housing indicator

States	Mean	Std. Deviation	Minimum	Maximum
Arunachal Pradesh	8.41	1.32	3.63	10
Assam	8.70	1.24	4.11	10
Manipur	8.29	1.11	4.10	10
Meghalaya	8.13	1.32	3.85	10
Mizoram	9.11	0.82	5.89	10
Nagaland	8.77	1.15	5.40	10
Sikkim	8.89	0.98	5.75	10
Tripura	8.28	1.32	3.55	10
Total	8.60	1.24	3.55	10

Source: Computed

For states, the mean scores range from 8.13 (lowest, Meghalaya) to 9.11 (highest, Mizoram). Along with Mizoram, Sikkim (8.89) scores relatively higher average, Nagaland (8.77) and Assam (8.70) also score higher averages than the region's averages. The remaining states recorded lower mean score than the region's average. This higher mean score of Mizoram and Sikkim is not unexpected as the two states outperformed others states in most of the indicators as presented in section 4.3 except- in case of Mizoram which recorded spectacularly low percentage of access to kitchen.

Meghalaya, which recorded comparatively higher level or percentage of access in indicators like structure adequacy, drinking water and sanitation and sources of energy than Tripura, has, unexpectedly, the lowest mean score (8.13). The state's aberrant low score in area sufficiency or congestion which carry the highest weight in this analysis is the factor which brought the low mean score for its overall housing indicator. Tripura, which score lowest in many dimensions of the analysis depict high deprivation despite having a moderate mean score (8.06), has the lowest minimum value (3.55) and a relatively high standard deviation (1.32), highlighting the presence of disparities in housing conditions. The findings in Table-4.29 emphasize variations in housing quality across the region, with some states manifests higher standards and more uniform conditions, while others reflect disparities in housing access and quality.

4.5. Estimates of Housing Poverty Incidence

It is an academic interest to estimate the incidence of housing poverty or housing deprivation given the overall HDI scores presented in Table-4.29. The problem is how to set the cut-off point for poverty line. It is noted that all households failing to achieve 10 points are technically deprived of adequate housing and amenities. However, there can be a situation where a household failed to achieve minimum requirement in one index but achieved in all other indices. It may not be fair to consider such a household as housing poor, due a mere low score in one index while getting high in other, because they may enjoy decent and comfortable living. It may be more appropriate to consider such household as partially deprived of housing requirements. Given all these possibilities, it may be justified to set cut-off below 10 points as absolute housing poverty line.

Figure 4.1: Distribution of housing deprivation scores



To have better understanding, the distribution of the housing deprivation index (HDI) is presented in Figure 4.1. It is observed that the mode of the distribution falls on the maximum point (i.e. 10), indicating that significantly more than half of the urban households in the 8 North Eastern states have adequate housing and are out of housing

deprivation. However, the negatively skewed distribution of suggests that scores for a substantial number of households tilts towards the lower end of the distribution. And the median point is also is well below the adequate 10 points (i.e. 8.891 points). This implies that many families are severely deprived of basic housing and amenities, while majority of them in the region are having adequate housing.

It is noteworthy that when considering the standard deviation scale, the value of *Mean minus Std. Dev.* (i.e. *Mean – SD*) is 7.358, while the 25th percentile is close to this point at 7.781. This distribution confirms that the bottom 25% fell below 7.781. In view of the negatively skew distribution, the proximity of the standard deviation range to the 25th percentile, and the need for simplicity in measurement, the minimum cut-off for housing poverty is determined arbitrarily at 7.5 points. Interestingly, a score of more than this cut-off would indicates achieving 75 per cent of the 10-point requirement for adequate housing, while below it would reflect a 25 per cent shortfall from the full adequacy score. Consequently, households scoring below 7.5 are classified as *housing poor*, falling short of the minimum adequacy score by at least 25 per cent. This cutoff is applied uniformly across all states of northeastern India for determining housing poverty.

The estimates of housing poverty incidence using the above criteria across the north -eastern states have been given in Table-4.30. The table shows that as many as 19.88 per cent of the households in urban areas of North-East India are poor in terms of housing. The incidence of housing poverty is found to be highest in Meghalaya (33.54%) followed by Tripura (27.53%). The incidence is lowest in Mizoram where only 5.76 per cent are considered as housing poor, followed by Sikkim (9.87%).

It may be worthwhile to note that congestion index as measured by the average number of persons per square feet has been given the largest weigh (40%) in the construction of housing deprivation index, while housing structure and access to drinking water and sanitation are given 25 per cent weigh each, and 10 per cent weight being allotted to access to energy. Meanwhile, as given in Table 4.8, the average floor area of the house per person was only 121.17 sq. ft. for Meghalaya followed by Tripura (169.56 sq. ft.) as against all 8 states average of 178.33 sq. ft. per person. The high

incidence of housing poverty in the two states relative to other states corroborates the prevalence of small living space and high congestion in the houses of urban households in these states. It may be noted that sufficient living area has been the main indicator of housing adequacy among the urban population (Behr, et.al., 2021; Meng.et.al., 2006).

Table 4.30: Estimates of the Incidence of housing poverty in urban north-east India

States	Percentage of households		
	Poor	Non-Poor	Total
Arunachal Pradesh	22.77	77.23	100
Assam	18.19	81.81	100
Manipur	24.12	75.88	100
Meghalaya	33.54	66.46	100
Mizoram	5.76	94.24	100
Nagaland	15.16	84.84	100
Sikkim	9.87	90.13	100
Tripura	27.53	72.47	100
Total	19.88	80.12	100

Source: Computed

4.6. Conclusion

By looking into different aspects and characteristics of housing deprivation in India, the quantitative data shows that while the incidence of deprivation seem severe in some cases, around 4/5th of the urban households (80.12%) in the region have access to adequate housing and are effectively out of deprivation. With 94.24 per cent of its urban households classified as ‘non-poor’, Mizoram is found to be the least ‘housing poor’ in the region closely followed by Sikkim (90.13%) and Nagaland (84.84%) came third. However, the remaining 1/5th faces deprivation in the form of congestion, inadequate or dilapidated physical structure of the housing units, lack of drinking water and sanitation facilities-some in all forms and some in specific form or aspects (Table-4.30).

Indicator-wise analysis shows that severe inadequacy or deprivation is highest in case of ‘congestion’ where nearly 1/5th of the households (19.8%) faces severe inadequacy of space measure in person per square feet (Table-4.7). In this indicator, the state of Meghalaya shows severe deprivation that more than half (51.3%) of urban household lived in inadequate living space, followed by Arunachal Pradesh (38.1%) and Sikkim (22.7%).

Deprivation is also high in physical structure and drinking water and sanitation where the percentage of urban households living with ‘severely inadequate’ structure and drinking water and sanitation accounts for 15.46 per cent and 18.65 per cent respectively (Table-4.15 & Table-4.23). Household records under ‘Inadequate’ in these two indicators account for 34.37 per cent and 4.98 per cent respectively.

Households falling under deprive or inadequate is the least in case of access to clean energy (electricity + Cooking fuel) that only 10.7 per cent of urban households have inadequate access to clean energy where lack of clean energy for cooking purpose is the major factor (Table-4.27).

Overall, the incidence of housing poverty or deprivation is found to be highest in the state of Meghalaya (33.54%) owing to its poor performance in ‘congestion’ factor where the highest weight is assigned to despite its high score in the physical structure and access to energy. Tripura, which registered low score in almost all indicators came second with 27.53 per cent of its urban households classified as ‘poor’ especially in ‘drinking water and sanitation.’

Improving access to these different characteristics or aspect of housing not only improve the physical wellbeing of urban residents but also effective in improving social order and economic sustainability. Therefore, constant and proactive measures and policies to deliver these basic needs to the urban residents is found to be essential and critical.

Chapter 5

FACETS AND FACTORS OF URBAN HOUSING POVERTY – AN EMPIRICAL ANALYSIS

5.1. Introduction

Access to housing and basic amenities is a fundamental aspect of human well-being affecting social life, economic growth, health of community and various other aspects of human life (Zainal, et.al., 2012; Kurian, 2011). The availability of quality housing and basic services such as clean water, sanitation, clean energy, etc have a profound impact on the overall welfare of the society including health, education and economic opportunities (Gambo, et.al., 2012; Filali, 2012). The unequal access to these basic needs perpetuates and deepens social and economic disparity, further marginalized the already disadvantaged group of society notably the low-income group of the society (Bradbury, et.al., 1986; Saunders, 2016; Tunstall, et al., 2013).

India's north-eastern region (including Sikkim) is one of the least urbanized regions in the country with only 18.36 per cent of its population lives in urban areas against the national percentage of 31.16 per cent. (Census, 2011). The demographic characteristic of the region also shows diversity in culture, religion, languages; inhabited by large proportion of scheduled tribes, scheduled castes and other backward classes (OBCs) population with uneven and imbalance social and economic progress. Since there has been empirical evidence suggesting the economic status of the households is highly correlated with the level of access to housing and basic amenities with the poor and socially deprived classes are having less access to these amenities (Pal, et.al., 2015; Van Dam, et.al., 2003), it would be rational to analyse the incidence of housing poverty (discussed in Chapter-4) incorporating these socio-economic characteristics.

Therefore, in this chapter, an attempt has been made to analyse housing poverty and its relative factors determining housing poverty by comparing socio-economic status of the respondent households viz., gender of head of households, marital status, education, religion, social group. Comparison will also be made with the level of

income and employment status of the household or head of household. The impact of this disparity in access to housing on the overall inequality of the study area will also be analysed.

5.2. Socio-economic Dimensions of Housing Poverty

5.2.1. Demography

One of the common and foremost demographic variables uses to distinguish the incidence of any economic occurrence is gender. The data presented in Table 5.1 examines the relationship between the gender of the head of household and housing conditions- distinguishing households between housing poverty and adequate housing.

Table-5.1: Gender of head of household

Gender	Housing Poverty Status		
	Poor	Non-Poor	Total
<i>Within Poverty Status (%)</i>			
Male	85.82	83.95	84.32
Female	14.18	16.05	15.68
Total	100	100	100
<i>Within Gender (%)</i>			
Male	20.23	79.77	100
Female	17.98	82.02	100
Total	19.88	80.12	100

Pearson Chi Square: 791.291; df:1; Asymp.sig (2-sided): .000

Source: Computed

It has been estimated that out of the total urban households, 19.88 per cent falls under the category of 'poor' in terms of housing (Chapter - 4, Table-30). Table-5.1 reveals that male-headed households constitute the 84.32 per cent of the total households and the remaining 15.68 per cent are female headed households. Among male headed households, 20.22 per cent fall into the category of housing poor against 17.98 per cent of female headed households. Analysing the incidence of housing

poverty within poverty status shows male-headed households accounting for 85.82 per cent of the housing poor and 83.94 per cent of non-poor owing to a much larger proportion of male-headed households (84.32%). Female-headed households, a smaller proportion in the total households (making up 15.68 per cent of the total household), constitute 14.18 per cent of poor households against 16.06 per cent among those households in non-poor category.

Out of the total head of households, a large majority (74.98%) are currently married, 13 per cent are widowed, 10.01 per cent are never married and a few (1.42%) are either divorced or separated (Table-5.2).

Table-5.2: Marital status of head of household

Marital Status	Housing Poverty Status		
	Poor	Non-Poor	Total
<i>Within Poverty Status (%)</i>			
never married	3.58	11.60	10.01
currently married	84.14	72.70	74.98
widowed	11.46	14.13	13.60
divorced/separated	0.82	1.57	1.42
Total	100	100	100
<i>within Marital Status (%)</i>			
never married	7.10	92.90	100
currently married	22.31	77.69	100
widowed	16.75	83.25	100
divorced/separated	11.54	88.46	100
Total	19.88	80.12	100

Pearson Chi Square:27154.742; df: 3; Asymp.sig (2-sided): .000
Source: Computed

Among the household identified as housing poor, head of household with ‘currently married’ constitute the highest percentage (84.14%). Compared to this, only 3.58 per cent of them never married and 11.46 per cent of them are divorced/separated. Interestingly the percentage of ‘widowed’ and ‘divorced/separated’ is categorised as housing poor lower than their percentage share in the total households (Widowed make

up 13.60 per cent of the total sample but constituted only 11.54 per cent among households categorised as housing poor). This implies that these two groups, while socially believed to be more vulnerable in the society does not necessarily poorer than other groups in housing terms. Within marital status, out of the total ‘currently married’ head of households, 22.31 per cent fall under the category of housing poor (highest) followed by widowed and divorced/separated.

Table-5.3 provides a detailed cross-tabulation of the age distribution of household heads across two housing conditions - poor and non-poor.

Table-5.3: Age distribution of head of household

Age Group	Housing Poverty Status		
	Poor	Non-Poor	Total
<i>Within Poverty Status (%)</i>			
Less than 20	0.95	2.19	1.94
20-30	7.55	8.33	8.18
30-40	28.13	21.25	22.62
40-50	33.03	25.69	27.15
50-60	18.20	23.01	22.05
60-70	8.62	14.13	13.03
70 & above	3.51	5.41	5.03
Total	100	100	100
<i>Within Age Group (%)</i>			
Less than 20	9.75	90.25	100
20-30	18.36	81.64	100
30-40	24.73	75.27	100
40-50	24.19	75.81	100
50-60	16.41	83.59	100
60-70	13.15	86.85	100
70 & above	13.87	86.13	100
Total	19.88	80.12	100

Mean Age: 46.20; Std Dev: 13.65

Pearson Chi Square: 26949.457; df: 6; Asymp.sig (2-sided): .000

Source: Computed

The analysis of the age distribution of heads of households reveals a significant association between age and housing poverty status. The overall mean age of the

household head is 46.20 years (SD = 13.65), indicating middle-aged head of household among the urban residents of north-east India.

The largest proportion (27.17%) of head of households are in the age group of 40-50 followed by 30-40 (22.62%) and 50-60 (22.05) meaning more than 70 per cent of the head of households are within the age group of 30-60. Out of the total households classified as poor, 33.03 per cent are within the age group of 40-50, 28.13 per cent are 30-40 and 18.20 per cent are in the age group of 50-60. Within age group, poverty is most prevalent among the age group of 30-40 that nearly 1/4th of them were categorised as poor followed by 40-50 (24.19%). The age group- less than 20 shows lowest incidence of poverty as less than 10 per cent of the households in this age group are categorised as housing poor.

Household size is categorized into three groups: small (less than 4 persons), medium (4–6 persons), and large (6 or more persons). Table 5.4 presents the distribution of household by two housing conditions—housing poverty and adequate housing. Small and Medium size household constitute more than 85 per cent of the total urban household and the remaining were categorised as large households with more than 6 family members.

Among the households classified as poor, nearly half of them are from medium size family. While the small size family constitute around 40 per cent of the total urban households, they only constitute 27.27 per cent of those in poor category. On the contrary, large household which constitute only 14.23 per of the total, constitute more than 20 per cent of the poor, showing a disproportionately higher representation. This suggests that larger households are significantly more likely to experience housing poverty, may face greater economic strain due to higher dependency ratios and resource demands.

Prevalence of housing poverty among large size households has been confirmed by analysis within household size. While only 22.52 per cent of the small household size only 21.76 per cent of medium household size are in poor category, much higher percentage (70.85%) of large family falls in the category of poor.

Table-5.4: Household size and housing poverty

Age Group	Housing Poverty Status		
	Poor	Non-Poor	Total
<i>Within Poverty Status</i>			
Small (Less than 4)	27.27	44.61	41.16
Medium (4-6)	48.83	43.56	44.61
Large (6 & above)	23.90	11.83	14.23
Total	100	100	100
<i>Within HH Size</i>			
Small (Less than 4)	22.52	77.48	100
Medium (4-6)	21.76	78.24	100
Large (6 & above)	70.85	29.15	100
Total	19.88	80.12	100

Pearson Chi Square: 60133.266; df: 4; Asymp.sig (2-sided): .000

Source: Computed

5.2.2. Religion and Social Groups- and Housing Poverty

Apart from the different demographic variables analyse in section 5.2.1, social background of the household is found to be an important determinant of access to housing and basic amenities (Pal, et.al., 2015) and certain social group like scheduled tribes (STs), scheduled castes (SCs) and religious groups like Muslim suffers disproportionately from poverty (Ahmad, 2012).

Table 5.5 analyzes the distribution of household heads by social group—Scheduled Tribes (STs), Scheduled Castes (SCs), Other Backward Classes (OBCs), and Others—in relation to housing conditions. The data reveal that Scheduled Tribes constitute the 26.26 per cent of household heads, followed by OBCs (24.66%), Scheduled Castes, form a smaller share of the total urban households (12.42%), and the rests classified as ‘others’ constitute more than 1/3rd of the total urban households.

Table-5.5: Distribution of head of household by social group

Social Group	Housing Poverty Status		
	Poor	Non-Poor	Total
<i>Within Poverty Status</i>			
Scheduled Tribes (STs)	23.68	26.90	26.26
Scheduled Castes (SCs)	14.50	11.90	12.42
Other Backward Classes (OBCs)	27.48	23.96	24.66
Others	34.34	37.24	36.66
Total	100	100	100
<i>Within Social Group</i>			
Scheduled Tribes (STs)	17.93	82.07	100
Scheduled Castes (SCs)	23.21	76.79	100
Other Backward Classes (OBCs)	22.15	77.85	100
Others	18.62	81.38	100
Total	19.88	80.12	100

Pearson Chi Square: 4979.626; df: 3; Asymp.sig (2-sided): .000

Source: Computed

The largest group ‘others’ and STs demonstrate lesser representation in the housing poor category than their percentage share in the total urban households accounting 34.34 per cent and 14.50 against their percentage share in total urban household of 36.66 per cent and 26.26 per cent respectively. On the other hand, the OBCs which account for 24.66 per cent of the total, with a higher share among the housing poor (27.48%) and SCs with 12.42 per cent in the total against 14.50 per cent among the housing poor shows higher representation among housing poor households.

These patterns suggest differential exposure to housing poverty across social groups, with SCs and OBCs being more vulnerable relative to STs, who appear to have comparatively better housing outcomes despite being a traditionally disadvantaged group. This has been proven by percentages of ‘poor’ within social group analysis that- 23.21 per cent and 22.15 per cent of the urban households among SCs and OBCs are

considered housing poor respectively against 17.93 per cent and 18.62 per cent for STs and Others respectively for the same.

Religion, as a socio-cultural identifier, may influence not only socio-economic inequality but also patterns of residential segregation, access to state resources, and community-level infrastructure. In this context, analysing the distribution of housing poverty by religion provides insights into the intersection of faith-based identity and structural disadvantage.

Table-5.6: Distribution of head of household by religion

Religion	Housing Poverty Status		
	Poor	Non-Poor	Total
<i>Within Poverty Status (%)</i>			
Hinduism	67.01	67.64	67.51
Islam	12.67	6.87	8.03
Christianity	15.01	19.40	18.53
Sikhism	0.07	0.09	0.08
Jainism	0.00	0.68	0.55
Buddhism	0.56	1.06	0.96
Others	4.68	4.26	4.34
Total	100	100	100
<i>Within Religious Status (%)</i>			
Hinduism	19.73	80.27	100
Islam	31.39	68.61	100
Christianity	16.10	83.90	100
Sikhism	16.68	83.32	100
Jainism	0.00	100.00	100
Buddhism	11.60	88.40	100
Others	21.42	78.58	100
Total	19.88	80.12	100

Pearson Chi Square: 19082.741; df: 6; Asymp.sig (2-sided): .000

Source: Computed

Table 5.6 presents the distribution of household heads by religion. The data show that Hindus make up the majority, constituting more than 2/3rd of the total urban

households, while Christians, accounts for nearly 1/5th (18.53%), Islam constitutes 8.03 per cent and the rest were identified as Sikhism, Jainism, Buddhism and others.

Among housing poor, Hindu and 'others' represent nearly the same percentage as in their total, while the percentage for Christian is slightly lesser than their total percentage share. On the contrary, 12.67 per cent for Islam means higher incidence of housing poverty among Islam. All other religious group viz., Sikhism, Jainism and Buddhism shows lower percentage than their totals indicating lower housing poor households among these groups.

This has been reflected in within religious group analysis that among Islam households 31.39 per cent are categorised as housing poor while the percentage for Hindus and Christians stood at 19.73 and 16.10. At the same time, the percentage for others (21.42%), Sikhism (16.68%) and Buddhism (11.60%) are also significant. Interestingly, no households among Jainism were reported to have experience housing poverty. The data strongly suggest that religious affiliation is correlated with differential exposure to housing poverty, with Muslims, others and Hindus experiencing greater disadvantage, while Jainism, Christians, Sikhism and Buddhism appear to fare better.

5.2.3. Education and Housing Poverty

Education is a critical structural determinant of socioeconomic status, shaping individuals' access to employment, income, and housing security as literacy has a positive relation with the residential condition (Deka, 2012). There is positive correlation between level of educational and level of income and living standards, thereby significantly reducing the chance of falling into housing poverty (Siddiqui, 2012, Tripathi, 2019). There exists clear negative relationship between education level and housing deprivation, with lower education levels correlating with higher incidence of poverty in urban India (Dehuri, 2017). Examining the relationship between education levels of household heads and housing poverty is expected to provide important insights structural inequality.

Table-5.7: Distribution of head of household highest level of education

Educational Level	Housing Poverty Status		
	Poor	Non-Poor	Total
<i>Within Poverty Status (%)</i>			
Illiterate	12.65	4.98	6.50
Literate	2.04	0.27	0.62
Primary/Below Primary	28.59	11.79	15.13
Upper Primary/Middle	24.27	16.81	18.29
Secondary	16.33	19.11	18.56
Higher Secondary	9.66	19.29	17.37
Graduate	6.29	23.76	20.29
Post-Graduate & above	0.18	4.00	3.24
Total	100	100	100
<i>Within Education Level (%)</i>			
Illiterate	38.68	61.32	100
Literate	65.40	34.60	100
Primary/Below Primary	37.56	62.44	100
Upper Primary/Middle	26.38	73.62	100
Secondary	17.50	82.50	100
Higher Secondary	11.05	88.95	100
Graduate	6.16	93.84	100
Post-Graduate & above	1.12	98.88	100
Total	19.88	80.12	100

Pearson Chi Square: 182403.829 ; df: 7; Asymp.sig (2-sided): .000

Source: Computed

Table-5.7 clearly demonstrates a strong inverse relationship between educational attainment and housing poverty. The proportion of housing poor is highest among those with low or no formal education. For instance, 28.59 percent of the housing poor have only completed up to the Primary/Below Primary, 24.27 of them have complete up to upper primary or middle which made more than half of the household classified as poor are within these two categories. These groups are overrepresented among the housing poor compared to their shares in the adequately housed population. Conversely, individuals with higher education, particularly those

who are graduates or postgraduates and above are significantly more likely to be in the non-poor group and minimally present among the housing poor- the two group constitute 23.53 per cent of the total households but make up only 6.37 (6.29+0.18) per cent of those within poor category

5.2.4. Land Ownership Status and Housing Poverty

Land ownership is a significant factor in determining housing security in urban areas. Landless households lack access to formal credit and assistance related to public housing schemes further their vulnerability to fall into housing poor. There is high chance them living in inadequate housing with high congestion lacking basic needs such as water and other sanitation amenities (Bhan, 2013). Whereas, land owning-households are found to have experience improved socio-economic status with better livelihood and are more likely to access formal credit for housing including state sponsored schemes (Desai, 2012).

Table-5.8 shows land ownership status of urban households of north-east India. Analysing landownership status of the urban households by percentage within Land owned indicates that more than 90 per cent of urban households possessed land which is less than 1 hectare in size categorised as marginal landowner while 4.38 per cent are landless-not holding any types of land-agricultural or non-agricultural. 1.63 per cent and 0.14 per cent of them are classified as small (1-2 hectare) and medium (2-4 hectare) landowners respectively. 0.05 per cent of urban households owned land larger than 8 hectares of none of them are falling under housing poverty.

Marginal landowners are the largest group among the housing poor making up 92.81 per cent owing to its large share in the total urban households and yet contributing larger percentage than its share in total urban households implying prevalence of housing poverty among these groups of households. Same is case for landless households, even if they are only 4.38 per cent of the total households, they made up 5.42 per cent of the total households categorised as ‘poor’.

Table-5.8: Land ownership status of urban households

Land Size (in Hectare)	Housing Poverty Status		
	Poor	Non-Poor	Total
<i>Within Poverty Status (%)</i>			
Landless	5.42	4.12	4.38
Marginal Landowner	92.81	92.57	92.62
Small Landowner	1.63	1.82	1.78
Medium Landowner	0.14	1.42	1.17
Large Landowner	0.00	0.07	0.05
Total	100	100	100
<i>Within Land Ownership Status (%)</i>			
Landless	24.61	75.39	100
Marginal Landowner	19.92	80.08	100
Small Landowner	18.23	81.77	100
Medium Landowner	2.35	97.65	100
Large Landowner	0.00	100.00	100
Total	19.88	80.12	100

Pearson Chi Square: 5681.196; df: 4; Asymp.sig (2-sided): .000

Source: Computed

Within landownership status, the percentage of households falling under housing poverty is highest among 'landless' i.e., 24.61 per cent, followed by marginal landowners (19.92%) and small landowners (18.23%). There are no households classified as housing poor among urban households holding land larger than 8 hectares (Large landowners).

5.2.5. Income Distribution and Housing Poverty

It is a widely established fact that income inequality has significantly affects households' access to quality housing leading to sub-standard living conditions among low-income households. Economic and social background of the households (including income and expenditure) are the major determinant of housing condition in both rural and urban India that there exists high correlation between access to basic housing amenities such and the economic status of the households that the poor and socially

deprived classes are having less access to these amenities (Pal, et.al., 2015). High income inequality is found to have a significant impact on increasing congestion and dilapidated housing conditions (Dewilde, 2004). Inversely, high and rising costs of housing significantly contribute to both poverty and income inequality (Bradbury, et.al., 1986; Saunders, 2016; Tunstall, et al., 2013).

Given this empirical evidence of the relationship between level of income and access to basic housing amenities, statistical analysis has been made to validate the impact of income inequality on housing access. It may be noted that due to unavailability of official survey data on household income, the Monthly Per Capita Consumption Expenditure (MPCE) has been the most commonly adopted proxy for household income to measure poverty, inequality and other indicators in India (Deaton & Dreze, 2002; Sundaram & Tendulkar, 2003; Himanshu, 2007; Mukherjee, et. al., 2014). So, the MPCE is used here as a proxy for income of the household, which is grouped into 5 different groups determined based on the percentile-score of each urban household in the study area.

Table-5.9 presents a detailed analysis of the income distribution of urban households in northeast India, showing percentage distributions within housing poverty status and within income group. The data clearly reveals that income levels are strongly associated with housing adequacy, highlighting income as a major determinant of housing poverty.

Within the housing poor category, a significant percentage (39.43%) belong to the lowest income group (monthly income up to Rs. 2087.5), while only 4.95 per cent of the poor are from the highest income group (above Rs 5000). On the other hand, the non-poor category is heavily represented by higher-income groups, with 23.67 per cent earning above Rs 5000 and only 15.20 per cent earning less than Rs 2087.5. This indicates that a large proportion of the housing poor are concentrated in the lower income brackets, emphasizing the financial barriers to accessing adequate housing.

Table-5.9: Income distribution of urban household in north-east India

Income Group	Housing Poverty Status		
	Poor	Non-Poor	Total
<i>Within Poverty Status (%)</i>			
up to 2087.5	39.43	15.20	20.02
2087.5 - 2880	26.26	18.48	20.03
2880 - 3770.5	18.79	20.25	19.96
3770.5 - 5000	10.56	22.39	20.04
Above 5000	4.95	23.67	19.95
Total	100	100	100
<i>Within Income Group (%)</i>			
up to 2087.5	39.16	60.84	100
2087.5 - 2880	26.07	73.93	100
2880 - 3770.5	18.72	81.28	100
3770.5 - 5000	10.48	89.52	100
Above 5000	4.93	95.07	100
Total	19.88	80.12	100

Pearson Chi Square: 170182,402; df: 4; Asymp.sig (2-sided): .000

Source: Computed

When the data is examined in terms of percentage within income group, a similar trend emerges. Among the lowest income households, 39.16 per cent are housing poor, but this figure drops steadily with rising income. For households earning above Rs 5000, only 4.93 per cent are categorised as housing poor, while 95.07 per cent are non-poor. This inverse relationship indicates that housing adequacy improves progressively with increased income, suggesting that income sufficiency is a prerequisite for eluding housing deprivation.

5.3. Employment and Occupation of the Housing Poor

There exists complex relationship between the housing condition and quality of life, that living in sub-standard housing affects economic productivity denying better employment opportunity (Filali, 2012) and those living in peripheral city have limited access to public services and employment (Tacoli, 2012). Therefore, without adequate housing, maintaining or securing employment is difficult (Gomez & Thiele, 2005).

On the contrary, low income and unemployment are the biggest contributors of increasing housing affordability problems (Gauhan, 1977). Programme supporting employment generation could cover this increasing problem and investment in housing sector generate good amount of income and employment (Shah & Bhagat, 2019, Arku, 2006).

The employment and occupation status of head of households is classified based on 2 digit National Industrial Classification (NIC, 2008) and 2 digit National Classification of Occupations (NCO). The 2-digit National Industrial Classification (NIC, 2008) is part of the hierarchical structure of India's official classification system used to categorize economic activities. The NIC system, developed by the Ministry of Statistics and Programme Implementation (MoSPI), broadly in line with international standards like International Standard Industrial Classification (Central Statistical Organisation, 2008). NCO is a classification of occupations which describes and assigns codes to the various occupations in the country and aligns it with the International Standard Classification of Occupations (ISCO). The Directorate General of Employment, Ministry of Labour & Employment, Government of India is responsible for maintaining and updating the National Classification of Occupation in India (Ministry of Labour & Employment, 2004)

In this section, an attempt has been made to provide an empirical evidence of the interrelation between the housing quality and employment status (which are collected and categorised based on NIC and NCO classification) of the urban households in north-east India.

Table-5.10 and Table-5.11 illustrates the percentage distribution of heads of households in urban areas based on their usual principal activity (within poverty status and within usual status) corresponding their housing poverty status.

First, analysing urban households in north-east India within poverty status in Table-10 reveal percentage distribution of heads of households where more than 1/3rd (36.62%) are engaged in households enterprise-classified as self employed or own account worker. Regular salaried/ wage employee is the second largest activity among urban household as 28.59 per cent are engaged in this activity. 'Rentiers, pensioners,

remittance recipients, etc’ and ‘other types of work’ are the other popular activities with 9.81 per cent and 7.95 per cent of the urban households are engaged in these activities respectively.

Table-5.10: Percentage distribution of head of household by usual principal activity (within housing poverty status)

Principal Activities	Housing Poverty Status		
	Poor	Non-Poor	Total
worked in household enterprise (self-employed): own account worker	41.71	35.36	36.62
employer	0.81	0.74	0.75
worked as helper in household enterprise (unpaid family work)	0.17	0.57	0.49
worked as regular salaried/ wage employee	16.72	31.53	28.59
worked as casual wage labour: in public works	3.15	1.19	1.58
in other types of work	20.62	4.80	7.95
did not work but was seeking and/or available for work	0.17	0.23	0.22
attended educational institution	2.26	5.46	4.83
attended domestic duties only	6.66	4.27	4.75
attended domestic duties and was also engaged in free collection of goods	1.95	1.93	1.94
rentiers, pensioners, remittance recipients, etc.	3.74	11.32	9.81
not able to work due to disability	0.30	0.35	0.34
others (including begging, prostitution, etc.)	1.74	2.25	2.15
Total	100	100	100

Pearson Chi Square: 156418.324; df: 12; Asymp.sig (2-sided): .000

Source: Computed

Among urban households classified as ‘poor’, a significant proportion (41.71%) are engaged in household enterprises as ‘self-employed’ own account workers and, unspecified informal work- ‘in other types of work’ (20.62%) and regular salaried/ wage employee (16.72) are the other main activity among urban households classified as housing poor.

However, the high percentage of households within housing poor category engaged in the two activities- household enterprises (self-employed) own account workers and regular salaried/ wage employee is mainly due to the high contribution of households in these two categories in the total urban households since more than half of them are engaged in these two activities (36.62 per cent and 28.59 per cent respectively). Still, in case of own account worker, they are over-represented in 'poor' category constituting 41.71 per cent against their percentage in the total urban household is 36.62 per cent. In contrast, 'regular salaried or wage employee' which constitute 28.59 per cent of the total urban household account for only 16.72 per cent of poor and 31.53 per cent of the non-poor, indicating that formal, stable employment is associated with better housing conditions.

Other activities where their percentage share is higher in 'poor' category than their total percentage share includes- employer (0.81>0.75); casual wage labour:in public works (3.15>1.58); 'other types of work' (20.62>7.95); domestic duties only (6.66>4.75); and, domestic duties and was also engaged in free collection of goods (195>1.94). These patterns indicate that poor households are disproportionately dependent on insecure and irregular forms of work, which may contribute to their inability to afford adequate housing.

Among those not engaged in active employment, 5.46 per cent non-poor individuals are attending educational institutions compared to 2.26 per cent of the poor. On the other hand, domestic duties are more commonly reported among the poor (6.66%) compared to non-poor (4.27%). Additionally, rentiers, pensioners, and recipients of remittances make up a larger proportion of the non-poor (11.32%) than the poor (3.74%), implying that non-labour income sources contribute significantly to housing adequacy.

Looking into the percentage distribution of households by within activity status presented in Table-4.11 indicate that the incidence of housing poverty is highest (51.61%) among household engaged in unspecified informal work (labeled as 'in other types of work' in the table). Along with this, households engaged in casual wage labour in public works (39.62%), engaged in 'domestic duties only' (27.89%), household

enterprise (self-employed): own account worker (22.64%), employer (21.39%), domestic duties and in free collection of goods (20.03%) report significantly higher rates of housing poverty, emphasizing the vulnerability of non-remunerated labour.

Table-5.11: Percentage distribution of head of household by usual principal activity (within activity status)

Principal Activities	Housing Poverty Status		
	Poor	Non-Poor	Total
worked in household enterprise (self-employed): own account worker	22.64	77.36	100
employer	21.39	78.61	100
worked as helper in household enterprise (unpaid family work)	6.84	93.16	100
worked as regular salaried/ wage employee	11.63	88.37	100
worked as casual wage labour: in public works	39.62	60.38	100
in other types of work	51.61	48.39	100
did not work but was seeking and/or available for work	15.77	84.23	100
attended educational institution	9.30	90.70	100
attended domestic duties only	27.89	72.11	100
attended domestic duties and was also engaged in free collection of goods	20.03	79.97	100
rentiers, pensioners, remittance recipients, etc.	7.58	92.42	100
not able to work due to disability	17.59	82.41	100
others (including begging, prostitution, etc.)	16.10	83.90	100
Total	19.88	80.12	100

Pearson Chi Square: 156418.324; df: 12; Asymp.sig (2-sided): .000
Source: Computed

At the same time, regular salaried/wage workers (11.63%), employers (21.39%), and self-employed-own-account workers (22.64%) show lower incidence of housing poverty, indicating a positive correlation between regular job or work and better housing conditions. Also, students- attended educational institution (9.30%), pension/remittance recipients (7.58%), and worked as helper in household enterprise (unpaid family work) with 6.84 per cent show lower housing poverty levels, possibly due to the presence of alternative support mechanisms.

The employment status of urban households entered in 2-digit NIC code are re-group into the four sector of industry as presented in Table-5.12. The distribution of households across industries reveals strong sectoral disparities in housing poverty. Households employed in the construction sector shows the highest proportion of poverty, with 41.65 per cent of the poor households belonging to this group, and only 58.35 per cent are non-poor. While only 10.84 per cent of total households are engaged in this industry, they make up more than 20 per cent of the total poor households indicating higher representation in poor category. This suggests that employment in construction is strongly associated with inadequate housing conditions, possibly due to low wages, irregular work, and insecure tenure.

Table-5.12:- Percentage distribution of household based on industry of employment

State	Housing Poverty Status		
	Poor	Non-Poor	Total
<i>Within Poverty Status (%)</i>			
Primary Sector	13.90	6.69	8.26
Secondary or Manufacturing Sector	10.18	7.13	7.79
Construction Sector	20.74	8.08	10.84
Services sector	55.19	78.10	73.11
Total	100	100	100
<i>Within Sector (%)</i>			
Primary Sector	36.63	63.37	100
Secondary or Manufacturing Sector	28.43	71.57	100
Construction Sector	41.65	58.35	100
Services sector	16.43	83.57	100
Total	19.88	80.12	100

Source: Computed

Households in the primary sector (agriculture and related activities) also reflect considerable housing deprivation, where 36.63 per cent of households in the sector are poor, and 13.90 per cent of all poor households are found in this sector. In contrast,

households in the services sector—which constitutes 73.11 per cent of total households—are the least likely to face housing poverty, with only 16.43 per cent being poor, and a dominant 83.57 per cent being non-poor. This underlines a strong correlation between service-sector employment and improved housing conditions, likely due to better income stability and urban location advantages.

The secondary or manufacturing sector shows a moderate pattern, where 28.43 per cent of those within the sector are poor, and it accounts for just over 10 per cent of poor households. Overall, the services sector serves as a protective factor against housing poverty, while employment in the construction and primary sectors appears more vulnerable to deprivation.

5.4. Access of Government Schemes by the Housing Poor

Effective participation of state to ensure efficient functioning of the housing market, financing the industry and providing affordable, adequate housing is considered as one of the responsibilities of a government (Flood, 1993, Buckley & Gurenko, 1997). Failure on the part of the government to participate in the market or the inefficient functioning, faulty implementation leads to increasing poverty, leading to problem of affordability (Flood, 1993, Mehta & Mehta, 1987)). Therefore the state has the key to overcome or solve the problem the increasing affordability by providing efficient welfare measures that would help to deliver equal access to basic housing amenities and services (Hegedus, 2011, Obeng-Odoom & Amedzro, 2011, Kumar, 2015).

The Government of India post 2014 introduced a multi-pronged approach to transform India's urban setting launching various schemes specially design to improve urban livelihoods. Pradhan Mantri Awas Yojana–Urban (PMAY-U), also known as 'Housing for All' introduced in 2015 with an objective to provide housing assistance to addressed the housing requirement of slum dwellers and people belonging to Economically Weaker Sections (EWS), Low-Income Groups (LIGs) and Middle-Income Groups (MIGs) through four verticals viz., Beneficiary-led Individual House Construction or Enhancement (BLC), Affordable Housing in Partnership with public or

private sector (AHP), “In-situ” Slum Redevelopment (ISSR) and Credit Linked Subsidy Schemes (CLSS) (Ministry of Housing and Urban Affairs, Government of India, n.d.).

This scheme served as the flagship scheme for the union government, addressing problems related with housing affordability post 2014, replacing the earlier schemes viz., Jawaharlal Nehru National Urban Renewal Mission (JNNURM), launched in December 2005, Affordable Housing Partnership (AHP) launched in 2009 as a part of the then existing Basic Services to Urban Poor (BSUP) to incentivised land assembly for affordable housing among Economically Weaker Section (EWS), Low-Income Group (LIG) and Middle-Income Group (MIG) and Rajiv Awas Yojana (RAY) - a scheme for “Slum-free India” announced on June 4, 2009.

These schemes are launch in convergence with larger national urban missions on infrastructure and sanitation facilities including Swachh Bharat Mission launched in 2014 to eliminate open defecation and improve solid waste management; Atal Mission for Rejuvenation and Urban Transformation (AMRUT) launched in 2015 to improve the quality of life in urban areas, providing robust urban infrastructure with a focus on basic services.

Pradhan Mantri Ujjwala Yojana (PMUY) introduced in 2016 to provides LPG connections to women from below poverty line (BPL) households to reduce dependency on polluting cooking fuels like firewood or dung and Saubhagya Scheme (Pradhan Mantri Sahaj Bijli Har Ghar Yojana) introduced in 2017 aimed at achieving universal household electrification are the popular state funded programme in the field of energy.

In light of this crucial role the state or government must or needs to play to deliver adequate, affordable housing needs to its increasing urban population, importance has been given to analyse the level of access to the benefit or scheme/assistance related to housing and necessities by the households in the study area.

Table-5.13 provides a detailed percentage distribution of households receiving benefits from housing-related schemes- categorized by type of benefit (Water, Sanitation, Housing, Electricity, and LPG)- with a further breakdown based on housing poverty status (Poor vs. Non-Poor). This cross-tabulation facilitates an understanding of how equitably public benefit schemes are accessed by the housing poor, which is critical in evaluating the effectiveness of targeted welfare interventions in the housing sector.

A careful examination of Table-5.13 reveals that the overall access to benefit or assistance receipt is markedly low across all categories- housing and its related characteristics such as drinking water, sanitation, clean energy for lighting and cooking, with less than 10 percent of households reported receiving of any specific benefit. The low percentages suggest a general underperformance in schemes (if any) coverage, especially for vulnerable populations.

Table-5.13: Percentage distribution of receiving benefit on housing scheme (ever)

Benefit on	Response	Housing Poverty Status (%)		
		Poor	Non-Poor	Total
Drinking Water	Yes	1.17	3.10	2.72
	No/Not Known	98.83	96.90	97.28
	Total	100	100	100
Sanitation	Yes	8.13	4.08	4.88
	No/Not Known	91.87	95.92	95.12
	Total	100	100	100
Housing	Yes	3.77	1.36	1.84
	No/Not Known	96.23	98.64	98.16
	Total	100	100	100
Electricity	Yes	2.49	2.77	2.72
	No/Not Known	97.51	99.88	99.90
	Total	100	100	100
LPG	Yes	7.32	7.33	7.33
	No/Not Known	92.68	92.67	92.67
	Total	100	100	100

Source: Computed

Benefit or government assistance in some cases such as sanitation and housing assistance show a relatively higher access among housing-poor households. For instance, 8.13 per cent of housing-poor households reported receiving sanitation-related benefits, compared to only 4.08 per cent of non-poor households. Similarly, 3.77 of housing-poor households benefited from housing-related schemes, while only 1.36 per cent of non-poor households reported the same.

These patterns suggest some degree of pro-poor targeting. However, the overall low percentages (4.88 per cent in sanitation and 1.84 in housing) highlight the limited effectiveness of targeting mechanisms and the need for enhanced efforts in identifying and prioritizing the most deprived households. The percentage of households ever received benefits or assistance in these two areas is estimated at the national level is 3.6 per cent in sanitation and 2.1 per cent in housing¹ suggesting better access of these benefits by the region compared to the rests of the country.

At the same time government assistance or benefits related to drinking water, electricity, and LPG connections appear to be distributed in a more universal or non-differentiated manner. The level of access to LPG benefits, for example, is almost identical between poor and non-poor households (approximately 7.3%), while access to benefits related to drinking water and electricity remains uniformly low, with total figures at 2.72 per cent for both. Overall, 2.72 per cent of urban households received assistance or benefits related to drinking water and electricity in north-east India, 7.33 per cent in case of LPG. The national figure or percentage for the same is 2.6 for drinking water, 2.1 for electricity and 5.9 for LPG² Again, in these three cases the percentage of households ever receiving benefit or assistance is higher in the region than the whole country

In summary, the data reveals a fragmented pattern of benefit distribution, wherein some degree of targeting exists favouring the north-eastern region of India

¹ NSS Report No. 584: Drinking Water, Sanitation, Hygiene and Housing Condition in India, Statement 30, page-55

² NSS Report No. 584: Drinking Water, Sanitation, Hygiene and Housing Condition in India, Statement 30, page-54-56.

compared to the whole country but is insufficient in scale and scope to address the depth of housing poverty.

Looking into whether these benefits or assistance mentioned were received or access within the last three years to make assessments to the recent state intervention in the housing sector (Note: Since the data is collected between July-December 2018, last three year means within 2016-2018). Table-5.14 provides a disaggregated account of benefit or assistance access by urban household across multiple housing and related schemes within three years, differentiated by housing poverty status.

A significant observation in the table is the predominance of “No Answer” (NA) responses, exceeding 90 per cent across all categories, suggesting potential issues such as data collection gaps, non-disclosure by respondents, or low levels of awareness and engagement with state welfare programmes.

Among the various benefit categories, sanitation and LPG schemes shows relatively higher coverage, especially among housing-poor households. Sanitation benefits were received by 5.38 per cent of the poor compared to 3.21 per cent of the non-poor, while LPG-related benefits reached 6.24 per cent of the poor and 5.62 per cent of the non-poor. In sum, 3.64 per cent and 5.74 per cent of the urban households received or access government assistance or benefit related to sanitation and LPG within the last three years respectively. The percentage for all-India level for the same stood at 2.8 per cent and 4.4 per cent³ implying better access to these benefits by the region than the rest of the country.

On the contrary, benefit access for water, housing, and electricity remains marginal, particularly among poor households. Only 0.69 per cent of the poor and 1.36 per cent of the non-poor received drinking water benefits, and housing scheme benefits were accessed by 1.64 per cent and 0.82 per cent respectively. Electricity-related benefits were received by just 1.83 per cent of the housing poor.

³ NSS Report No. 584: Drinking Water, Sanitation, Hygiene and Housing Condition in India, Statement 30, page-54-56

Table-5.14: Percentage distribution of household receiving benefit on housing & related schemes (within 3 years)

Benefit on	Response	Housing Poverty Status (%)		
		Poor	Non-Poor	Total
Water	Yes	0.69	1.36	1.22
	No/Not Known	0.48	1.74	1.49
	NA*	98.83	96.90	97.28
	Total	100	100	100
Sanitation	Yes	5.38	3.21	3.64
	No/Not Known	2.75	0.87	1.24
	NA*	91.87	95.92	95.12
	Total	100	100	100
Housing	Yes	1.64	0.82	0.98
	No/Not Known	2.13	0.54	0.86
	NA*	96.23	98.64	98.16
	Total	100	100	100
Electricity	Yes	1.83	1.23	1.35
	No/Not Known	0.66	1.55	1.37
	NA*	97.51	97.23	97.28
	Total	100	100	100
LPG	Yes	6.24	5.62	5.74
	No/Not Known	1.08	1.70	1.58
	NA*	92.68	92.67	92.67
	Total	100	100	100

Source: Computed

* No Answer

Looking into these data of benefit or assistance delivered to the urban inhabitants irrespective of their poverty status shows coverage and effectiveness of state or government intervention in the housing sector. It may, also be interesting to broaden the analysis by exploring different schemes and assistance from which the households received these benefits. Table-5.15 presents the distribution of households by housing poverty status and the types of government schemes from which they have received the most benefit across five different areas. It is important to note that across all areas, the percentage of households leaving the question unanswered is very high which is marked as 'NA' in the Table-5.15

The data in Table-5.15 reveals a significant gap in the receipt of benefits from drinking water-related schemes among urban households in northeast India. Though few percentages of households reported to have received benefit from schemes like Atal Mission for Rejuvenation and Urban Transformation (AMRUT), Smart Cities Mission, both poor and non-poor households report extremely low access to these schemes, with less than 1 per cent of households identifying them as the source of benefit.

Table-5.15: Types of schemes on which maximum benefit is received

Items	Schemes	Housing Poverty Status		
		Poor	Non-Poor	Total
Drinking Water	Atal Mission for Rejuvenation and Urban Transformation (AMRUT)	0.06	0.04	0.05
	Smart Cities Mission	0.00	0.01	0.00
	not known/other scheme	0.64	1.31	1.17
	NA	99.31	98.64	98.78
	Total	100	100	100
Sanitation	Swachh Bharat Mission (SBM)	3.65	2.49	2.72
	Atal Mission for Rejuvenation and Urban Transformation (AMRUT)	0.37	0.04	0.10
	not known/other scheme	1.37	0.69	0.83
	NA	94.62	96.79	96.35
	Total	100	100	100
Housing	Pradhan Mantri Awaas Yojana (PMAY)	1.20	0.62	0.73
	not known/other scheme	0.44	0.20	0.25
	NA	98.36	99.18	99.02
	Total	100	100	100
Electrification	not known	1.83	1.23	1.35
	NA	98.17	98.77	98.65
	Total	100	100	100
LPG	Pradhan Mantri Ujjwala Yojana (PMUY)	4.44	3.29	3.52
	not known/other scheme	1.80	2.33	2.23
	NA	93.76	94.38	94.25
	Total	100	100	100

Source: Computed

NA: No Answer

In the sanitation sector, the Swachh Bharat Mission (SBM) shows relatively higher visibility and outreach, particularly among the housing poor, with 3.65 per cent reporting benefit as compared to 2.49 per cent of non-poor households. Despite this, a vast majority—94.62 per cent of the poor and 96.79 per cent of the non-poor—still fall under the 'NA' category. This discrepancy indicates that while sanitation schemes have made some impact, particularly on the poor, their coverage remains limited.

The benefit distribution under housing schemes shows some evidence of targeted inclusion, with the Pradhan Mantri Awaas Yojana (PMAY) reaching 1.2 per cent of the poor households—double the rate seen among non-poor households (0.62%). This reflects the intended design of PMAY to support economically weaker sections.

Electrification and LPG-related schemes exhibit similar trends. Electrification benefits were largely unreported, with only 1.83 per cent of the poor and 1.23 per cent of the non-poor. LPG schemes—especially the Pradhan Mantri Ujjwala Yojana (PMUY)- show relatively better performance. PMUY has reached 4.44 per cent of poor and 3.29 per cent of non-poor households, indicating moderate success in addressing energy security.

5.5. Analysis of Factors affecting Housing Poverty

The level of access to quality housing in urban areas has been determined by a composition of factors including demographic factors like age distribution of head of households, size of households, location, etc and other socio-economic factors viz., level of education, possession of land and economic factors like employment status and income distribution, high land and construction costs, etc. which were analysed in the earlier section. Some of the significant and measurable factors that have been examined in the preceding sections may need further examination to find out the nature of their impacts (positive or negative) on households' access to basic housing and amenities.

Education (section 5.2.3, Table-5.7) is a key determinant, as higher educational qualification is found to enhance employment prospects and awareness of housing

schemes, thereby minimizing vulnerabilities related to housing (Deka, 2012). Land ownership (section 5.2.4, Table-5.8) is another critical factor as landless households face exclusion from formal credit systems and public housing support, increasing their risk of living in substandard, congested conditions (Bhan, 2013), while landowners have better access to institutional support and improved livelihoods (Desai, 2012).

Economic factor, particularly income and expenditure level (section 5.2.5, Table-5.9), significantly impact access to basic amenities as the poor and socially marginalized groups are more likely to face systemic exclusion from these essential services (Pal et al., 2015). Income inequality further aggravates housing inadequacy by increasing congestion and deterioration in low-income settlements (Dewilde, 2004). Employment (section 5.3, Table-5.12) and income stability are key to secure housing needs as low-income and unemployment restricts access to these needs, thus public investment in employment generation and the housing sector can improve housing access (Gauhan, 1977; Shah & Bhagat, 2019; Arku, 2006).

These factors are statistically significant determinant of housing poverty as the Pearson's Chi-Square test result confirms a statistically significant ($p < .001$ in all cases) association between these factors and housing poverty status of the household. To further examine the nature of their empirical relationship, the following binary logistic regression has been estimated.

$$\text{logit}(Y) = \ln\left(\frac{P(Y=1)}{1-P(Y=1)}\right) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_n X_n \quad [5.1]$$

which can be transformed into,

$$p = \frac{e^{\beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_n X_n}}{1 + e^{\beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_n X_n}} = \frac{1}{1 + e^{-(\beta_0 + \beta_1 X_1 + \beta_2 X_2 + \dots + \beta_n X_n)}} \quad [5.2]$$

Where Y is the binary variable indicating household's housing poverty status, (i.e. 0 - housing poor / deprived & 1-adequate housing/not poor), and X_1 , X_2 , X_3 and X_4 are the determining factors such as age, possession of land, level of education, and income distribution, respectively.

These factors are measured as follows: Age of household head (1: less than 20yrs; 2: 20-30yrs; 3: 30-40yrs; 4: 40-50yrs; 5:50-60yrs; 6: 60-70yrs; 7:70yrs &above). Possession of land [0: landless; 1-marginal landowner, (i.e. less than 1 Ha); 2-small landowner (1-2 ha); 3-medium landowner (2-4 Ha); 4-large landowner (4 Ha & above). Level of education of household head (0-illiterate; 1-Literate, 2- Primary/below primary, 4-Middle/upper primary, 5-Secondary, 6-higher secondary, 7-Graduate, 8-Post Graduate & Above).

Income distribution (i.e. monthly per capita expenditure). In view of the high variability of income among the households, income distribution has been used here instead of using absolute income to minimise the variability. The income distribution is assigned numeric code as 1: up to ₹2087.5, 2: ₹2087.5-₹2880, 3: ₹2880-₹3770.5, 4: ₹3770.5-₹5000, 5: Above ₹5000.

Logistic regression models are frequently used to predict a dependent variable from a set of independent variables. Binary logistic regression or the logistic model analyzes the relationship between multiple independent variables and a categorical dependent variable, and estimates the probability of occurrence of an event by fitting data to a logistic curve. The logistic regression coefficient for the i th independent variable shows the change in the predicted log odds of having an outcome for one unit change in the i th independent variable, all other things being equal. Since logistic regression calculates the probability of an event occurring over the probability of an event not occurring, the impact of independent variables is explained in terms of odds.

This model predicts the log Odds of Y as a function of X_1 , X_2 , X_3 and X_4 . The Odds Ratio (OR) represents the odds that an outcome will occur given a particular exposure, compared to the odds of the outcome occurring in the absence of that exposure. The exponential function of the regression coefficients, $e^{\beta'x} = \text{Exp}(B)$, is called the Odds Ratios (OR), and is associated with a one unit increase in the independent variable such that $OR=1$ indicates that the exposure does not affect odds of outcome, $OR>1$ indicates that exposure associated with higher odds of outcome, and $OR<1$ indicates exposures associated with lower odds of outcome (Park, 2013). The result of binary logistic regression is given in Table-5.16

Table-5.16: Determinants of housing poverty-Binary Logistic Regression

Determinant	B	S.E.	df	Sig.	Exp(B)
Age distribution	.297***	0.002	1	0.000	1.345
Possession of Land	.518***	0.007	1	0.000	1.679
Level of education	.379***	0.001	1	0.000	1.461
Income	.470***	0.002	1	0.000	1.601
Constant	-3.287***	0.012	1	0.000	0.02

Source: Computed. *** significant at 1% level

A binary logistic regression to examine the effects of key socio-economic variables on the determinant of housing adequacy in Table-5.16 shows statistically significant result of 0.001 level for all determinants or predictors. The results indicated that age distribution has a significant positive effect on housing poverty ($B = 0.297$, $SE = .002$, $p < .001$), with an OR of 1.345. This suggests that higher age group are associated with a 34.5 per cent more chance that the household have adequate housing or out of housing poverty. Similarly, land possession is also a significant predictor ($B = 0.518$, $OR = 1.679$), implying households without land were 67.9 per cent more likely to fall in the category of housing poor.

Level of education also show positively impact on housing poverty ($B = 0.379$, $OR = 1.461$), revealing that each unit increase in educational category was associated with a 46.1 per cent increase in the odds of being out of housing poor.

The leading predictor of housing access is income distribution ($B=0.470$, $OR=1.601$), showing households in lower income groups were 60.1 per cent more likely to experience housing poverty. The constant term was also significant ($B=-3.287$, $p < .001$), suggesting a low baseline probability of housing poverty when all predictors are held constant.

These findings highlight the significant role of income, level of education, land ownership, and age in shaping housing poverty outcomes. Policies that promote income

enhancement, secure land ownership and tenure, and support aging populations in the form of increasing old age pensions may be effective in reducing housing-related deprivation in urban areas.

5.6. Income-based Poverty and Housing Poverty

With the dimensional nature of poverty, alternative or complementary measures of poverty has been introduced to broaden the academic understanding poverty instead of narrowly focusing on income or consumption. Conventional poverty measures—typically based on income thresholds or expenditure levels—have long served as the standard for assessing deprivation. However, such approaches generally overlook the multidimensional nature of poverty, particularly in urban settings where non-food expenditures like housing constitute a significant burden. Housing poverty, incorporating inadequacies in shelter in terms of affordability, quality, and access to basic services, highlights a critical dimension often ignored in traditional metrics. Over-reliance on these traditional metrics -neglecting the increasing costs and condition of housing - risks underestimating the true extent of poverty, especially in urban India (Chandrasekhar et al.,2010).

Considering these, focussed is given to developed housing poverty index (discussed in chapter 4) and estimation has been made housing poverty ratio in urban areas of north-east India. It is now an academic interest to compare these poverty ratio measure in terms of conventional poverty measure and of housing deprivation to see any divergent ratio between the two.

Before any comparison is made, the first challenge is the need to undertake is to work out poverty line for the year 2018 matching the year of estimate of housing poverty. Tendulkar Committee (2009)⁴ on poverty recommended the use of household unit level price index based on large scale NSS consumer expenditure survey (CES) to update poverty line. There were two large CES conducted in 2011-12 and 2022-23.

⁴ Planning Commission (2009), *Report of the Expert Group to Review the Methodology for Estimation of Poverty*, Government of India

However, there was no CES in the year 2017-18 to match our dataset, i.e. the 76th Round of National Sample Survey (2018). Consequently, an adjustment factor has been worked out considering the change in the imputed unit level price index between 11 years (i.e. 2011-12 and 2022-23) to calculate annual growth rate. The calculated annual growth rate has been used to find out the updated urban poverty lines in each state taking the official poverty line as a base.⁵ The price index is worked out based on the nominal and real (based on 2011-12 survey) values of MPCE as follows:

$$\text{Unit Price Index (UPI)} = \frac{\text{Nominal MPCE}}{\text{MPCE at Real Price}} \times 100$$

$$\text{CPI} = \frac{6459}{3510} \times 100 = 184.02$$

A UPI of 184.02 in 2022-23 means an increase in 84.02 per cent during the span of 11 year (2022-23 – 2011-12) i.e., 7.64 per cent every year on average. Thus, for the year 2018, poverty line is adjusted and up by 53.48 per cent (i.e., 7.64x7=53.48) for states of north-east India. The new poverty line for the 8 states is given in Table-5.17 and estimated poverty incidence is presented in Table-5.18.

Table-5.17: Adjusted poverty line for 2017-18 (Tendulkar Methodology)

States	Poverty Line (2011-12) *	Adjusted Poverty Line (2017-18) #
Arunachal Pradesh	1060	1627
Assam	1008	1547
Manipur	1170	1796
Meghalaya	1154	1771
Mizoram	1155	1773
Nagaland	1302	1998
Sikkim	1226	1882
Tripura	920	1412

*Planning Commission July 2013, Press Note on Poverty Estimates, 2011-12

#Computed based on Poverty Line for 2011-12

⁵ Planning Commission (July 2013), *Press Note on Poverty Estimate, 2011-12*, Government of India

The data reveals a stark contrast between conventional poverty, measured by the Below Poverty Line (BPL) criteria, and housing poverty across the North-Eastern states of India. On average, only 6.58 per cent of households fall under the conventional BPL classification, whereas 19.88 per cent are classified as poor based on housing conditions. This significant difference shows the limitations of income-based poverty measures in capturing the full scope of deprivation.

At the state level, the gap is especially evident in Meghalaya, where only 2.62 per cent of households are BPL, yet 33.54 per cent are housing poor. Similarly, Tripura shows a modest 2.52 per cent BPL rate but a much higher 27.53 per cent housing poverty rate. These figures implicate the inadequacy of relying solely on income or expenditure to assess poverty, particularly in regions with high costs or shortages in adequate housing infrastructure.

Table-5.18: Comparison between housing poverty and income-based poverty

States	Poverty Status			Housing Poverty Status		
	BPL	APL	Total	Poor	Non-Poor	Total
Arunachal Pradesh	23.65	76.35	100	22.77	77.23	100
Assam	5.91	94.09	100	18.19	81.81	100
Manipur	15.58	84.42	100	24.12	75.88	100
Meghalaya	2.62	97.38	100	33.54	66.46	100
Mizoram	0.11	99.89	100	5.76	94.24	100
Nagaland	7.92	92.08	100	15.16	84.84	100
Sikkim	1.14	98.86	100	9.87	90.13	100
Tripura	2.52	97.48	100	27.53	72.47	100
Total	6.58	93.42	100	19.88	80.12	100

Source: Computed

Interestingly, even states like Mizoram and Sikkim, with nearly negligible BPL populations (0.11% and 1.14%, respectively), exhibit notable housing poverty levels (5.76% and 9.87%). This pattern suggests that while economic conditions may appear adequate under conventional metrics, a considerable proportion of the population still lacks decent living conditions.

In conclusion, the disparity between conventional and housing poverty across these states reinforces the argument made by Chandrasekhar et al. (2010) and Ha (2003) that poverty, when measured solely through income or expenditure, risks severely underestimating real deprivation highlighting the need for a more comprehensive approach taking into account various living standard indicator to accurately estimate the poverty ratio.

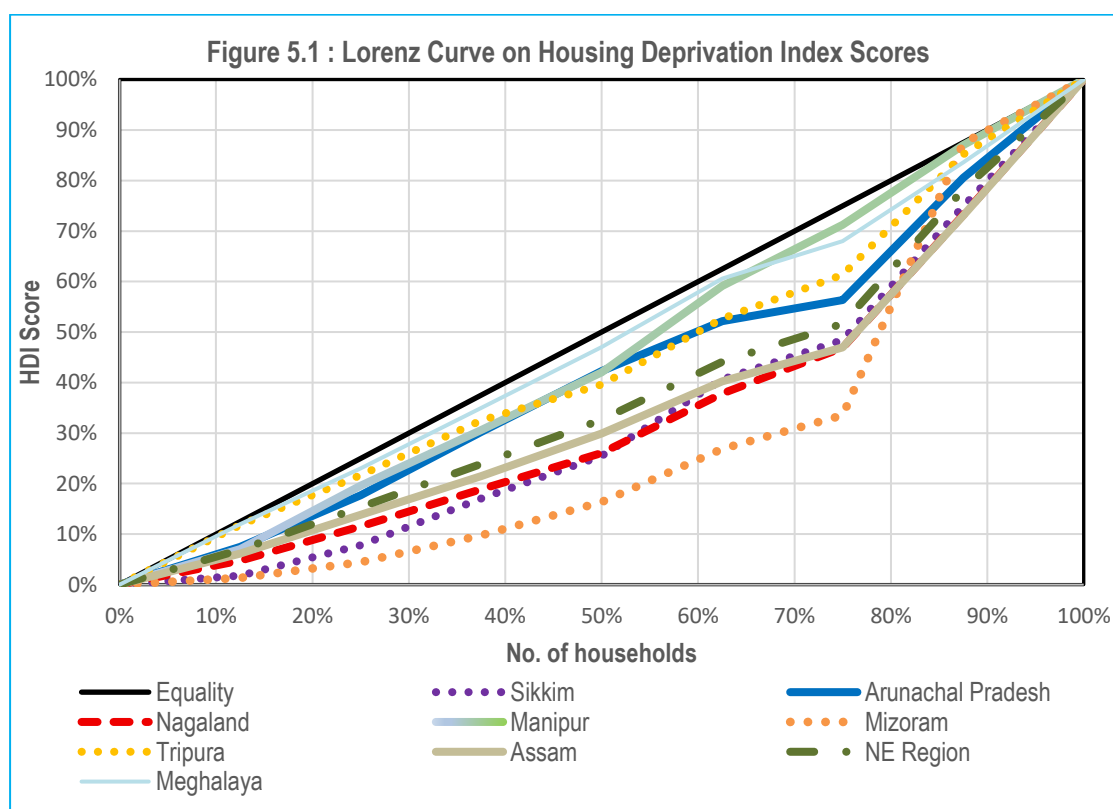
5.7. Inequality in access to Adequate Housing

It has been established from the analysis made in Chapter 4 that certain degree of inequality or disparities exists among urban residents of north-east India. Disparities are evidenced in the form of unequal access in space availability; structural quality; access to basic living and sanitation facilities such as drinking water, latrine, etc; and access to clean energy for lighting and cooking purposes. These disparities are an inherent result of broader structural inequalities such as income inequality, land ownership patterns, absence of urban planning, and historical socio-political exclusion (UN-Habitat, 2020) like the class or caste division, etc. Analysis made in section 5.5, Table-5.16 proved that some demographic factor like age distribution, economic factor such as income, employment status and social factor like level of education, are critical determinant of housing deprivation and are the consequent factor and result of rising inequality.

To understand broader dimension of housing deprivation in north-east India, the extent of inequality in access to quality housing is analysed by Lorenz curve and Gini Co-efficient to graphically depict the extent of inequality and to show quantitative measure to show wealth-housing in this case-distribution.

The Lorenz Curve is a graphical representation of the cumulative distribution of housing deprivation. It plots the cumulative percentage of total housing deprivation index scores against the cumulative percentage of total household, arranged from the poorest to the richest. A perfectly equal distribution is represented by the line of equality (a 45-degree line from the origin), where each percentile of the household earns the

same percentage of housing deprivation score. The greater the curvature away from this line, the higher the inequality.



The figure (5.1) showing Lorenz curve analysis of housing deprivation shows the exists a significant disparity among urban households in access to adequate housing as the curve for the region deviates significantly from the line of equality. Interestingly, Mizoram (green-dotted line), the state showing lowest percentage of household categorised as ‘poor’ (5.76%, chapter 4, Table-4.30) stands out for having the most unequal distribution, as its Lorenz curve deviates furthest from the line of equality. This indicates that a large proportion of households enjoy better housing conditions, some segment remains deprived and the difference in their score on HDI is large.

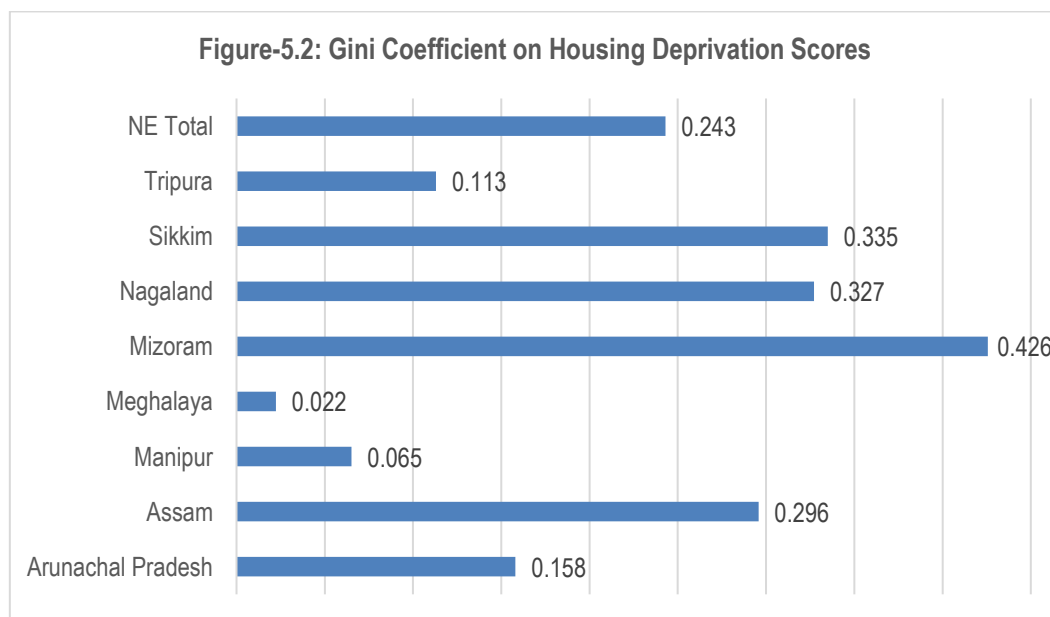
States like Manipur (light green solid line) and Tripura (yellow dotted line) shows more equitable distributions, with their curves lying closer to the equality line. This suggests that housing deprivation is more evenly spread across households in these

states as they are the two state with relatively higher rate of household falling under housing poverty. States such as Arunachal Pradesh (blue solid line), Nagaland (red dashed line), and Sikkim (purple dotted line) fall somewhere in between, indicating moderate housing inequality showing consistent deviation from the line of equality.

From the Lorenz curve analysis, it is now possible to calculate the Gini Coefficient (or Gini Index) quantifying the inequality depicted in the Lorenz Curve. In simple term, Gini Coefficient is defined as the ratio of the area between the line of equality and the Lorenz Curve to the total area under the line of equality. Suppose there are n points on the Lorenz Curve, i.e. $(x_0, y_0), (x_1, y_1), \dots, (x_n, y_n)$, where x_i and y_i are cumulative population share at point i and cumulative score share at point i . Using Trapezoidal Rule of numerical integration to find out the area under the curve, the Gini Coefficient is calculated using the following formula:

$$Gini\ Coefficient = 1 - 2 \sum_{i=1}^n \frac{(y_{i-1} + y_i)}{2} \times (x_i - x_{i-1}) \quad [5.3]$$

The Gini value ranges between 0 and 1 (or 0% to 100%). A Gini of 0 indicates perfect equality whereas a Gini of 1 indicates perfect inequality. The Gini value of each state is plot in Figure-5.2



Since Gini value is calculated from the Lorenz curve, the curve analysis and the Gini score give the same picture of housing inequality in north-east India. Mizoram

(0.426) exhibits the highest level of inequality, indicating a sharp disparity in housing conditions followed by Sikkim (0.335) and Nagaland (0.327), both of which also show relatively high levels of inequality, pointing to uneven development in housing access.

At the same time, states like Meghalaya (0.022) and Manipur (0.065) show remarkably low Gini coefficients, suggesting a much more equitable distribution of housing resources. Tripura (0.113) and Arunachal Pradesh (0.158) also reflect relatively lower inequality, indicating better inclusivity in housing provision. The regional average Gini coefficient (NE Total) stands at 0.243, which highlights a moderate level of inequality in housing deprivation across the north-eastern region.

The analysis of the Lorenz Curve and Gini Coefficient for housing deprivation in North-East India reveals considerable inter-state variation in inequality offering comprehensive picture of housing inequality, underlining where policy intervention is needed.

5.8. Conclusion

This chapter compare and contrast several factors determining housing deprivation among urban residents of north-eastern region of India. It incorporates some demographic variables, social indicators and economic factors which significantly influence households' level of access to adequate housing. Analysis has also been made into the state's role in the provision of assistance through its chain of schemes and programmes benefiting the stakeholders. It also analyse the extent of impact on housing adequacy outcome of urban households by various socio-economic factors and indicators using binary logistic regression models. Then to establish the effectiveness of housing poverty index introduced in this study, adjustment has been made to the accepted poverty line and rough estimation has been made which is compared to the estimation of this study. Lastly, using Lorenz curve and Gini Coefficient, inequality in access to adequate housing has been estimated.

Cross tabulation of several demographic factors viz., age, gender, marital status, household size, religion and social group, social factors like level of education and

economic factors such as land possessed, level of income, employment status, with housing poverty status of the urban household indicated that these factors prove to a significant determinant of households' housing outcomes. The findings have been proven by Chi Square test of interdependence with high level of significance.

An analysis of the state's role in provision of affordable, quality housing suggested that though there exists some degree of impact, the policies and their implementation fail to meet its expected outcomes. Expanding coverage, creating awareness and targeted interventions where maximum needs exist seems to be the solution. Again, some demographic and economic factors, viz., age, land possessed, education, employment and income have proved to be the major determinant of housing access.

Rough estimation of poverty for the year 2018-19 has been compared with housing poverty estimates to conclude that housing poverty measure provides a more comprehensive measure to poverty, capturing better picture to the real deprivation.

The measures of inequality using Lorenz curve and Gini co-efficient shows interesting findings that those states in the region with lower rate of housing poverty are found to be the state where high inequality in access to housing exists. On the contrary, states with lower percentage of housing poor are found to be more equal in access to adequate housing.

In conclusion, the chapter emphasise that housing poverty in urban India is not merely a function of income but is strongly influence by several demographic, social, and economic factors. While there are some progresses made with government initiatives, they fall short in addressing the multidimensional nature of housing deprivation. A shift toward more inclusive and targeted policy measures, informed by detailed demographic and economic profiling, is essential. Moreover, the findings emphasize the importance of adopting housing poverty as a more accurate and comprehensive indicator of deprivation, capable of capturing inequalities in access to adequate living conditions that conventional poverty metrics often overlook.

SUMMARY OF FINDINGS AND CONCLUSION

6.1. Introduction

This chapter presents a summary of findings of the present study which aimed to examine the status and dimensions of urban housing poverty in north-east India with objectives of examining the nature of housing poverty and its related problems, impact of socio-economic status on housing access and inequality in access to adequate housing.

The major findings list in this chapter are drawn upon extensive empirical analysis of chapter 3, chapter 4 and chapter 5, applying ranges of statistical techniques and methods including descriptive statistics such as percentage, mean, standard deviation. etc., and inferential statistics like chi-square, logistic regression, etc. The Housing Deprivation Index (HDI) constructed using four indicators-congestion, structure adequacy, drinking water and sanitation and access to clean energy offer a deeper understanding of housing conditions of households in urban areas of the region. Further examination is made to analyse how housing poverty is influenced by socio-economic factors like age of the household head, household size, land possession, educational attainment, employment status and income level. Estimates and comparison were made to examine the extend of inequality influenced by disparity in access to housing using Lorenz curve and Gini Coefficient.

This chapter is structured as follows: the first section outlines the primary findings related to the set objectives; the next section lists out the implications and recommendations of these findings within the context of urban development and housing policies; and the concluding part will summarize the overall chapters listing key limitations and scope for future research.

6.2. Major Findings

1. The broad analysis of two national data-census 2011 data and 76th Round of National Sample Survey report in Chapter 3 suggested that there exists some degree of disparity and uneven progress in terms of physical structure, sanitation and basic amenities among the states of north-east India. While states like Sikkim, Mizoram and Meghalaya are found to provide better access to quality housing or improved living standards to their urban residents, especially in case of sanitation facilities, states like Manipur and Tripura fall behind others lagging in almost all housing characteristics. Comparison of the north-east averages against the national figure indicates there are some areas region needs improvement to match the national level such as structure durability, provision of improved drinking water, etc. However, the region managed to provide better or up to the national standard sanitation facilities such as latrine and bathroom facilities (Objective-1).
2. Section 4.2 of Chapter-4 discussed different indicators used by numerous research to measure and estimate housing poverty or deprivation (they are taken as synonymous in this study). After exploring several indicators and detailed analysis, four indicators were identified- *congestion*; *structure adequacy*; *drinking water & sanitation*; and *access to clean energy* has been identified as key indicator.
3. Setting the cut-off for the floor area of a dwelling at 97 sq. ft. per person to measure congestion, it is found that 19.8 percent of urban households in North-East India live in inadequate or congested housing. The most severe case of inadequacy in terms of space availability is found in the state of Meghalaya where more than half (51.3%) live in inadequate space or congested houses. The congestion rate is lowest in the state of Manipur as only 10.3 per cent of urban household lives in congested condition. Meanwhile, the average per person availability of space for the whole region is calculated at 178.33 sq.ft. The mean per capita floor area is lowest for Meghalaya at 121.17 sq.ft against the highest 204.87 for Mizoram.

4. Structure adequacy is measured by using six indicators (*roof status, wall status, floor status, access to kitchen, condition of structure and condition of ventilation*) with a total score of 10. In the first case i.e., roof status, 98.9 per cent of urban households in the region used durable structure against 1.1 per cent using non-durable structure. In case of wall structure or material, 81 per cent and 19 per cent of urban households in the region used durable and non-durable material for wall respectively. The use of floor material also follows the same pattern as 82.3 per cent and 17.7 per cent of urban households used durable and non-durable floor material respectively.
5. In the state of Meghalaya, all urban households are found to have use durable roof material; whereas 91 per cent of urban households in Arunachal Pradesh used durable roof material, which is the lowest in the region. For wall material, 98.6 per cent of urban households in Sikkim are using durable wall material (highest) against only 45.3 per cent in Manipur (lowest). Dependence on durable floor material is highest in the state of Meghalaya i.e., 99.4 per cent and lowest in the state of Manipur (60.5%).
6. Condition of structure and ventilation of housing unit, categories into three-bad, satisfactory and good. In case of ventilation conditions, 47.8 per cent of urban housing units in the region are classified as good and 44.2 per cent as satisfactory whereas 8 per cent are classified as bad. Mizoram (68.3%) recorded the highest proportions of households with 'good' ventilation. On the contrary, the only two states with more than 10 per cent of households recorded as bad ventilation were Manipur (17.8%) and Nagaland (15.6%). The case of structure condition is slightly positive as more than half of the housing units in the region were marked as good, 42.1 per cent are satisfactory, 5.9 per cent, on the contrary, fall under the bad category.
7. The overall structure adequacy index is measured by summing scores of these 6 indicators viz., roof status, wall status, floor status, access to kitchen, condition of structure and ventilation. The average or mean scores for the region indicate a moderate level of adequacy overall (Mean: 8.33; Std. Dev: 1.67), with significant

inter-state variability. The average housing adequacy scores range from 7.11 (lowest, Manipur) to 9.08 (highest, Sikkim). The adequacy scores were further categorised into '*severely inadequate*', '*inadequate*' and '*adequate*'. For the region, half of the urban households (50.17%) were categorised as adequate and the remaining 15.46 per cent and 34.37 per cent were categorised as severely inadequate and inadequate respectively. The percentage of severely inadequate is highest in Manipur (38.34%) and lowest in Sikkim (2.09%).

8. Using 7 indicators with a maximum score of 13, water and sanitation index is constructed where principal sources of drinking water, sufficiency of drinking water and level of access to principal sources were key indicators. In case of principal sources of drinking water, 77.8 per cent of urban households in the region have access to improved sources and the remaining 22.2 per cent have sources classified as unimproved source. 91.4 per cent received sufficient water supply from these sources and 86.6 per cent have their own or exclusive sources of drinking water in the region.
9. State-wise analysis shows that all urban households in the state of Sikkim have access to improved sources of drinking water against only 66.7 percent and 66.8 percent in the state of Tripura and Manipur respectively. The sufficient rate also shows similar patterns as Sikkim with 99.6 percent at the top and Nagaland (57.7%) at the bottom. Arunachal Pradesh (97.8%) shows highest rate of exclusive use of water source whereas sharing rate or community use is highest in Manipur with 18.8 per cent.
10. Regarding the availability of basic sanitation facilities such as latrine and bathroom, 88.5 per cent of urban households in north-east India have access to improved latrine and the remaining 11.5 per cent are denied of improved latrine. Similar pattern is shown in access to bathroom as 85.3 per cent have fully access to bathroom facility and the remaining 14.7 are classified as having only partial access (no bathroom, sharing or partially uncovered) to bathroom.

11. States of Mizoram and Sikkim have universal access to improved latrine. In contrast, the percentage of urban household using 'improved' latrine is lowest in the state of Nagaland (84.6%) which is lower than the region's average. Meghalaya (1.1%) and Tripura (1%) are the only states with highest rate of households with no latrine. In case of bathroom access, 83.3 per cent in the region have exclusive use where states like Tripura and Manipur registered high percentage of households with no bathroom (46.2 and 24.6 respectively).
12. The summary score of drinking water and sanitation for the whole region indicate that the mean score is 11.92 with standard deviation of 1.65. State-wise observation shows that Mizoram with a mean score of 12.85 is highest in this Index, closely followed by Sikkim with a mean score of 12.84 with a smaller standard deviation of 0.54 indicating smaller variation or disparities among households. Manipur (10.71) and Tripura (10.91) are the two states with lowest mean score reflecting low score in all aspects of the indicators.
13. Categorising the overall adequacy indicator of drinking water and sanitation into three-scale level of adequacy- 'Severely Inadequate', 'Inadequate' and 'Adequate' indicates that 18.65 per cent of the urban household experience 'severe inadequacy' in access to drinking water and sanitation, while another 4.98 per cent falls under the 'inadequate' category. However, majority of the households (76.37%) are classified as having 'adequate' access.
14. The access to electricity for lighting, heating and cooking purposes is nearly universal in the region as 99.1 per cent of the urban households in north-east India are having access to electricity. There only three states- Meghalaya, Assam, and Arunachal Pradesh with one-two per cent of urban households with no access to electricity. The case of clean cooking fuel is slightly different as the overall access to adequate cooking fuel in the region is less than 90 per cent (89.8%) where the rate of dependence on unclean or inadequate fuel is highest in state of Tripura (21.2%), Meghalaya (13.1%) and Manipur (12.3%).

15. After a comprehensive analysis of these four indicators and two additional factors - tenure security and affordability (which are not included in the final estimation of housing deprivation due to data limitations) - an overall Housing Deprivation Index (HDI) is constructed. This index is developed by assigning a set of weights to the selected four indicators and has a maximum score of 10 points, which signifies an adequate housing score or full access to adequate housing. Any score below 10 indicates deprivation from adequate housing. It has been found that the mean score of the entire north-eastern region stood at 8.60, suggesting generally moderate to high levels of adequate housing access. For states, the mean scores range from 8.13 (Meghalaya) to 9.11 (Mizoram). Along with Mizoram, Sikkim (8.89) scores relatively high average, Nagaland (8.77) and Assam (8.70) also score higher averages than the region's averages. The remaining states recorded lower mean score than the region's average.
16. It has been observed that there are situations where some families show full access or adequacy in most indicators and live a decent life but fail to achieve a full adequacy score in the overall HDI because they do not get full scores in one or two indicators. In view of this, the cut-off point has been determined arbitrarily at 7.5, taking into consideration the one standard deviation scale and the percentile distribution. The cut-off point also represents a threshold indicating 25% deprivation from full access to adequate housing. Thus, any household with a score of 7.5 or below is considered housing-poor or deprived (both terms are used interchangeably), and any household scoring above this point is considered non-poor. It has been found that 19.88 per cent of urban households in north-east India are classified as poor and the rest 80.22 per cent are non-poor. State-wise analysis shows that the incidence of housing poverty is found to be highest in Meghalaya (33.54%) followed by Tripura (27.53%) whereas incidence is lowest in Mizoram where only 5.76 per cent are considered as housing poor, followed by Sikkim (9.87%).
17. After the estimation of the rate of housing poverty, the incidence of housing poverty is co-related with selected demographic factors viz., age, marital status,

households size; social factor (level of education); economic factors such as employment status and level of income. All these factors are found to be a significant determinant of housing poverty proven by high levels of significance ($p>0.001$) in chi-square test of interdependence.

18. Housing poverty is more prevalent among male headed households (20.22/79.77- poor/non poor) than female (17.98/82.02), and male headed households contributing 85.82 per cent of housing poor owing to larger share of male in the total households (84.32%). In case of marital status, poverty incidence is highest among 'currently married' and lowest among 'never married'.
19. In relation to age of head of households, middle age groups are more like to fall in housing poverty category as 24.73 per cent of age group 30-40 are categorised as housing poor. The age group- less than 20 shows lowest incidence of poverty as less than 10 per cent of the households in this age group are categorised as housing poor. Out of the total households classified as poor, 33.03 per cent are within the age group of 40-50, 28.13 per cent are 30-40 and 18.20 per cent are in the age group of 50-60.
20. Among the households classified as poor, nearly half of them are from medium size family. While the small size family constitute around 40 per cent of the total urban households, they only constitute 27.27 per cent of those in poor category. On the contrary, large household which constitute only 14.23 per of the total, constitute more than 20 per cent of the poor, showing a disproportionately higher representation. This suggests that larger households are significantly more likely to experience housing poverty. Prevalence of housing poverty among large size households has been confirmed by analysis within household size as 70.85 per cent of large family falls in the category of poor.
21. The incidence of housing poverty within social group analysis that-23.21 per cent and 22.15 per cent of the urban households among SCs and OBCs are considered housing poor respectively against 17.93 per cent and 18.62 per cent for STs and Others respectively for the same indicating SCs and OBCs being more vulnerable

relative to STs and others. Within religious group, 31.39 per cent of households affiliated as Islam are categorised as housing poor while the percentage for Hindus and Christians stood at 19.73 and 16.10, suggesting religious affiliation is correlated with differential exposure to housing poverty.

22. Educational attainment of the family head has also been found to have significant relationship with their housing poverty status. The proportion of housing poor is highest among those with low or no formal education- 28.59 percent of the housing poor have only completed up to the Primary/Below Primary, 24.27 of them have complete up to upper primary or middle which made more than half of the household classified as poor are within these two categories. Conversely, individuals with higher education i.e., graduates or postgraduates and above are less likely to be in the poor group, make up only 6.37 per cent of those within poor category. Within Among the head of households with educational attainment of post-graduate and above, only 1.12 per cent are poor.
23. Land ownership is also a significant factor in determining housing security in urban areas. Marginal landowners are the largest group among the housing poor making up 92.81 per cent owing to its large share in the total urban households and yet contributing larger percentage than its share in total urban households. Same is case for landless households, even if they are only 4.38 per cent of the total households, they made up 5.42 per cent of the total households categorised as 'poor'. This has been confirmed by within landownership status analysis that the percentage of households falling under housing poverty is highest among 'landless' i.e., 24.61 per cent, followed by marginal landowners (19.92%) and small landowners (18.23%). The results of the logistic regression of housing poverty status (1 = non-poor, 0 = housing-poor) on various factors showed that the coefficient for landownership status is positive and significant, indicating a direct relationship between housing poverty and land ownership. *This supports Hypothesis No. 2 of this study.*
24. Within the housing poor category, a significant percentage (39.43%) belong to the lowest income group (monthly income up to Rs. 2087.5), while only 4.95 per cent

of the poor are from the highest income group (above Rs 5000). Among the lowest income households, 39.16 per cent are housing poor, but this figure drops steadily with rising income. Among households earning above Rs 5000, only 4.93 per cent are categorised as housing poor, while 95.07 per cent are non-poor. The positive and significant coefficient for income in the logistic regression of housing poverty status on other factors confirms the positive impact that household income has on their housing poverty status. *This supports Hypothesis No. 1 of this study.*

25. The incidence of housing poverty is highest (51.61%) among household engaged in unspecified informal work (labeled as 'in other types of work' in the table). Along with this, households engaged in casual wage labour in public works (39.62%), engaged in 'domestic duties only' (27.89%), household enterprise (self-employed): own account worker (22.64%), employer (21.39%), domestic duties and in free collection of goods (20.03%) report significantly higher rates of housing poverty, emphasizing the vulnerability of non-remunerated labour. At the same time, regular salaried/wage workers (11.63%), employers (21.39%), and self-employed-own-account workers (22.64%) show lower incidence of housing poverty, indicating a positive correlation between regular job or work and better housing conditions.
26. Analysis on state's policy intervention on housing and amenities sector revealed that the percentage of households accessing or benefiting from government assistance or schemes is extremely low in the region. Among the different characteristics, benefit received is highest in case of LPG (7.33 per cent and 5.74 per cent within the last three years), followed by sanitation (4.88 per cent and 3.64 per cent within the last three years). Households receiving benefit assistance on housing related activities is less than 2 per cent. There are evidence suggesting some degree of targeted intervention favouring the poor in the region.
27. To assess the effectiveness of the housing poverty estimation made in this study, an income-based poverty estimation using the conventional method has been examined, taking the poverty line for the year 2011–12 based on the Tendulkar Committee (2009) as a reference. This Committee recommended using household

unit-level price indices based on large-scale NSS Consumer Expenditure Surveys (CES) to update the poverty line from time to time. Data from the large-scale CES for 2011–12 and 2022–23 have been used to interpolate the state-wise urban poverty lines to suit the dataset of this study. The results reveal a stark contrast between income-based poverty, measured by the Below Poverty Line (BPL) criteria, and housing poverty across the north-eastern states of India. On average, only 6.58 per cent of households fall under the conventional BPL classification, whereas 19.88 per cent are classified as poor based on housing conditions. This significant difference shows the limitations of income-based poverty measures in capturing the full scope of deprivation.

28. At the state level, the gap is especially evident in Meghalaya, where only 2.62 per cent of households are BPL, yet 33.54 per cent are housing poor. Similarly, Tripura shows a modest 2.52 per cent BPL rate but a much higher 27.53 per cent housing poverty rate. These figures implicate the inadequacy of relying solely on income or expenditure to assess poverty, particularly in regions with high costs or shortages in adequate housing infrastructure.
29. In our attempt to see the inequality dimensions of housing poverty, graphical Lorenz Curve have been constructed based on HDI scores. It was observed that the region show significant disparity among urban households in access to adequate housing as the curve for the region deviates significantly from the line of equality. Among states, the curve for the state of Mizoram deviates the furthest from the point of equality indicating existence of highest level of inequality in the states. States such as Arunachal Pradesh, Nagaland, and Sikkim exhibits moderate housing inequality showing consistent deviation from the line of equality. On the other hand, States like Manipur and Tripura shows more equitable distributions, with their curves lying closer to the equality line.
30. The calculated Gini coefficient from HDI scores also give the same picture of housing inequality in north-east India as Mizoram (0.426) showing the highest level of inequality, indicating a sharp disparity in housing conditions followed by Sikkim (0.335) and Nagaland (0.327), both of which also show relatively high

levels of inequality. These findings suggest that having lower rate of housing poverty does not necessarily imply equal distribution since the state with lowest incidence of housing poverty turn out to be the most unequal states in terms of access to adequate housing.

6.3. Conclusions

This study undertook a systematic investigation into the status, dimensions, and determinants of housing poverty among urban households in North-East India. By constructing a Housing Deprivation Index (HDI) and integrating socio-economic data drawn from NSS 76th Round, the research aimed to provide comprehensive and multidimensional understanding of urban housing deprivation. After analysing different characteristics and dimension of housing poverty in north-east India, it can be concluded that though there exists several evidence of deprivation in many forms, there are promising findings that signals improvement in areas especially sanitation. It, however, is found that there exist serious gaps and differences the region needs to pull through with the rest of the country. With continuous efforts and inclusive participation of the state, local governments and civil societies, more could be achieved, consequently delivered the aspirations of millions of urban residents living safely in their own homes with improved means of living.

It is also notable that the study observed wide deviations between the estimates of housing poverty (or deprivation) and poverty as measured by the poverty line method. This may be taken to indicate the inadequacy of the traditional poverty line method for estimating the incidence of poverty in a multidimensional sense, given the different facets of poverty.

Tackling constraints like limitation in data availability, there are many areas and factors influencing housing sector including housing demand, housing prices and cost of construction, housing finance and many others, this study failed to cover and study. By expanding into these areas, future research can contribute to more comprehensive, inclusive, and effective housing policy frameworks that are responsive to both spatial and social realities.

6.4. Recommendations

From the summary of findings discussed in section 6.2, which highlights the different status, nature and dimensions of housing deprivation prevalent in urban north-east India, the following set of recommendations and suggestions has been made to address housing deprivation and disparity in access to adequate housing pointing actions needed at local states, regional and national level:

1. **Flexible approach to housing regulations and policies:** Evidence suggests there exists the marked inter-state variability and disparities-ranging from congestion, structure durability, access to basic sanitation facilities, requiring different approaches to address the problems. Acknowledging, demographic, geographical, cultural and political differences, flexible housing policy and approaches are suggested, thus, a decentralized, state-specific approach must be adopted.
2. **Problem-specific approach:** The findings suggested that while there are some areas where the region's figures bettered the national figure- especially in case of sanitation facilities, more focused should be given to address where the states in the region lack progress and fall behind relatively to the rest of the country viz., structure adequacy such as durable material, provision of clean or improved drinking water, etc. This specific problem may also be state specific, for instance, high congestion rate in Meghalaya which is deeply rooted in cultural practice may be addressed through relaxation in building regulation; low score in sanitation facility in some states may be due to social or cultural factors such as conscience to cleanliness and hygiene which require change than mere provision of financial support, promoting education, creating awareness may be the long term solution.
3. **Introducing norms to enforce minimum space requirement, ventilation and lighting:** Urban planning authorities should revise urban development norms to prevent overcrowding, incorporating minimum space per person guidelines and encouraging mixed-use, medium-density housing in urban expansion areas. Along with this, regulations regarding minimum standards for natural ventilation, and lighting may be introduced and enforced.

4. **Upgrading structural components of dwelling units:** Structural adequacy, durability of structure, bad conditions of structure are deeply affected by economic status of urban households including their level of income. Steps to improve their economic status or increase income through education, employment generation may be long term objectives. Short-term solutions to solve these problems may include financial support in the form of government assistance and schemes for these poor households. For this purpose, subsidies or credit-linked incentives under the PMAY-U should be made available to these households.
5. **Expanding water infrastructure in urban areas:** Inadequate and unimproved drinking water access in some states points out the need to prioritize expanding coverage to household-level treated, piped water supply, reducing the dependence on untreated sources.
6. **Introducing land tenure and urban land reform policies:** Land possession status especially landlessness is major determinants of housing poverty. Urban planning authorities must accelerate and enforce tenure security, and provision of land, particularly for marginalized communities, and control skyrocketing land price to promote stability in housing sector and investment.
7. **Adopt a multidimensional approach to poverty estimation:** The significant gap between income-based (BPL) and housing-based poverty estimates highlights the need to shift towards a multidimensional approach incorporating housing characteristics to measure and identify poverty the state and national levels. This should integrate housing adequacy, access to basic services, and asset ownership into poverty targeting mechanisms to better reflect actual deprivation.
8. **Inclusive urban planning:** The high Gini coefficients and Lorenz curve findings reveal deep housing inequality even in states with low poverty rates. Urban policies must include zoning reforms, mixed-income housing projects, and equitable infrastructure investments to reduce spatial inequality in housing access.

Bibliography

Adeoye, D. O. (2016). Challenges of Urban Housing Quality: Insights and Experiences of Akure, Nigeria. *Procedia - Social and Behavioral Sciences* (216), 260-268.

Ahmad, S. (2015). Housing Poverty and Inequality in Urban India. *Poverty Reduction Policies and Practices in Developing Asia*, 107-124.

Arku, G. (2006, December). The housing and economic development debate revisited: economic significance of housing in developing countries. *Journal of Housing and the Built Environment*, 21(4), 377-395.

Arnold, E., & Skaburskis, A. (1989, October). Measuring Ontario's Increasing Housing Affordability Problem. *Social Indicators Research*, 2(5), 501-515.

Arundel, R. (2017). Equity Inequity: Housing Wealth Inequality, Inter and Intra-generational Divergences, and the Rise of Private Landlordism. *Housing, Theory and Society* 34(2), 176-200

Ayala, L., & Navarro, C. (2023). *Housing Poverty*. Edward Elgar Publishing. doi:<https://doi.org/10.4337/9781800883451.00036>

Balchin, P. N., & Stewart, J. (2001). Social housing in Latin America: Opportunities for affordability in a region of housing need. *Journal of Housing and the Built Environment*, 16(3/4), 333-341.

Behr, D. M., Chen, L., Goel, A., Haider, K. T., Singh, S., & Zaman, A. (2021). *Introducing the Adequate Housing Index (AHI): A New Approach to Estimate the Adequate Housing Deficit*. Policy Research Working Paper 9830, International Finance Corporation, World Bank Group.

Bhagat, R., Sarode, S., Dwivedi, L., & Kumar, M. (2019). Access to Household Amenities and Assets in India: A Census Based Study. *IIPS Research Brief*.

Bhan, G. (2013). Planned Illegalities: Housing and the 'Failure' of Planning in Delhi: 1947-2010. *Economic and Political Weekly*, 48(24), 58-70.

Bradbury, B., Rossiter, C., & Vipond, J. (1986). Housing Costs and Poverty. *The Australian Quarterly*, 58(1), 34-46.

Buckley, R. M., & Gurenko, E. N. (1997, February). Housing and Income Distribution in Russia: Zhivago's Legacy. *The World Bank Research Observer*, 12(1), 19-32.

Buckley, R. M., Kallergis, A., & Wainer, L. (2015). The emergence of large-scale housing programs: Beyond a public finance perspective. *Habitat International*, 199-204.

Central Statistical Organisation. (2008). *National Industrial Classification All Economic Activities 2008*. Ministry of Statistics and Programme Implementation, Government of India.

Chandrasekhar, S., & Montgomery, M. R. (2010). *Broadening poverty definitions in India: Basic needs in urban housing*. Human Settlements Programme: International Institute for Environment and Development (IIED).

Chen, X., & Gao, X. (1993). China's Urban Housing Development in the Shift from Redistribution to Decentralization. *Social Problems*, 40(2), 266-288.

Chopra, H. (2018, March). Is Housing Poverty Improving in Urban India. *SARVEKSHANA, Journal of National Sample Survey Office* (104th), 1-18.

Coker, A., Awakola, O., Olomolaiye, P., & Booth, C. (2008). Challenges of urban housing quality and its associations with neighbourhood environments: insights and experiences of Ibadan City, Nigeria. *Journal of Environmental Health Research*, 7(1), 21-30.

Cushman & Wakefield Research Publication. (2014). *Opportunities for the Housing Sector in Urban India*. Retrieved from www.cushmanwakefield.co.in

Dantzler, P. A. (2021). Reconsidering poverty dynamics by analyzing housing spells. *The Social Science Journal*, 58(2), 176-185.

Deaton, A., & Dreze, J. (2002, Sep 7-13). Poverty and Inequality in India: A Re-examination. *Economic and Political Weekly*, 37(36), 3729-3748.

Deaton, A., & Kozel, V. (2005). Data and Dogma: The Great Indian Poverty Debate. *The World Bank Research Observer*, 20(2), 177-199.

Dehuri, B. (2017). Interlinkages of Literacy and Household Poverty in India: Inter-District and Socio-Demographic Disparities. *Biomedical Journal of Scientific and Technical Research*, 1-8.

Deka, N. (2012). Access to Housing and Basic Amenities in Urban India: An Interstate Analysis, 2002-2012. Retrieved November 25, 2024, from <https://hd-ca.org/wp-content/plugins/view-conf-tools-export/conf-papers-2015/DEKA>

Desai, R. (2012). Governing the Urban Poor: Riverfront Development, Slum Resettlement and the Politics of Inclusion in Ahmedabad. *Economic and Political Weekly*, 47(2), 49-56.

- Dewilde, C. (2004). The Multidimensional Measurement of Poverty in Belgium and Britain: A Categorical Approach. *Social Indicators Research*, 68(3), 331-369.
- D'Souza, R. (2015). Housing Poverty in Urban India: The Failures of Past and Current Strategies and the Need for a New Blueprint. *ORF Occasional Paper*.
- Ebekozien, A., Abdul-Aziz, A.-R., & Jaafar, M. (2019). Housing finance inaccessibility for low-income earners in Malaysia: Factors and solutions. *Habitat International*, 87, 27-35.
- Fahey, T., Nolan, B., & Maitre, B. (2004). Housing Expenditures and Income Poverty in EU Countries. *Journal of Social Policy*, 33(3), 437-454.
- Fiadzo, E. D., Houston, J. E., & Godwin, D. D. (2001, February). Estimating Housing Quality for Poverty and Development Policy Analysis: CWIQ in Ghana. *Social Indicators Research*, 53(2), 137-162.
- Filali, R. (2012, September). Housing conditions in Tunisia: the quantity-quality mismatch. *Journal of Housing and the Built Environment*, 27(3), 317-347.
- Flood, J. (1993). Housing Indicators in Australia: A Consultative Method. *Netherlands Journal of Housing and the Built Environment*, 8 (1), 95-124.
- Foster, T. B., & Kleit, R. G. (2014). The Changing Relationship Between Housing and Inequality, 1980–2010. *Housing Policy Debate*, 25 (1), 16-40.
- Gambo, Y., Idowu, O., & Anyakora, I. (2012). Impact of Poor Housing Condition on the Economy of the Urban Poor: Makoko, Lagos State in View. *Journal of Emerging Trends in Economics and Management Sciences (JETEMS)*, 3 (4), 302-307.
- Gandhi, S., Green, R. K., & Patranabis, S. (2022). Insecure property rights and the housing market: Explaining India's housing vacancy paradox. *Journal of Urban Economics*. doi:<https://doi.org/10.1016/j.jue.2022.103490>
- Gauhan, O. T. (1977). Housing and the Urban Poor: The Case of Bogotá, Colombia. *Journal of Interamerican Studies and World Affairs*, 19 (1), 99-124.
- Gilbert, A. G. (2014). Free housing for the poor: An effective way to address poverty? *Habitat International*, 41, 253-261.
- Gomez, M., & Thiele, B. (2005). Housing Rights Are Human Rights. *Human Rights*, 32(3), 2-5.
- Gopalan, K., & Venkataraman, M. (2015). Affordable housing: Policy and practice in India. *IIMB Management Review*, 27(2), 129-140.

Government of India. (2012). *Report of The Technical Group on Urban Housing Shortage (TG-12) (2012-17)*. National Building Organisation, Ministry of Housing and Urban Poverty Alleviation.

Government of India. (2013). *Affordable Housing in Partnership: Scheme Guidelines*. Ministry of Housing and Urban Poverty Alleviation.

Government of India. (2015). *National Urban Rental Housing Policy (Draft)*. Ministry of Housing and Urban Poverty Alleviation.

Government of India. (2019). *Drinking Water, Sanitation, Hygiene and Housing Condition in India NSS 76th Round July 2018-December 2018*. Ministry of Statistics & Programme Implementation, National Statistical Office.

Government of India. (2019). *Instructions to Field Staff, Vol. I: NSS 76th Round*. Ministry of Statistics & Programme Implementation, National Statistical Office.

Government of India. (2022). *National Family Health Survey (NFHS-5), 2019-21 India Report*. Ministry of Health and Family Welfare.

Ha, S.-K. (2004). Housing poverty and the role of urban governance in Korea. *Environment&Urbanization*, 16(1), 139-154.

Harish, S. (2021). Affordable Rental Housing Complexes Scheme and Private Rental Housing in Indian Cities. *Economic & Political Weekly*, 56(16), 15-19.

Hegedus, J. (2011). Social Safety Nets, the Informal Economy and Housing Poverty – Experiences in Transitional Countries. *European Journal of Homelessness*, 5(1), 15-26.

Himanshu. (2007, Feb. 10-16). Recent Trends in Poverty and Inequality: Some Preliminary Results. *Economic and Political Weekly*, 42(6), 497-508.

Ho, M. H., & Chiu, R. L. (2002). Impact of accessibility on housing expenditure and affordability in Hong Kong's private rental sector. *Journal of Housing and the Built Environment*, 17(4), 363-383.

Hulse, K., & Milligan, V. (2014). Secure Occupancy: A New Framework for Analysing Security in Rental Housing. *Housing Studies*, 29(5), 638-656.

Hutto, N., Waldfogel, J., Kaushal, N., & Garfinkel, I. (2011, March). Improving the Measurement of Poverty. *Social Service Review*, 85(1), 39-74.

International Energy Agency. (2017). *Energy Access Outlook 2017 From Poverty to Prosperity*. International Energy Agency.

Iwata, S., & Yamaga, H. (2008). Rental externality, tenure security, and housing quality. *Journal of Housing Economics*, 17, 201-211.

- Jamal, H. (2011). Assessing Poverty with Non-Income Deprivation Indicators: Pakistan, 2008-09. *The Pakistan Development Review*, 50(4), 913-926.
- Jha, R. (n.d.). Urban Rental Housing in India: Towards 'Housing For All'. *ORF Occasional Paper* 287.
- Kain, J. F., & Quigley, J. M. (1970). Measuring the Value of Housing Quality. *Journal of the American Statistical Association*, 65(330), 532-548.
- Katyal, A., Singh, P. V., Samarth, A., Bergkvist, S., & Rao, M. (2013). Using the Indian National Sample Survey data in public health research. *The National Medical Journal of India*, 26(5), 291-294.
- Kaur, A., & Chandra, T. (2022, September-October). Urban Rental Housing: An Affordable Alternative For All. *NCHF Bulletin*, 35(3-4), 31-33.
- Kim, K.-H. (1997). Housing Finance and Urban Infrastructure. *Urban Studies*, 34(10), 1597- 1620.
- Kim, K.-H. (2004). Housing and the Korean economy. *Journal of Housing Economics*, 13, 321-341.
- KMPG India & NAREDCO. (2014). *Decoding Housing For All by 2022*. Retrieved from <https://assets.kpmg.com/content/dam/kpmg/pdf/2014/09/>
- Kumar, A. (2015, April). Housing Amenities in Urban India-Issues and Challenges. *SHELTER*, 16(1), 7-14.
- Kumar, A. (2015). Housing Shortages in Urban India and Socio-economic Facets. *Journal of Infrastructure Development*, 7(1), 19-34.
- Kumar, S. (2001). Embedded Tenures: Private Renting and. *Housing Policy in Surat, India*, 16(4), 425-442.
- Kurian, S. M., & Thampuran, A. (2011). Assessment of Housing Quality. *Institute of Town Planners, India Journal*, 8(2), 74-85.
- Littlewood, A., & Munro, M. (1997). Poverty and Poor Housing in Scotland: The Relationship between Income and Housing Condition. *Netherlands Journal of Housing and the Built Environment*, 12(2), 199-220.
- Liu, E., Valentine, K., Batterham, D., Stone, W., Martin, C., Parkinson, S., & Hynes, D. (2023). *Poverty and Australian housing: findings from an Investigative Panel*. Melbourne, Australia: Australian Housing and Urban Research Institute Limited. doi:<https://doi.org/10.31235/osf.io/q2tf>

- Mahadevia, D. (2010). Tenure Security and Urban Social Protection Links: India. *IDS Bulletin*, 41(4), 52-62.
- Mainardi, S. (1994). Poor Housing Conditions: An Analysis across South African Development Regions. *Savings and Development*, 18(4), 427-455.
- Malpezzi, S. (1990). Urban Housing and Financial Markets: Some International Comparisons. *Urban Studies*, 27(6), 971-1022.
- Manoj, P. (2024). Housing finance by banks and housing finance companies in India: A review. *Environment and Social Psychology*, 9(6).
- Mehta, M., & Mehta, D. (1987). Metropolitan Housing Markets: A Case Study of Ahmedabad. *Economic and Political Weekly*, 22(40), 1701-1709.
- Meng, G., & Hall, G. B. (2006, December). Assessing housing quality in metropolitan Lima, Peru. *Journal of Housing and the Built Environment*, 21(4), 413-439.
- Mimura, Y. (2007). Housing Cost Burden, Poverty Status, and Economic Hardship among Low-income Families. *Journal of Economic and Family Issues*, 152-165.
- Ministry of Development of North-Eastern Region. (2008). *North-Eastern Region: Vision 2020*. Government of India, North-Eastern Council.
- Ministry of Home Affairs, North-East Division. (n.d.). *Government of India*. Retrieved from <https://www.mha.gov.in/en/commoncontent/north-east-division>
- Ministry of Housing and Urban Affairs, Government of India. (n.d.). Retrieved from PMAY-Urban: <https://pmay-urban.gov.in/>
- Ministry of Housing and Urban Poverty Alleviation. (2015). *National Urban Rental Housing Policy (Draft)*. Government of India.
- Ministry of Housing and Urban Poverty Alleviation. (2016). *Housing For All (Urban): Scheme Guidelines*. Government of India. Retrieved from https://pmay-urban.gov.in/uploads/guidelines/18HFA_guidelines_March2016-English.pdf
- Ministry of Labour & Employment. (2004). *National Classification of Occupation-2004*. Government of India. Retrieved from <https://labour.gov.in>
- Morris, A., Hulse, K., & Pawson, H. (2017). Long-term private renters: Perceptions of security and insecurity. *Journal of Sociology*, 53(3), 653-669.
- Mukherjee, S., Chakraborty, D., & Sikdar, S. (2015). Three Decades of Human Development Across Indian States: Inclusive Growth or Perpetual Disparity? *Journal of Asian and African Studies*, 49(5), 544-567.

Muth, R. F. (1960). The Demand for Non-Farm Housing in the Demand for Durable Goods. *University of Chicago Press*. 29-96.

National Housing Bank. (2012). *Report on Trends and Progress of Housing in India*.

NITI Aayog. (2021). *North-Eastern Region District SDG Index and Dashboard: Baseline Report 2021-22*. Ministry of Development of North-Eastern Region.

NITI Aayog. (2021). *Reforms in Urban Planning Capacity in India*. Government of India.

Obeng-Odoom, F., & Amedzro, L. (2011). Inadequate housing in Ghana. *Urbani Izziv*, 2(1), 127-137.

Office of the Registrar General & Census Commissioner, India. (2011). *Census of India 2011: Primary Census Abstract*. Ministry of Home Affairs, Government of India. Retrieved from <https://censusindia.gov.in/>

Office of the United Nations High Commissioner for Human Rights. (n.d.). Retrieved from: <https://www.ohchr.org/en/special-procedures/sr-housing/human-right-adequate-housing>.

Pal, R., Aneja, N., & Nagpal, D. (2015). Inequality in Housing and Basic Amenities in India. *Munich Personal RePEc Archive*. Retrieved from <http://mpa.ub.uni-muenchen.de/61994/>

Park, H. A. (2013). An Introduction to Logistics Regression: From Basic Concept to Interpretation with particular attention to Nursing domain. *Journal of Korean academy of nursing*, 43(2), 154-164.

Patel, A., Shah, P., & Beauregard, B. E. (2020). Measuring multiple housing deprivations in urban India using Slum Severity Index. *Habitat International*. doi:<https://doi.org/10.1016/j.habitatint.2020.102190>

Piyush, P., & Negi, H. (2016). Study of Housing Finance in India with reference to HDFC and LIC Housing Finance Ltd. *International Journal of Management (IJM)*, 7(3), 39-49.

Planning Commission. (2013). *Press Note on Poverty Estimates 2011-12*. Government of India.

Purnachandrarao. (2017). Right to House: Housing-induced Poverty and Sustainable Development. *Journal of Poverty, Investment and Development* (40), 56-64

Rao, P. K., & Biswas, A. (2021). Measuring Housing Affordability Using Residual Income Method for Million-plus Cities in India. *4th International Conference of*

Contemporary Affairs in Architecture and Urbanism (ICCAUA-2021) 20-21 May 2021, (610-620). doi:10.38027/ICCAUA2021257N3

Rodinneli, D. A. (1990, April). Housing the Urban Poor in Developing Countries: The Magnitude of Housing Deficiencies and Failure of Conventional Strategies are World-Wide Problems. *American Journal of Economic and Sociology*, 49(2), 153-166.

Roy, D., & ML, M. (2020). Housing for India's low-income urban households: A demand perspective. *Working Paper, No. 402*. New Delhi: Indian Council for Research on International Economic Relations (ICRIER) .

Salahuddin, T., & Zaman, A. (2012). Multidimensional Poverty Measurement in Pakistan: Time Series Trends and Breakdown. *The Pakistan Development Review*, 51(4), 493-504.

Sarkar, A., Dhavalikar, U., Agrawal, V., & Morris, S. (2016). *Examination of Affordable Housing Policies in India*. Indian Institute of Management; Ahmedabad.

Saunders, P. (2016). Housing costs, poverty and inequality in Australia. *Housing Studies*. doi:10.1080/02673037.2016.1229757

Shah, Y. S., & Bhagat, S. S. (2019). Housing Policy in India: Challenges and Reforms. *International Journal of Research in Engineering, Science and Management*, 2(12), 180-183.

Siddiqui, T. (2012). Education As Poverty Removal Instrument: A Study in India. *Global Journal for Research Analysis*, 3(6), 50-53.

Sivam, A., & Karuppannan, S. (2002). Role of state and market in housing delivery for low-income groups in India. *Journal of Housing and the Built Environment*, 17(1), 69-88.

Smets, P. (1997). Private Housing Finance in India: Reaching Down-Market. *Habitat International*, 21(1), 1-15.

Steering Committee on Urbanization. (2011). *Report of the Working Group on Urban Poverty, Slum and Service Delivery System*. Planning Commission, Government of India.

Sundaram, K., & Tendulkar, S. D. (2003, Jan. 25-31). Poverty has decline in the 1990s: A Resolution of Comparability Problems in NSS Consumer Expenditure Data. *Economic and Political Weekly*, 38(4), 327-337.

Tacoli, C. (2012). Urbanization, gender and urban poverty: paid work and unpaid carework in the city. *Urbanization and Emerging Population Issues: Working Paper 7*.

International Institute For Environment and Development: United Nations Population Fund.

Tiwari, P., & Rao, J. (2016). Housing Markets and Housing Policies in India. *ADB Working Paper Series*. Asian Development Bank Institute.

Tripathi, S. (2019). Does higher level of education reduce poverty and increase inequality? Evidence from Urban India. *International Journal of Business and Globalisation*, 22(3), 419-431.

Tunstall, R., Bevan, M., Bradshaw, J., Croucher, K., Duffy, S., Hunter, C., . . . Wilcox, S. (2013). *The Link between Housing and Poverty: An Evidence Review*. Joseph Rowntree Foundation (JRF).

Ulman, P., & Cwiek, M. (2020). Measuring housing poverty in Poland: A multidimensional analysis. *Housing Studies*. 36(8), 1-19.

UN HABITAT. (2009). *The Right to Adequate Housing-Fact Sheet No.21/Rev.1*. United Nations Human Settlement Programme. Retrieved from https://www.ohchr.org/Documents/Publications/FS21_rev_1_Housing_en.pdf

UN HABITAT. (2016). *World Cities Report, 2016 (Urbanization and Development: Emerging Futures)*. United Nations Human Settlement Programme. Retrieved from <https://www.unhabitat.org/wp-content/uploads/2014/03/WCR-%20Full-Report-2016.pdf>

UN Habitat. (2020). *World Cities Report 2020: The Value of Sustainable Urbanization*. United Nations Human Settlements Programme. Retrieved from <https://unhabitat.org/>

UN Habitat. (2024). *Annual Report 2024: Adequate Housing for all*. United Nations Human Settlement Programme. Retrieved from <https://unhabitat.org/annual-report-2024>

United Nations. (1949). *United Nations Universal Declaration of Human Rights 1948*. Retrieved from http://nhrc.nic.in/documents/udhr_eng.pdf UN 1948

United Nations. (2018). *World Urbanization Prospects: The 2018 Revision*. Department of Economic and Social Welfare.

Van Dam, R., Geurts, V., & Pannecoucke, I. (2003). Housing tenure, housing costs and poverty in Flanders (Belgium). *Journal of Housing and the Built Environment*, 18(1), 1-23.

World Health Organisation. (2018). *WHO Housing and Health Guidelines*. Retrieved from <https://iris.who.int/bitstream/handle/10665/277465/WHO-CED-PHE-18.10-eng.pdf>

Yang, Z., & Shen, Y. (2008). The affordability of owner occupied housing in Beijing. *Journal of Housing and the Built Environment*, 23(4), 317-335.

Zainal, N. R., Kaur, G., Ahmad, N., & Khalili, J. M. (2012). Housing Conditions and Quality of Life of the Urban Poor in Malaysia. *Procedia - Social and Behavioral Sciences*, 50, 827-838.

Brief Bio-data of the Candidate

Personal Details:

Name : Tuanmuansanga
Father's Name : Dalthanga
Mother's Name : Dimzaluani
D.o.B : 01.08.1990
Gender : Male
Nationality : Indian
Present Address : V-138, College Veng, Aizawl
Permanent Address : Vaikhawtlang, Champhai District, Mizoram, India
Mobile No. : 8258036526
Email : msvartevkt@gmail.com

Educational:

Mizoram University:

- Master of Arts (Economics) with a CGPA of 7.35
- Master of Philosophy with 'O' Grade

Pachhunga University College:

- Bachelor of Arts (Economics) with I Division (60%)

Publications:

- Published article "Urban Housing and Basic Amenities in North-East India" in *Mizoram Economic Review*.
- Published article "The Problem of Congestion in Urban Housing in North-East India" in *Mizoram Economic Review*.

Paper Presented:

- “Disparity in Access to Drinking Water in Urban Areas of North-East India” in One Day National Seminar on Entrepreneurship and Innovation for Development organized by Mizoram Economic Association on 10th December, 2024
- “Urban Housing and Basic Amenities in North-East India” in One Day National Seminar on Sustainable Development Goals 2030: Prospects and Challenges” organized by Mizoram Economic Association on 9th December, 2022.

Seminar/Workshop Attended

- Regional Workshop on ‘Sustainable Development Goals’ organized by Planning & Programme Implementation Department, Government of Mizoram with support from North-Eastern Council on the 24th August, 2018 at ATI Auditorium, Aizawl, Mizoram
- Webinar on ‘Economics Research’ organized by Mizoram University on 26th May, 2021
- One Week Faculty Development Programme on ‘ICT Tools for Teaching and Learning’ organized by Teaching Learning Centre, Ramanujan College, University of Delhi on 16-22 January, 2023.
- One Day National Seminar on ‘Entrepreneurship and Innovation for Development’ organized by Mizoram Economic Association on 10th December, 2024.

(TUANMUANSANGA)

PARTICULARS OF THE CANDIDATE

NAME OF THE CANDIDATE : TUANMUANSANGA
DEGREE : DOCTOR OF PHILOSOPHY
DEPARTMENT : ECONOMICS
TITLE OF THESIS : URBAN HOUSING POVERTY :
STATUS AND DIMENSIONS IN
NORTH- EAST INDIA
DATE OF ADMISSION : 04.08.2017

APPROVAL OF RESEARCH PROPOSAL

1. DRC : 11.10.2018
2. BOS : 16.10.2018
3. SCHOOL BOARD : 26.10.2018

MZU REGN.NO. : 3131 OF 2010-11

Ph.D. REGN NO.& DATE : MZU/Ph.D./1168 of 26.10.2018

EXTENSION (IF ANY) : *Vide-File No. F.No.A.49012/1/2023-
Conf/PF/9 Dated 5th January, 2024, 45th
Academic Council Meeting Minutes*

Head

Department of Economics

ABSTRACT

**URBAN HOUSING POVERTY : STATUS AND DIMENSIONS IN
NORTH-EAST INDIA**

**AN ABSTRACT SUBMITTED IN PARTIAL FULFILLMENT OF
THE REQUIREMENTS FOR THE DEGREE OF
DOCTOR OF PHILOSOPHY**

TUANMUANSANGA

MZU REGISTRATION NO: 3131 OF 2010-11

Ph.D. REGISTRATION NO. MZU/Ph.D./1168 of 26.10.2018



**DEPARTMENT OF ECONOMICS
SCHOOL OF ECONOMICS, MANAGEMENT
& INFORMATION SCIENCES**

JULY, 2025

**URBAN HOUSING POVERTY : STATUS AND DIMENSIONS IN
NORTH-EAST INDIA**

BY

TUANMUANSANGA

DEPARTMENT OF ECONOMICS

SUPERVISOR

PROF. JAMES L.T. THANGA

SUBMITTED

**IN PARTIAL FULFILLMENT OF THE REQUIREMENT OF THE
DEGREE OF DOCTOR OF PHILOSOPHY IN ECONOMICS OF
MIZORAM UNIVERSITY, AIZAWL**

1. Introduction

Housing is one of the basic needs along with food and clothing. Access to quality housing determines human dignity, its living standard and level of socio-economic development, while ensuring safety, providing personal space, proper sanitation and health. Access to quality housing is a major indicator of a society's standard of living depicting overall socio-economic progress (Chen & Gao, 1993; Kurian & Thampuran, 2011). Without access to adequate housing, employment is difficult to secure and maintain, health is threatened, education is impeded, violence is more easily perpetrated, privacy is impaired, and social relationships are frequently strained, consequently affect human rights (Gomez & Thiele, 2005).

Article 25 of United Nations' Universal Declaration of Human Rights 1948 states that "Everyone has the right to a standard of living adequate for the health and well-being of himself and of his family, including food, clothing, housing and medical care....". However, due to a number of reasons, millions of people in the world are being denied of this right (UN Habitat, 2024). The largest and most prominent reason is poverty which is the cause and impact of housing deprivation. The problem of deprivation couples due to the increasing urbanization and rising costs. Urbanization is now a permanent and continuous trend with positive impact, but the biggest challenge would be providing the housing needs- including water, sanitation facilities of those living in cities and those who migrate to the cities (MoHUPA, 2015, United Nations, 2018).

Therefore, a housing or dwelling unit may be considered adequate if is affordable even for weaker sections of society, which guaranteed physical safety with available housing amenities, having basic public service nearby and even secure contract for renters. An individual or household without such shelter or housing which guarantee physical safety plus basic living amenities with basic public services may be consider as 'housing poor' (Purnachandrarao, 2017; Ayala & Navarro, 2023; Liu, et al., 2023).

More than half of the world's population as of 2018 are living in urban areas (55 per cent, up from 30 per cent in 1950). It has been estimated that by mid-century (2050), more than two thirds (68 per cent) of the world's population will be living in urban areas. The global urban population is projected to grow by 2.5 billion urban dwellers between 2018 and 2050 (United Nations, 2018).

Around 2.8 billion individuals globally encounter various forms of housing inadequacy, of which 1.1 billion persons live in informal settlements and slums, deprived-off sufficient living conditions hindering their opportunities for development (UN Habitat, 2024). According to UN Habitat Annual Report, 2024, more than 318 million people in the world are homeless and 14 per cent of urban population lack drinking water and 2 out of 5 people lack safely manage sanitation service across the globe.

India is now following the global trends of increasing urban population which saw steady growth over the last 60 years. India's urban population has grown from 27.8 per cent in 2001 to 31.2 per cent i.e., 377.10 million in 2011 (Census, 2011, Steering Committee on Urbanization, 2011), at a Compound Annual Growth Rate (CAGR) of 2.8 per cent over 2001-2011, over 2012-2050, the pace of urbanization is likely to increase at a CAGR of 2.1 percent (KMPG India & NAREDCO, 2014). It is estimated that urban growth contributed upto 73 per cent of increase in population by 2036 (NITI Aayog, 2021).

According to Census 2011, the housing stock for urban areas stood at 78.48 million units for 78.86 million households. Though the gap between these household and housing stock is narrowing, actual housing shortage becomes more severe due to current housing stock being dilapidated and people living in congested dwelling. In fact, 13.9 million households are homeless or living in slums in India (Census, 2011). In addition to this, 33.9 per cent of urban household lived in a rented or hired dwelling (NSS 76th Round, 2018). Planning Commission (2013) estimated that in 2012 housing shortage in urban areas was 18.78 million units.

In case of basic housing amenities like water, sanitation facilities like toilet, bathroom and electricity, the shortage or deficiency is huge. As per 76th Round of NSS (2018), while 97.4 per cent of urban households have access to improved source of drinking water, only 72 per cent received sufficient water from these sources, bathroom facility was not available for 8.8 per cent of urban household and 3.8 per cent of urban household have no toilet or latrine facility. In case of electricity, the access is nearly universal as 99.1 per cent of urban households have access to electricity. However, only 86.6 per cent have access to clean cooking fuel (LPG).

2. Review of Literature

To provide an overview of the key concepts, causes, consequences, and policy responses related to housing poverty highlighting issues relating to poverty and housing showing different dimensions of the problems, different concepts, conclusions and different approaches to addressing the problems of housing poverty, an extensive review of literature is included in this study. This review is structured in order to cover different facets, themes and areas in housing research in the form of- quality of housing and access to services (Zainal, et.al., 2012; Gambo, et.al., 2012; Tacoli, 2012); affordability (Rao, 2021; Arnold, et. al 1989; Gopalan, 2015); housing poverty and inequality (Arundel, 2017; Tunstall, 2013; Saunders, 2016; Bradbury, et. al., 1986); housing poverty as an alternative measure of poverty (Chandrasekhar, et.al 2010; Littlewood, et.al 1997; Meng, et.al, 2006); government response to the problems of housing poverty (Hegedus, 2011; Mehta, 1987; D’Souza, 2019; Kumar, 2015; Sivam, 2002); rental housing and the issue of tenure security (Hulse, et. al., 2014; Harish, 2021; Gandhi, 2022; Kumar, 2001); the need for housing finance (Piyush, et, al., 2016; Kim, 1997; Buckley, et.al., 2016; Manoj 2024); and data and analytical methods to housing poverty (Kumar, 2015; Behr et. al., 2021; Fahey, 2014; Fiadzo, 2001)

Poverty and ‘material deprivation’ of housing character are intertwined problems because housing acts both as a charge on income and as a source of income (Tunstall, 2013). Housing poverty or housing deprivation is a pressing global issue with far-reaching socio-economic implications including peoples’ health (WHO, 2018,

Chen, 1993). The way to conceptualise housing poverty is by defining what constitutes adequate housing which covers basic amenities such as electricity, water supply, and mentally healthy, and economically and educationally productive” (D’Souza, 2019).

Housing is not only about providing shelter as it has far more significance and implications to physical quality of life and mental health and has a positive relationship with the quality of life (Arku, 2006), level of education, employment, productivity of labour (Zainal, et.al, 2012; Gambo, et.al, 2012). Failure to secure quality housing costs the households- numbers of hidden cost. The increasing intensity of housing deprivation is the main hindrances to the growing cities and urban centres in India (Deka, 2019).

Ensuring that all individuals have access to safe, affordable, and adequate housing is a serious concern since a large number of population (around the world) still lacking basic housing facilities and living in slum condition (WHO, 2018). With the increasing land price, cost of constructions, the problem of affordability is growing for low-income households (Parrikar, 2018; Arnold, 1989; Rao, 2021). To address to problem, challenges like land scarcity, growing urban population needs to be overcome (Gopalan, 2015).

As economic and social background is the determinant of housing condition, there exist unequal distribution in favour of the rich having higher access to better housing (Pal, et.al., 2015). Also, higher housing costs leads to increase poverty thereby widen inequality (Saunders, 2016; Bradbury, et.al, 1986).

To complement or supplement the traditional measurement of poverty or to introduce a new index measuring housing deprivation, a number of measures and Index have been constructed. The Housing Quality Index measuring housing quality with physical quality, sustainability, extra amenity, etc. ((Fiadzo, 2001; Meng, et.al., 2006), Shelter Deprivation Index (Chopra, 2018) and Slum Severity Index (Patel, et.al., 2020) are some examples.

Addressing housing poverty requires a comprehensive approach, involving policy interventions, economic reforms, and social initiatives to create a more

equitable housing for all. It is believed that the state needs to play proactive role in delivering adequate housing through policy intervention (Mainardi, 1994; Obeng-Odoom, et.al., 2011; Buckley, et.al., 1997). Lack of policy intervention, political will on the part of the state is the main problem of housing poverty (Gilbert, 2000) causing the emergence of the informal sector (Sivam & Karuppannan, 2002). In some case, the government intervention failed to address the core problem (D'Souza, 2019).

With the growing rental housing necessitated by urban expansions and escalating cost, security of tenure has been key issue that needs to be addressed (Sarkar, et.al., 2016). The demand for rental housing mostly comes from migrants-seeking employment, education and other urban facilities and low-income urban dwellers (Jha, 2020; Kaur, et.al., 2022). For them, tenure security is their priority which could reduce their deprivation and uplift their social status (Harish, 2021; Mahadevia, 2010).

Rising land prices and construction costs make housing finance vital for affordability and quality (Piyush, et. al., 2016). Formal systems, despite subsidies, often exclude low-income groups due to barriers like low repayment capacity and lack of collateral, while informal financing remains costly (Ebekozen, 2019; Manoj, 2024). Addressing affordability requires community participation, private enterprise, (Gauhan, 1977) and government support through incentives, subsidies, and inclusive policies (Ebekozen, 2019; Smets, 1997). Nations like India must responds with significant investments and programs, such as "Housing for All," supported by institutions like the National Housing Bank and HUDCO (Sarkar, et.al., 2016).

3. Brief Profile of North - East India

The north-eastern region of India, despite its abundant natural resources, remains one of the most underdeveloped regions of the country. It encounters numerous economic, social and political challenges, viz., inadequate infrastructure, particularly in terms of road, rail, and air connectivity, hilly and challenging terrains, high costs of living, lack of employment opportunities, reliance on subsistence

agriculture, resource limitations, and extensive international borders, among others (NITI Aayog, 2021).

In terms of geographical area, the region covers 2.6 lakhs square kilometre, of which around 70 per cent of the landscape are hills. It accounts for about 7.98 per cent of the total geographical area of the country. Arunachal Pradesh is the largest in terms of geographical area. The region is home to 4,55,87,982 as per Census, 2011, of which 83,67,815 lives in urban areas. On average 18.36 per cent live in urban area with which way lower than the national urbanization rate of 31.16 per cent.

Characterised by rich diversity in customs, cultures, traditions and languages, the region is inhabited by various social, ethnic and linguistic groups (Ministry of Development of North-Eastern Region, 2008). These historical and cultural diversity, issues of local resources, migration, etc., along with the state of socio-economic development, resulted in fragile security situation and the region continuously experienced challenges of political violence, insurgencies, ethnic conflict, migration pressure and interstate disputes (NITI Aayog, 2021, Ministry of Home Affairs, North-East Division, n.d.).

The economy of the north-east is largely agrarian with more than 70 per cent of its work force engaged in agriculture and related activities contributing 31.4 per cent of the domestic product. The manufacturing sector in the region has a small share contributing just over 18 per cent to the income, while the tertiary sector contributes around 50 per cent. The industries are mostly agro, mineral or forest-based (Ministry of Development of North-Eastern Region, 2008, NITI Aayog, 2021).

Despite all these drawbacks, with immense potential in natural resources, water resources, agriculture, and horticulture, the region is rapidly developing into a hub for sustainable tourism, medicinal plants, and a vibrant arts and handicraft sector (NITI Aayog, 2021)

4. Significance of the Study

Understanding the extent of housing poverty and deprivation of basic housing amenities is significant in economics because adequate housing is not only a basic human need but also a key indicator of overall economic well-being and social equity. Housing poverty reflects multiple dimensions of deprivation, including inadequate physical structures and unequal access to essential services and infrastructure. Studying its extent and determining its contributing factors can help policymakers design targeted interventions to improve living standards, reduce urban and rural poverty, and promote inclusive growth.

Since poverty and poor housing always related to each other, any measures targeting poverty directly or indirectly affects the living condition of poor households. Improving income of household may lead to improving living conditions. There are some significant evident that there is strong relationship between these two. This study provides empirical evidence to the relationship between ‘income/expenditure-based poverty’ and ‘housing poverty’. It also attempts to show the real picture of poverty which the ‘income/expenditure-based poverty’ has fails to take into accounts.

The findings of this study provide inter-connection between housing poverty and inequality that access to housing and amenities is an important dimension that cannot be exclude measuring inequality.

5. Statement of the Problem

The north-eastern region of India which cover around 8 per cent of India’s geographical area is home to 3.77 per cent of the total population. The region shares over 5300 kms of international borders with several neighbouring countries, it is increasingly gaining significant strategic value. The region is home to at least 133 Scheduled Tribe groups out of a total of around 705 identified in India. The region experiences various political turmoil and issues including ethnic conflict, interstate dispute, etc. These demographic challenges, cultural diversity and political challenges further complicate the situation of poverty and deprivation (NITI Aayog, 2021). This

complexity significantly impacts the region's capacity of economic independence. Along with these, economic underdevelopment, and political marginalization, which limit both public and private investment in infrastructure further isolate the region.

Despite its strategic importance, the region continues to face prolonged challenges in urban housing, marked by inadequate housing, congestion, poor access to basic amenities, and rising informal settlements. Due to the increasing urbanization without matching progress in urban infrastructure or housing supply, a large proportion of the urban population lives in substandard housing, with limited access to basic services. To make it worse, informal settlement is rising as low-income households are systematically excluding low-income households from the ambit of formal housing market, denying them legal recognition and access to essential services. Limited coverage and inadequate implementation of national housing and urban infrastructure programmes and schemes, absence of accurate data, further aggravated the problems

Additionally, there is limited coverage of the region in academic and policy research focussing particularly on the housing sector. Consequently, there is limited understanding on the needs, scale, dimensions and determinant of housing disparity of the region. It is, therefore, an academic interest to explore the habitable conditions of the growing urban households in the region, showing the status, indicators, dimensions and establishing association between socio-economic status and access to quality housing. Therefore, this study is expected fill this gap and enhance the understanding of the region's complex economic constraints.

6. Objectives

1. To study the existing condition of housing of the urban households and their access to basic housing amenities.
2. To identify key indicators to measure housing deprivation
3. To construct housing deprivation index to complement the conventional measure of poverty and compare its estimates.

4. To explore various demographic and socio-economic factors associated with housing poverty among urban households
5. To study and compare the level of access to housing and basic housing amenities among different social groups or religious entities in the urban areas of north-east India.
6. To identify key factors influencing housing poverty among urban households
7. To examine the significance of households' income on housing conditions.
8. To examine the extent of inequality in housing among urban population.

7. Hypothesis

1. There is significant relationship between housing poverty and income of the households.
2. Ownership of land has significant impact on households' access to adequate housing. In other words, land ownership significantly help household move out of housing poverty in North-East India.

8. Methodology

8.1. Scope of the study

The study focusses on assessing the different dimensions of housing incorporating not only physical structures, but also basic services needed for urban livelihood. Area-wise, the study is confined to the north-eastern region of India. North-east India comprising eight states viz., Assam, Arunachal Pradesh, Manipur, Meghalaya, Mizoram, Nagaland, Tripura and Sikkim. The region is home to 4,55,87,982 as per Census, 2011, of which 83,67,815 lives in urban areas. On average 18.36 per cent live in urban area with which way lower than the national urbanization rate of 31.16 per cent.

The study adopts a multidimensional approach to examine housing poverty. It covers not only the physical aspects of housing but includes several indicators, such

as congestion or overcrowding, access to safe drinking water, sanitation facilities, availability of electricity, creating comparable quantitative measures to evaluate or assess housing access.

8.2. Data Source

The study depends on both primary and secondary data collected from different sources and platforms.

(a) Primary data: The study primarily depends upon the un-tabulated unit level data of 76th Round of National Sample Survey (NSS) data on *Drinking Water, Sanitation, Hygiene, and Housing Conditions* (2018). The survey collected detailed information relating to various aspects of housing conditions and availability of basic amenities including drinking water and sanitation facilities. The data were collected through a stratified multi-stage sampling system in urban India during July-December 2018 which covered a total of 43102 randomly selected urban households including 4776 in north-east India. These samples were collected following NSS complex sample design and estimation procedures. Since data was extracted from the micro-data and directly fit-in (merged and filtered) to suit the requirement of the study, the methods and procedure of sample design and estimation adopted by the NSSO have been considered the underlying designs of this study. The multipliers assigned to each household given in the NSS unit-level dataset have been used as weights in all the estimations. These multipliers are applied to each household in the sample to adjust for factors such as unequal probabilities of selection and non-response, ultimately providing a representative estimate of the entire population (Katyal, et.al., 2013).

(b) Secondary data: In addition to primary data, secondary data is collected from published sources such as Census data, reports of union and states government ministries and departments, other functional advisory or regulatory entities including NSS reports, economic survey, National Family Health Survey, etc. Publication of international agency including United Nations, UN Habitat and real estate corporates also serve as an important source of information. Along with these various published

research papers are the key sources of information especially for methodology and theoretical understanding and learning.

8.3. Analytical Framework

(a) Construction of Indices: To capture and examine the different aspects of housing deprivation in the region, 6 housing quality indicators are identified viz., structure adequacy or congestion, physical structure of the housing unit, availability of drinking water and sanitation facilities, access to clean energy, tenure security and affordability. After detailed analysis, the tenure security and affordability have to be dropped due to insufficient survey data. The final Housing Deprivation Index (HDI) was constructed using the remaining four indicators listed in Table-1.

Table – 1: Indices and variables

Sl.No	Index	Weight	Variables
1	Congestion	0.40	Floor Area per person (Sq.ft.)
2	Structure Adequacy	0.25	Roof status, Wall status, Floor status, kitchen, Structure condition, Ventilation types
3	Drinking Water & Sanitation	0.25	Principal source of drinking water, sufficiency of drinking water, access to water source, type of latrine, access to latrine, bathroom, and level of access to bathroom
4	Access to energy	0.10	Access to electricity, cooking fuel

It was found that congestion factor has been the most consistent indicators being selected in many of the housing-quality measures (Behr, et. al., 2021; Meng, et. al., 2006; Chopra, 2018) and the shortage of demand for housing emanates mostly from this characteristic. To reflect the relative importance of this, it is decided that congestion shall be assigned the highest weightage among the four selected indicators. Accordingly, the other indicators were also assigned solely on this reasoning.

(b) Descriptive statistics: Simple descriptive statistics like mean, median, mode, standard deviation, percentages, etc., are used- to analyse the general trend, to summarise the basic characteristics of housing, and housing condition of the region and states. These statistics are mainly presents in the form of tables- mostly in percentages- and figures whenever appropriate.

Further, taking into consideration the 25th percentile value of HDI and its value at one standard deviation below mean (i.e. $Mean - SD$) the cut-off point for adequate housing has been determined at 7.5 on the HDI score. This cut-off would indicate achieving 75% of the 10-point requirement for adequate housing, while below it would reflect a 25% shortfall from the full adequacy score. Households with score below 7.5 are classified as *housing poor or deprived*, falling short of the minimum adequacy score by at least 25%. This cutoff is applied uniformly across all states of north-eastern India for determining housing poverty.

(c) Test statistics: To identify possible relationship between the variables and constructed index, statistical tests are conducted. Firstly, to test the level of interdependence or association between housing poverty and various socio-economic status of the urban households, Chi-Square test of independence is used. Secondly, test the significance and nature of the relationship between the factors affecting housing poverty, the following binary logistic regression model has been estimated and significance of the coefficients examined:

$$\text{logit}(Y) = \ln\left(\frac{P(Y=1)}{1-P(Y=1)}\right) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \cdots + \beta_n X_n$$

which can be transformed into,

$$p = \frac{e^{\beta_0 + \beta_1 X_1 + \beta_2 X_2 + \cdots + \beta_n X_n}}{1 + e^{\beta_0 + \beta_1 X_1 + \beta_2 X_2 + \cdots + \beta_n X_n}} = \frac{1}{1 + e^{-(\beta_0 + \beta_1 X_1 + \beta_2 X_2 + \cdots + \beta_n X_n)}}$$

Where Y is the binary variable indicating household's housing poverty status, (i.e. 0 - housing poor / deprived & 1-adequate housing/not poor), and X_1 , X_2 , X_3 and X_4 are the determining factors such as age, possession of land, level of education, and income distribution, respectively.

(d) Measures of Inequality: To enable understanding on the presence of inequality in access to adequate housing as given by HDI, Lorenz curve has been constructed for all 8 states of North-East India. To supplement the indicated inequality in the Lorenz curve, Gini Coefficients (or Gini Index) are calculated. It is understood that Gini Coefficient signifies the ratio of the area between the line of equality and the Lorenz Curve to the total area under the line of equality. Using Trapezoidal Rule of numerical integration to find out the area under the curve, the Gini Coefficient is calculated as follows:

$$Gini\ Coefficient = 1 - 2 \sum_{i=1}^n \frac{(y_{i-1} + y_i)}{2} \times (x_i - x_{i-1})$$

Where n is the number of points on the Lorenz Curve, i.e. (x_0, y_0) , (x_1, y_1) , ..., (x_n, y_n) , and, x_i and y_i are cumulative population share at point i and cumulative score share at point i . The Gini value ranges between 0 and 1 (or 0% to 100%). A Gini coefficient of 0 indicates perfect equality whereas a Gini of 1 indicates perfect inequality.

(e) Limitations of the Study: This study primarily depends on the unit level data of 76th Round of National Sample Survey on *Drinking Water, Sanitation, Hygiene, and Housing Conditions* (2018). Though the dataset provides extensive cover providing data for the whole country, covering all the relevant area in housing and basic service, there are certain unavoidable limitations. First, due to delayed released of the final report and data, the study, coupled with the outbreak of Covid-19 epidemic caused a serious setback consequently causing a delay in completion of this research. However, it is understood that housing, being a durable good, involves transactions that are slow and irregular due to high costs and market frictions (Malpezzi, 1990; Muth, 1960). Therefore, it is believed that the given dataset adequately represents the present reality in most cases.

Second, a number of un-response or unanswered data for some variables, for instance, amount spent for construction, sources of finance, reason form movement, etc., causing improvisation had to be made in many cases. Despite these issues, a serious attempt has been made to produce credible research outcomes throughout this study.

9. Chapterisation

The study is structured into six chapters as follows:

Chapter 1: Introduction

Chapter 2: Review of Literature

Chapter 3: An Overview of Urban Housing Conditions in North-East India

Chapter 4: Housing Poverty and its Measures in North-East India

Chapter 5: Facets and Factors of Urban Housing Poverty – An Empirical Analysis

Chapter 6: Summary Of Findings and Conclusion

Bibliography

10. Summary of Findings

1. The broad analysis of two national data-census 2011 data and 76th Round of National Sample Survey report suggested that there exists some degree of disparity and uneven progress in terms of physical structure, sanitation and basic amenities among the states of north-east India. Comparison of the north-east averages against the national figure indicates there are some areas region needs improvement to match the national level such as structure durability, provision of improved drinking water, etc. However, the region managed to provide better or up to the national standard sanitation facilities such as latrine and bathroom facilities.
2. After exploring several indicators and detailed analysis, four indicators were identified- congestion; structure adequacy; drinking water & sanitation; and access to clean energy has been identified as key indicator.
3. Setting the cut-off for the floor area of a dwelling at 97 sq. ft. per person to measure congestion, it is found that 19.8 percent of urban households in North-East India live in inadequate or congested housing. The most severe case of inadequacy in terms of space availability is found in the state of Meghalaya where more than half

(51.3%) live in inadequate space or congested houses. The congestion rate is lowest in the state of Manipur as only 10.3 per cent of urban households live in congested conditions. Meanwhile, the average per person availability of space for the whole region is calculated at 178.33 sq.ft. The mean per capita floor area is lowest for Meghalaya at 121.17 sq.ft against the highest 204.87 for Mizoram.

4. Structure adequacy is measured by using six indicators (roof status, wall status, floor status, access to kitchen, condition of structure and condition of ventilation) with a total score of 10. In the first case i.e., roof status, 98.9 per cent of urban households in the region used durable structure against 1.1 per cent using non-durable structure. In case of wall structure or material, 81 per cent and 19 per cent of urban households in the region used durable and non-durable material for wall respectively. The use of floor material also follows the same pattern as 82.3 per cent and 17.7 per cent of urban households used durable and non-durable floor material respectively. The condition of structure and ventilation of the housing unit are categories into three-bad, satisfactory and good. In case of ventilation conditions, 47.8 per cent of urban housing units in the region are classified as good and 44.2 per cent as satisfactory whereas 8 per cent are classified as bad. Mizoram (68.3%) recorded the highest proportions of households with 'good' ventilation. On the contrary, the only two states with more than 10 per cent of households recorded as bad ventilation were Manipur (17.8%) and Nagaland (15.6%). The structure condition is slightly positive as more than half of the housing units in the region were marked as good, 42.1 per cent are satisfactory, 5.9 per cent, on the contrary, fall under the bad category.
5. The overall structure adequacy index is measured by summing scores of these 6 indicators viz., roof, wall and floor status, access to kitchen, condition of structure and ventilation. The average or mean scores for the region indicate a moderate level of adequacy overall (Mean: 8.33; Std. Dev: 1.67), with significant inter-state variability. The average housing adequacy scores range from 7.11 (lowest, Manipur) to 9.08 (highest, Sikkim). The adequacy scores were further categorised into 'severely inadequate', 'inadequate' and 'adequate'. For the region, half of the

urban households (50.17%) were categorised as adequate and the remaining 15.46 per cent and 34.37 per cent were categorised as severely inadequate and inadequate respectively. The percentage of severely inadequate is highest in Manipur (38.34%) and lowest in Sikkim (2.09%).

6. Using 7 indicators with a maximum score of 13, the water and sanitation index is constructed where principal sources of drinking water, sufficiency of drinking water and level of access to principal sources were key indicators. In case of principal sources of drinking water, 77.8 per cent of urban households in the region have access to improved sources and the remaining 22.2 per cent have sources classified as unimproved sources. 91.4 per cent received sufficient water supply from these sources and 86.6 per cent have their own or exclusive sources of drinking water in the region. Regarding the availability of basic sanitation facilities such as latrine and bathroom, 88.5 per cent of urban households in north-east India have access to improved latrine and the remaining 11.5 per cent are denied of improved latrine. A similar pattern is shown in access to bathroom as 85.3 per cent have 'fully access' to bathroom facility and the remaining 14.7 are classified as having only partial access (no bathroom, sharing or partially uncovered) to bathroom.
7. The summary score of drinking water and sanitation for the whole region indicates that the mean score is 11.92 with a standard deviation of 1.65. State-wise observation shows that Mizoram with a mean score of 12.85 is highest in this Index, closely followed by Sikkim with a mean score of 12.84 with a smaller standard deviation of 0.54 indicating smaller variation or disparities among households. Manipur (10.71) and Tripura (10.91) are the two states with the lowest mean score reflecting low score in all aspects of the indicators.
8. The access to electricity for lighting, heating and cooking purposes is nearly universal in the region as 99.1 per cent of the urban households in north-east India are having access to electricity. There are only three states- Meghalaya, Assam, and Arunachal Pradesh with one-two per cent of urban households with no access

to electricity. The case of clean cooking fuel is slightly different as the overall access to adequate cooking fuel in the region is less than 90 per cent (89.8%) where the rate of dependence on unclean or inadequate fuel is highest in state of Tripura (21.2%), Meghalaya (13.1%) and Manipur (12.3%).

9. After a comprehensive analysis of these four indicators, the overall Housing Deprivation Index (HDI) is constructed. This index is developed by assigning a set of weights to the selected four indicators and has a maximum score of 10 points, which signifies an adequate housing score or full access to adequate housing. Any score below 10 indicates deprivation from adequate housing. It has been found that the mean score of the entire north-eastern region stood at 8.60, suggesting generally moderate to high levels of adequate housing access. For states, the mean scores range from 8.13 (Meghalaya) to 9.11 (Mizoram). Along with Mizoram, Sikkim (8.89) scores relatively high average, Nagaland (8.77) and Assam (8.70) also score higher averages than the region's averages. The remaining states recorded lower mean score than the region's average.
10. It has been observed that there are situations where some families show full access or adequacy in most indicators and live a decent life but fail to achieve a full adequacy score in the overall HDI. Any household with a score of 7.5 or below is considered housing-poor or deprived (both terms are used interchangeably), and any household scoring above this point is considered non-poor. It has been found that 19.88 per cent of urban households in north-east India are classified as poor and the rest 80.22 per cent are non-poor. State-wise analysis shows that the incidence of housing poverty is found to be highest in Meghalaya (33.54%) followed by Tripura (27.53%) whereas incidence is lowest in Mizoram where only 5.76 per cent are considered as housing poor, followed by Sikkim (9.87%).
11. After the estimation of the rate of housing poverty, the incidence of housing poverty is co-related with selected demographic factors viz., age, marital status, households size; social factor (level of education); economic factors such as employment status and level of income. All these factors are found to be a

significant determinant of housing poverty proven by high levels of significance ($p>0.01$) in chi-square test of interdependence.

12. The incidence of housing poverty within social group analysis that-23.21 per cent and 22.15 per cent of the urban households among SCs and OBCs are considered housing poor respectively against 17.93 per cent and 18.62 per cent for STs and Others respectively for the same indicating SCs and OBCs being more vulnerable relative to STs and others. Within religious group, 31.39 per cent of households affiliated as Islam are categorised as housing poor while the percentage for Hindus and Christians stood at 19.73 and 16.10, suggesting religious affiliation is correlated with differential exposure to housing poverty.
13. Educational attainment of the family head has also been found to have significant relationship with their housing poverty status. The proportion of housing poor is highest among those with low or no formal education- 28.59 percent of the housing poor have only completed up to the Primary/Below Primary, 24.27 of them have completed up to upper primary or middle which made more than half of the household classified as poor are within these two categories. Conversely, individuals with higher education i.e., graduates or postgraduates and above are less likely to be in the poor group, making up only 6.37 per cent of those within poor category. Within the head of households with educational attainment of post-graduate and above, only 1.12 per cent are poor.
14. Land ownership is also a significant factor in determining housing security in urban areas. This has been confirmed by within landownership status analysis that the percentage of households falling under housing poverty is highest among 'landless' i.e., 24.61 per cent, followed by marginal landowners (19.92%) and small landowners (18.23%). The results of the logistic regression of housing poverty status (1 = non-poor, 0 = housing-poor) on various factors showed that the coefficient for landownership status is positive and significant, indicating a direct relationship between housing poverty and land ownership. This supports Hypothesis No. 2 of this study.

15. Within the ‘poor’ category, a significant percentage (39.43%) belongs to the lowest income group (monthly income up to Rs. 2087.5), while only 4.95 per cent of the poor are from the highest income group (above Rs 5000). Among the lowest income households, 39.16 per cent are housing poor, but this figure drops steadily with rising income. Among households earning above Rs 5000, only 4.93 per cent are categorised as housing poor, while 95.07 per cent are non-poor. The positive and significant coefficient for income in the logistic regression of housing poverty status on other factors confirms the positive impact that household income has on their housing poverty status. This supports Hypothesis No. 1 of this study.
16. The incidence of housing poverty is highest (51.61%) among households engaged in unspecified informal work (labeled as ‘in other types of work’ in the table). Along with this, households engaged in casual wage labour in public works (39.62%), engaged in ‘domestic duties only’ (27.89%), household enterprise (self-employed): own account worker (22.64%), employer (21.39%), domestic duties and in free collection of goods (20.03%) report significantly higher rates of housing poverty, emphasizing the vulnerability of non-remunerated labour. At the same time, regular salaried/wage workers (11.63%), employers (21.39%), and self-employed-own-account workers (22.64%) show a lower incidence of housing poverty, indicating a positive correlation between regular job or work and better housing conditions.
17. Analysis on state’s policy intervention on housing and amenities sectors revealed that the percentage of households accessing or benefiting from government assistance or schemes is extremely low in the region. Among the different characteristics, the benefit received is highest in the case of LPG (7.33 per cent and 5.74 per cent within the last three years), followed by sanitation (4.88 per cent and 3.64 per cent within the last three years). Households receiving benefit assistance on housing related activities is less than 2 per cent. There is evidence suggesting some degree of targeted intervention favouring the poor in the region.

18. To assess the effectiveness of the housing poverty estimation made in this study, an income-based poverty estimation using the conventional method has been examined, taking the poverty line for the year 2011–12 based on the Tendulkar Committee (2009) as a reference. The results reveal a stark contrast between income-based poverty, measured by the Below Poverty Line (BPL) criteria, and housing poverty across the north-eastern states of India. On average, only 6.58 per cent of households fall under the conventional BPL classification, whereas 19.88 per cent are classified as poor based on housing conditions. This significant difference shows the limitations of income-based poverty measures in capturing the full scope of deprivation.
19. From the graphical presentation of Lorenz Curve, it was observed that the region shows significant disparity among urban households in access to adequate housing as the curve for the region deviates significantly from the line of equality. Among states, the curve for the state of Mizoram deviates the furthest from the point of equality indicating the existence of the highest level of inequality in the states. States such as Arunachal Pradesh, Nagaland, and Sikkim exhibit moderate housing inequality showing consistent deviation from the line of equality. On the other hand, States like Manipur and Tripura shows more equitable distributions, with their curves lying closer to the equality line.
20. The calculated Gini coefficient from HDI scores also give the same picture of housing inequality in north-east India as Mizoram (0.426) showing the highest level of inequality, indicating a sharp disparity in housing conditions followed by Sikkim (0.335) and Nagaland (0.327), both of which also show relatively high levels of inequality. These findings suggest that having a lower rate of housing poverty does not necessarily imply equal distribution since the state with the lowest incidence of housing poverty turns out to be the most unequal states in terms of access to adequate housing.

11. Conclusion

This study undertook a systematic investigation into the status, dimensions, and determinants of housing poverty among urban households in North-East India. By constructing a Housing Deprivation Index (HDI) and integrating socio-economic data drawn from NSS 76th Round, the research aimed to provide comprehensive and multidimensional understanding of urban housing deprivation. After analysing different characteristics and dimension of housing poverty in north-east India, it can be concluded that though there exists several evidence of deprivation in many forms, there are promising findings that signals improvement in areas especially sanitation. It, however, is found that there exist serious gaps and differences the region needs to pull through with the rest of the country. With continuous efforts and inclusive participation of the state, local governments and civil societies, more could be achieved, consequently delivered the aspirations of millions of urban residents living safely in their own homes with improved means of living.

It is also notable that the study observed wide deviations between the estimates of housing poverty (or deprivation) and poverty as measured by the poverty line method. This may be taken to indicate the inadequacy of the traditional poverty line method for estimating the incidence of poverty in a multidimensional sense, given the different facets of poverty.

Tackling constraints like limitation in data availability, there are many areas and factors influencing housing sector including housing demand, housing prices and cost of construction, housing finance and many others, this study failed to cover and study. By expanding into these areas, future research can contribute to more comprehensive, inclusive, and effective housing policy frameworks that are responsive to both spatial and social realities.

12. Recommendations

1. **Flexible approach to housing regulations and policies:** Evidence suggests there exists the marked inter-state variability and disparities-ranging from congestion, structure durability, access to basic sanitation facilities, requiring different approaches to address the problems. Acknowledging, demographic, geographical, cultural and political differences, flexible housing policy and approaches are suggested, thus, a decentralized, state-specific approach must be adopted.
2. **Problem-specific approach:** The findings suggested that while there are some areas where the region's figures bettered the national figure- especially in case of sanitation facilities, more focused should be given to address where the states in the region lack progress and fall behind relatively to the rest of the country viz., structure adequacy such as durable material, provision of clean or improved drinking water, etc. This specific problem may also be state specific, for instance, high congestion rate in Meghalaya which is deeply rooted in cultural practice may be addressed through relaxation in building regulation; low score in sanitation facility in some states may be due to social or cultural factors such as conscience to cleanliness and hygiene which require change than mere provision of financial support, promoting education, creating awareness may be the long term solution.
3. **Upgrading structural components of dwelling units:** Structural adequacy, durability of structure, bad conditions of structure are deeply affected by economic status of urban households including their level of income. Steps to improve their economic status or increase income through education, employment generation may be long term objectives. Short-term solutions to solve these problems may include financial support in the form of government assistance and schemes for these poor households. For this purpose, subsidies or credit-linked incentives under the PMAY-U should be made available to these households.
4. **Adopt a multidimensional approach to poverty estimation:** The significant gap between income-based (BPL) and housing-based poverty estimates highlights the need to shift towards a multidimensional approach incorporating housing characteristics to measure and identify poverty at the state and national levels. This

should integrate housing adequacy, access to basic services, and asset ownership into poverty targeting mechanisms to better reflect actual deprivation.

5. **Inclusive urban planning:** The high Gini coefficients and Lorenz curve findings reveal deep housing inequality even in states with low poverty rates. Urban policies must include zoning reforms, mixed-income housing projects, and equitable infrastructure investments to reduce spatial inequality in housing access.

Bibliography

Ahmad, S. (2015). Housing Poverty and Inequality in Urban India. *Poverty Reduction Policies and Practices in Developing Asia*, pp. 107-124.

Arku, G. (2006, December). The housing and economic development debate revisited: economic significance of housing in developing countries. *Journal of Housing and the Built Environment*, Vol. 21(No. 4), pp. 377-395.

Arnold, E., & Skaburskis, A. (1989, October). Measuring Ontario's Increasing Housing Affordability Problem. *Social Indicators Research*, Vol. 2(No. 5), pp. 501-515.

Arundel, R. (2017). Equity Inequity: Housing Wealth Inequality, Inter and Intra-generational Divergences, and the Rise of Private Landlordism. doi:<http://dx.doi.org/10.1080/14036096.2017.1284154>

Ayala, L., & Navarro, C. (2023). *Housing Poverty*. Edward Elgar Publishing. doi:<https://doi.org/10.4337/9781800883451.00036>

Behr, D. M., Chen, L., Goel, A., Haider, K. T., Singh, S., & Zaman, A. (2021). *Introducing the Adequate Housing Index (AHI): A New Approach to Estimate the Adequate Housing Deficit*. Policy Research Working Paper 9830, International Finance Corporation, World Bank Group.

Bradbury, B., Rossiter, C., & Vipond, J. (1986). Housing Costs and Poverty. *The Australian Quarterly*, Vol. 58(No. 1), 34-46.

Buckley, R. M., & Gurenko, E. N. (1997, February). Housing and Income Distribution in Russia: Zhivago's Legacy. *The World Bank Research Observer*, Vol. 12(No. 1), pp 19-32.

Buckley, R. M., Kallergis, A., & Wainer, L. (2015). The emergence of large-scale housing programs: Beyond a public finance perspective. *Habitat International*, 199-204. doi:[10.1016/j.habitatint.2015.11.022](https://doi.org/10.1016/j.habitatint.2015.11.022)

- Chandrasekhar, S., & Montgomery, M. R. (2010). *Broadening poverty definitions in India: Basic needs in urban housing*. Human Settlements Programme: International Institute for Environment and Development (IIED).
- Chen, X., & Gao, X. (1993). China's Urban Housing Development in the Shift from Redistribution to Decentralization. *Social Problems*, 40(2), 266-288.
- Chopra, H. (2018, March). Is Housing Poverty Improving in Urban India. *SARVEKSHANA, Journal of National Sample Survey Office* (104th), pp. 1-18.
- Deka, N. (2012). Access to Housing and Basic Amenities in Urban India: An Interstate Analysis, 2002-2012. Retrieved November 25, 2024, from [https://hd-ca.org/wp-content/plugins/view-conf-tools-export/conf-papers-2015/DEKA Access%20to%20Housing%20and%20Basic%20Amenities%20in%20Urban%20India-.pdf](https://hd-ca.org/wp-content/plugins/view-conf-tools-export/conf-papers-2015/DEKA%20Access%20to%20Housing%20and%20Basic%20Amenities%20in%20Urban%20India-.pdf)
- D'Souza, R. (2015). Housing Poverty in Urban India: The Failures of Past and Current Strategies and the Need for a New Blueprint. *ORF Occasional Paper*.
- Ebekozien, A., Abdul-Aziz, A.-R., & Jaafar, M. (2019). Housing finance inaccessibility for low-income earners in Malaysia: Factors and solutions. *Habitat International*, 87, 27-35.
- Fahey, T., Nolan, B., & Maitre, B. (2004). Housing Expenditures and Income Poverty in EU Countries. *Journal of Social Policy*, 33(3), 437-454. doi:<https://doi.org/10.1017/S0047279404007767>
- Fiadzo, E. D., Houston, J. E., & Godwin, D. D. (2001, February). Estimating Housing Quality for Poverty and Development Policy Analysis: CWIQ in Ghana. *Social Indicators Research*, 53(2), pp. 137-162.
- Gambo, Y., Idowu, O., & Anyakora, I. (2012). Impact of Poor Housing Condition on the Economy of the Urban Poor: Makoko, Lagos State in View. *Journal of Emerging Trends in Economics and Management Sciences (JETEMS)*, 3(4), pp. 302-307.

- Gandhi, S., Green, R. K., & Patranabis, S. (2022). Insecure property rights and the housing market: Explaining India's housing vacancy paradox. *Journal of Urban Economics*. doi:<https://doi.org/10.1016/j.jue.2022.103490>
- Gauhan, O. T. (1977). Housing and the Urban Poor: The Case of Bogotá, Colombia. *Journal of Interamerican Studies and World Affairs*, Vol. 19(No. 1), pp. 99-124.
- Gilbert, A. G. (2014). Free housing for the poor: An effective way to address poverty? *Habitat International*, Vol. 41, pp. 253-261. doi:<https://doi.org/10.1016/j.habitatint.2013.08.009>
- Gomez, M., & Thiele, B. (2005). Housing Rights Are Human Rights. *Human Rights*, 32(3), pp.2-5.
- Gopalan, K., & Venkataraman, M. (2015). Affordable housing: Policy and practice in India. *IIMB Management Review*, Vol. 27(No. 2), pp. 129-140. doi:<https://doi.org/10.1016/j.iimb.2015.03.003>
- Government of India. (2012). *Report of The Technical Group on Urban Housing Shortage (TG-12) (2012-17)*. National Building Organisation, Ministry of Housing and Urban Poverty Alleviation.
- Government of India. (2015). *National Urban Rental Housing Policy (Draft)*. Ministry of Housing and Urban Poverty Alleviation.
- Government of India. (2019). *Drinking Water, Sanitation, Hygiene and Housing Condition in India 76th Round NSS July 2018-December 2018*. Ministry of Statistics & Programme Implementation, National Statistical Office.
- Harish, S. (2021). Affordable Rental Housing Complexes Scheme and Private Rental Housing in Indian Cities. *Economic & Political Weekly*, 56(16), 15-19.
- Hegedus, J. (2011). Social Safety Nets, the Informal Economy and Housing Poverty – Experiences in Transitional Countries. *European Journal of Homelessness*, 5(1), 15-26.

- Hulse, K., & Milligan, V. (2014). Secure Occupancy: A New Framework for Analysing Security in Rental Housing. *Housing Studies*, Vol. 29(No. 5), pp. 638-656. doi:<https://doi.org/10.1080/02673037.2013.873116>
- Jha, R. (n.d.). Urban Rental Housing in India: Towards 'Housing For All'. *ORF Occasional Paper* 287.
- Kaur, A., & Chandra, T. (2022, September-October). Urban Rental Housing: An Affordable Alternative For All. *NCHF Bulletin*, 35(3-4), pp. 31-33.
- Kim, K.-H. (1997). Housing Finance and Urban Infrastructure. *Urban Studies*, Vol. 34(No.10), pp. 1597- 1620.
- KMPG India & NAREDCO. (2014). *Decoding Housing For All by 2022*. Retrieved from <https://assets.kpmg.com/content/dam/kpmg/pdf/2014/09/Decoding-Housing-for-all-2022.pdf>
- Kumar, A. (2015, April). Housing Amenities in Urban India-Issues and Challenges. *SHELTER*, Vol. 16(No. 1), pp. pp. 7-14.
- Kumar, S. (2001). Embedded Tenures: Private Renting and. *Housing Policy in Surat, India*, Vol.16(No. 4), pp. 425-442.
- Kurian, S. M., & Thampuran, A. (2011). Assessment of Housing Quality. *Institute of Town Planners, India Journal*, Vol. 8(No. 2), pp. 74-85.
- Littlewood, A., & Munro, M. (1997). Poverty and Poor Housing in Scotland: The Relationship between Income and Housing Condition. *Netherlands Journal of Housing and the Built Environment*, Vol. 12(No. 2), pp. 199-220.
- Liu, E., Valentine, K., Batterham, D., Stone, W., Martin, C., Parkinson, S., & Hynes, D. (2023). *Poverty and Australian housing: findings from an Investigative Panel*. Melbourne, Australia: Australian Housing and Urban Research Institute Limited. doi:<https://doi.org/10.31235/osf.io/q2tf>
- Mahadevia, D. (2010). Tenure Security and Urban Social Protection Links: India. *IDS Bulletin*, Vol. 41(No. 4), pp. 52-62. doi:10.1111/j.1759-5436.2010.00152.x

Mainardi, S. (1994). Poor Housing Conditions: An Analysis across South African Development Regions. *Savings and Development*, Vol. 18(No. 4), pp. 427-455.

Malpezzi, S. (1990). Urban Housing and Financial Markets: Some International Comparisons. *Urban Studies*, 27(6), 971-1022.

Manoj, P. (2024). Housing finance by banks and housing finance companies in India: A review. *Environment and Social Psychology*, 9(6). doi:10.54517/esp.v9i6.2601

Mehta, M., & Mehta, D. (1987). Metropolitan Housing Markets: A Case Study of Ahmedabad. *Economic and Political Weekly*, 22(40), pp. 1701-1709.

Meng, G., & Hall, G. B. (2006, December). Assessing housing quality in metropolitan Lima, Peru. *Journal of Housing and the Built Environment*, Vol. 21(No. 4), pp. 413-439.

Ministry of Development of North-Eastern Region. (2008). *North-Eastern Region: Vision 2020*. Government of India, North-Eastern Council.

Ministry of Home Affairs, North-East Division. (n.d.). *Government of India*. Retrieved from <https://www.mha.gov.in/en/commoncontent/north-east-division>

Ministry of Housing and Urban Affairs, Government of India. (n.d.). Retrieved from PMAY-Urban: <https://pmay-urban.gov.in/>

Ministry of Housing and Urban Poverty Alleviation. (2015). *National Urban Rental Housing Policy (Draft)*. Government of India.

Ministry of Housing and Urban Poverty Alleviation. (2016). *Housing For All (Urban): Scheme Guidelines*. Government of India. Retrieved from https://pmay-urban.gov.in/uploads/guidelines/18HFA_guidelines_March2016-English.pdf

Muth, R. F. (1960). The Demand for Non-Farm Housing in the Demand for Durable Goods. 29-96.

National Housing Bank. (2012). *Report on Trends and Progress of Housing in India*.

NITI Aayog. (2021). *North-Eastern Region District SDG Index and Dashboard: Baseline Report 2021-22*. Ministry of Development of North-Eastern Region.

NITI Aayog. (2021). *Reforms in Urban Planning Capacity in India*. Government of India.

Obeng-Odoom, F., & Amedzro, L. (2011). Inadequate housing in Ghana. *Urbani Izziv*, 2(1), pp. 127-137.

Office of the Registrar General & Census Commissioner, India. (2011). *Census of India 2011: Primary Census Abstract*. Ministry of Home Affairs, Government of India. Retrieved from <https://censusindia.gov.in/>

Office of the United Nations High Commissioner for Human Rights. (n.d.). Retrieved from Office of the United Nations High Commissioner for Human Rights (OHCHR): <https://www.ohchr.org/en/special-procedures/sr-housing/human-right-adequate-housing>

Pal, R., Aneja, N., & Nagpal, D. (2015). Inequality in Housing and Basic Amenities in India. *Munich Personal RePEc Archive*. Retrieved from <http://mpra.ub.uni-muenchen.de/61994/>

Patel, A., Shah, P., & Beauregard, B. E. (2020). Measuring multiple housing deprivations in urban India using Slum Severity Index. *Habitat International*. doi:<https://doi.org/10.1016/j.habitatint.2020.102190>

Piyush, P., & Negi, H. (2016). Study of Housing Finance in India with reference to HDFC and LIC Housing Finance Ltd. *International Journal of Management (IJM)*, 7(3), 39-49.

Planning Commission. (2013). *Press Note on Poverty Estimates 2011-12*. Government of India.

Purnachandrarao. (2017). Right to House: Housing-induced Poverty and Sustainable Development. *Journal of Poverty, Investment and Development*(40), 56-64. Retrieved from <https://www.iiste.org/Journals/index.php/JPID/article/download/40479/41627>

Rao, P. K., & Biswas, A. (2021). Measuring Housing Affordability Using Residual Income Method for Million-plus Cities in India. *4th International Conference of*

Contemporary Affairs in Architecture and Urbanism (ICCAUA-2021) 20-21 May 2021, (pp. 610-620). doi:10.38027/ICCAUA2021257N3

Sarkar, A., Dhavalikar, U., Agrawal, V., & Morris, S. (2016). *Examination of Affordable Housing Policies in India*. Indian Institute of Management; Ahmedabad.

Saunders, P. (2016). Housing costs, poverty and inequality in Australia. *Housing Studies*. doi:10.1080/02673037.2016.1229757

Sivam, A., & Karuppannan, S. (2002). Role of state and market in housing delivery for low-income groups in India. *Journal of Housing and the Built Environment*, 17(1), 69-88.

Smets, P. (1997). Private Housing Finance in India: Reaching Down-Market. *Habitat International*, Vol.21(No.1), pp 1-15. doi:[https://doi.org/10.1016/S0197-3975\(96\)00036-7](https://doi.org/10.1016/S0197-3975(96)00036-7)

Steering Committee on Urbanization. (2011). *Report of the Working Group on Urban Poverty, Slum and Service Delivery System*. Planning Commission, Government of India.

Tacoli, C. (2012). Urbanization, gender and urban poverty: paid work and unpaid carework in the city. *Urbanization and Emerging Population Issues: Working Paper 7*. International Institute for Environment and Development: United Nations Population Fund.

Tunstall, R., Bevan, M., Bradshaw, J., Croucher, K., Duffy, S., Hunter, C., . . . Wilcox, S. (2013). *The Link between Housing and Poverty: An Evidence Review*. Joseph Rowntree Foundation (JRF).

UN HABITAT. (2009). *The Right to Adequate Housing-Fact Sheet No.21/Rev.1*. United Nations Human Settlement Programme. Retrieved from https://www.ohchr.org/Documents/Publications/FS21_rev_1_Housing_en.pdf

UN HABITAT. (2016). *World Cities Report, 2016 (Urbanization and Development: Emerging Futures)*. United Nations Human Settlement Programme. Retrieved from

<https://www.unhabitat.org/wp-content/uploads/2014/03/WCR-%20Full-Report-2016.pdf>

UN Habitat. (2020). *World Cities Report 2020: The Value of Sustainable Urbanization*. United Nations Human Settlements Programme. Retrieved from <https://unhabitat.org/>

UN Habitat. (2024). *Annual Report 2024: Adequate Housing for all*. United Nations Human Settlement Programme. Retrieved from <https://unhabitat.org/annual-report-2024>

United Nations. (1949). *United Nations Universal Declaration of Human Rights 1948*. Retrieved from http://nhrc.nic.in/documents/udhr_eng.pdf UN 1948

United Nations. (2018). *World Urbanization Prospects: The 2018 Revision*. Department of Economic and Social Welfare.

World Health Organisation. (2018). *WHO Housing and Health Guidelines*. Retrieved from <https://iris.who.int/bitstream/handle/10665/277465/WHO-CED-PHE-18.10-eng.pdf>

Zainal, N. R., Kaur, G., Ahmad, N. ', & Khalili, J. M. (2012). Housing Conditions and Quality of Life of the Urban Poor in Malaysia. *Procedia - Social and Behavioral Sciences*, 50, 827-838.