

Urban Sustainability in North-East India: A Study through the lens of NER-SDG index

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BACKGROUND:

Urbanisation is an inevitable outcome of modernisation and economic development. As world civilisation progresses, all nations have experienced concentration of urban population. In 1800 A.D., only 3 percent of the world's population lived in cities, but this figure reached to 14% and 47% in 1900 and 2000 respectively (United Nations Population Division, 2001). The report published in 2022 further reveals that the world's urbanisation level has reached 57%, developed (79.7%), developing (52.3%) and LDCs (35.8) which is estimated to be 60 % worldwide in 2030 (World Urbanisation Prospects, United Nations Population Division, 2022). The trend of urbanisation in India as reflected in the latest census (2011) shows that the level of urbanisation has increased from 27.7% in 2001 to 31.1% in 2011. Major components of urban population growth in Indian cities are natural increment in population and urban agglomeration or outgrowths (Bhagat, 2018). Urban sustainability is adversely affected due to large scale land use land cover conversions to built up and residential areas and demand-supply gap in the provisioning of civic urban amenities (Kumar, 2009; Bera, 2020). It has a far-reaching effect on India's efforts on reaching Sustainable Development Goals (SDGs) by 2030.

In this context, it is very relevant to explore the status and components of urban sustainability in North-East India, being the corridor to South-East Asia. The paper intends to study the urban sustainability components and challenges in achieving SDGs in urban centres of north-eastern states.

The paper is divided into five sections. Background of the paper in the first section is followed by the reviews of literature in the context of measuring urban sustainability in the second section. The methodology part is presented in the third section. The fourth section captures the results and discussion on evidences of urban growth and analysis of urban sustainability attainment levels of North-East region of India. The paper concludes with relevance of the study for future research, limitations of the study and policy recommendations in the fifth section.

REVIEW OF LITERATURE:

Measuring Urban Sustainability

The issue of 'urban sustainability' has grabbed attention worldwide in the 'UN conference on environment and development', popularly known as the Rio Summit, held in 1992 with the participation of 178 countries. The challenges posed by rapid urbanisation are entrusted by the United Nations in its Millennium Development Goals (MDGs) in the year 2000 (cities without slums). Further, in September 2015, the UN Sustainable development Summit held in New York declared 17 Sustainable Development Goals (SDGs) with inclusion of the 11th goal as 'Sustainable Cities and Communities'. After the Rio Summit, when many countries initiated the efforts towards measuring and reaching the goal of urban sustainability, India lacks such effort (Salk et al, 2008). The unprecedented city growths and growing environmental concerns led India to adopt a series of comprehensive action-oriented strategies following UN norms of Millennium Development Goals after 2000 (Van Hauff et al, 2013; Panda et al 2016).

Measurement of urban sustainability is very much essential for proper identification of the sources causing unsustainability. The construction of indicators for the measurement involves through an evolutionary process

being exercised by various international agencies including United Nations. Earlier, many challenges of urbanisation were not identified and poor data availability for urban development dimensions contributed to the inadequacy of proper urban policy designing. The recent developments augmented the process of proper measurement of urban sustainability incorporating new components and changing urban dynamics (Wong, 2014). The evolution of the process of measurement of urban development and sustainability has been well-documented by Gomez et al., 2018.

Table 1: Evolution of Urban Development and Sustainability Indicators

Phases →	1st	2nd	3rd	4th
Period→	1960s	1990s	2010s	2030s
Approach→	Conventional macrocosmic approach	Thematic and sectoral approach	Instigated and multidimensional approach	Holistic and geo-localized flexible approach
Unit→	One-dimensional	Sector Specific	Composite	More Complex
Indicators→	GDP, Population and City Sprawl	Specific Index	Composite Index	Holistic Index
Example→	UN World Urbanization Prospects; World Bank World Development Indicators Series	Global City Indicators Program (World Bank), Global Urban Indicators and Urban Governance Index (UN-Habitat) The Cities Data Book (Asian Development)	City Data (World Council), City Prosperity Index (UN-Habitat), Better Life Index (OECD)	Urban Sustainability Assessment Framework (USAF) , Indicator System for Characterization of Urban Sustainability (ISCUS), a holistic methodological framework with participatory approach.

Source: Gómez-Álvarez et al, 2018; Ameen & Mourshed, 2019; Feleki et al., 2020

Urban sustainability refers to practices and actions incorporated in urban planning helping the cities to grow and prosper without permanently depleting the resources. The three pillars of sustainability are social sustainability, economic sustainability and environmental sustainability (Chakraborty, 2017; Roy et al, 2023). However, in the holistic approach of Urban Sustainability Indicator Framework (USIF), institutional components (participation, civic engagement, urban planning, environmental management, governance, finance and transparency) are incorporated to achieve a more robust, coherent and flexible measure of urban sustainability (Michalina et al., 2021). The paradigm shift in the measurement of urban sustainability has been a

experienced through integration of SDGs in urban policy design and urban management. It navigates the possibility of sustainable cities with assurance of social, economic and environmental well-being of city-dwellers (Roy et al, 2023). In Indian context, various attempts have been made by the researchers and institutions to measure urban sustainability at national level, state level, district level and city level to search for the achievements and challenges (UN-Habitat, 2013; UN-Habitat, 2015; State Planning Commission ; NITI Aayog; Roy et al, 2023). NITI aayog pioneers the effort with the release of SDG Urban Index for major cities representing their performances across composite and specific SDGs (SDG Urban Index, NITI Aayog Dashboard, 2021-22). It enables the planning and implementation agencies to identify the loopholes and design city development models to mitigate the same.

There are many studies found in the literature analysing urban sustainability issue in Indian context (Reddy and Tiwari, 2016; Climate Smart Cities Assessment Framework 3.0, Ministry of Housing and Urban Affairs, GOI, 2022), especially analysis of the cities towards achieving SDGs (Roy et al., 2023). But no studies have attempted to make analysis of SDG indices for North-Eastern states although few studies have addressed the urban expansion and urban sustainability in their studies (Saitluanga, 2020; Guha, 2020). This paper intends to analyse the performance of North East India in reaching Urban SDGs as SMART-City models have been incorporated in the development agenda of urban centres of the region. It will pave the way for smart urbanism while developing and designing north eastern cities with its huge impact towards successful implementation of 'Act East Policy' initiatives of Government of India.

METHODOLOGY:

The paper is entirely based on secondary data adapted from NITI Aayog Dashboard -Urban SDG and NER SDG, 2021-22. Since the paper involves comparative analysis of SDGs of North Eastern cities, it is entirely descriptive in nature and incorporates using of diagrams for showing specific SDG indices.

RESULTS AND DISCUSSION:

Developing countries are experiencing rapid growth of urbanisation as causal sequence of economic development (Nyambod, 2010). Provision of employment, education, better communication, health facilities and other services for comfortable living- shopping, recreation and cultural facilities are the push factors causing settlement in urban centres (Rahman et al., 2009). The tempo of urbanisation in the North-East is clearly reflected in the growth of population and number of households. Contrary to the smaller and medium towns showing faster growth than class I cities in less developed states of India till 90s, the trend changed and class I¹ cities have experienced much faster growth in those states (Kundu, 2006). North-East India, comparatively being lagged behind in terms of economic development, its class 1 cities have experienced tremendous urban growth in recent decades as revealed in the study by Kundu, 2006.

Evidences of Rapid Urbanisation in North-East India:

The spatial transformation in Northeast India, symbolised by urbanisation (municipal and expansion) and rural-urban migration has been coordinated with multiple policy initiatives of the Government of India (Atal Mission for Rejuvenation and Urban Transformation and Smart Cities Mission). India's Act East Policy (formerly Look East Policy) has also emphasised development of the border towns to facilitate cross-border trade with South-East Asian nations (especially with Bangladesh and Myanmar). As a result, not only the

¹ Based on population sizes, urban centres in India are classified into six categories as follows:

Class I : 100,000 or more

Class II: from 50,000 to 99,999

Class III: from 20,000 to 49,999

Class IV: from 10,000 to 19,999

Class V: from 5000 to 9999

Class VI: below 5000

Source: Census of India, 1991, 2001, 2011.

capitals of the states, border towns, such as Dawki (Meghalaya), Champhai (Mizoram), Moreh (Manipur) and Pangsau (Arunachal Pradesh) are too experiencing rapid urban growth. The following table reveals the level of urbanisation experienced in the eight states of N-E India.

Table 2: Proportion (Percent) of Urban Population to Total Population

States	Level of Urbanisation (%)			AEGR	
	1991	2001	2011	1991-2001	2001-2011
Arunachal Pradesh	12.8	20.75	22.94	7.49	3.31
Assam	11.08	12.9	14.1	3.29	2.46
Manipur	27.52	26.58	29.21	1.31	3.7
Meghalaya	18.6	19.58	20.07	3.24	2.71
Mizoram	46.1	49.63	52.11	3.33	2.6
Nagaland	17.21	17.23	28.86	5.11	5.1
Sikkim	9.1	11.07	25.15	4.93	9.42
Tripura	15.3	17.06	26.17	2.61	5.66

Source: Handbook of Urban Statistics, 2019, Ministry of Housing and Urban Affairs

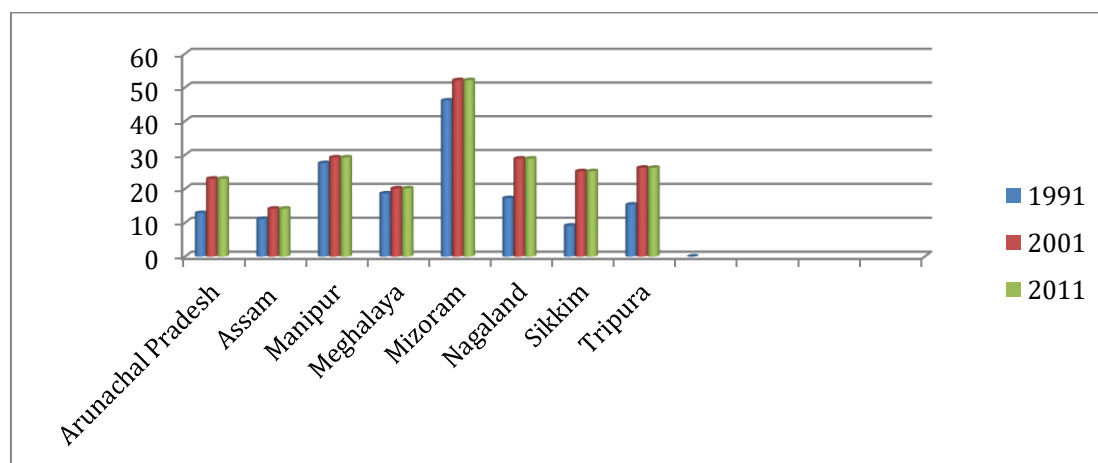


Fig. 1: Level of Urbanisation (Percent of urban to total population) in North-East

The above table reflects the level of urbanisation reflected by the census data. Amongst the eight states, Mizoram exhibits the highest urban population percentage in the entire North-East. Although the level of urbanisation is 14.1 percent as per 2011 census, however, number of urban population is a matter of attention

in Assam, Guwahati, being the corridor to the North-East India. Kamrup (Metro) district is home to 82.70 percent urban population as compared to 14.1percent of urban population in Assam. The population density of the district is the highest in Assam (2010 per square kilometre) which is 398 per square kilometre in entire Assam (Census of India, 2011).

Table 3: Percent of projected urban population to total population based on 2011 census (2011-2036) in North-East

States	2011			2021			2031			2036		
	Total	Male	Female	Total	Male	Female	Total	Male	Female	Total	Male	Female
Arunachal Pradesh	23.08	23.67	22.45	25.32	26.1	24.55	27.58	28.49	26.62	28.7	29.7	27.64
Assam	14.17	14.26	14.08	15.39	15.5	15.24	16.61	16.84	16.38	17.23	17.5	16.96
Manipur	29.39	28.8	29.99	32.07	31.5	32.62	34.74	34.29	35.18	36.08	35.7	36.44
Meghalaya	20.1	19.98	20.22	20.61	20.6	20.67	21.07	21.1	21.04	21.31	21.4	21.22
Mizoram	52.33	51.75	52.92	54.71	54.3	55.15	57.05	56.83	57.26	58.18	58.1	58.24
Nagaland	29.67	30.03	29.28	43.81	44.5	43.1	58.15	59.28	56.96	65.14	66.6	63.64
Sikkim	26.32	26.01	26.67	46.18	45.8	46.65	66.34	66.03	66.73	75.69	75.5	75.93
Tripura	26.8	26.63	26.98	37.65	37.5	37.78	48.9	48.94	48.86	54.57	54.8	54.38

Source: Population Projections for India and States, 2011-2036, National Commission on Population, Ministry of Health & Family Welfare, 2020

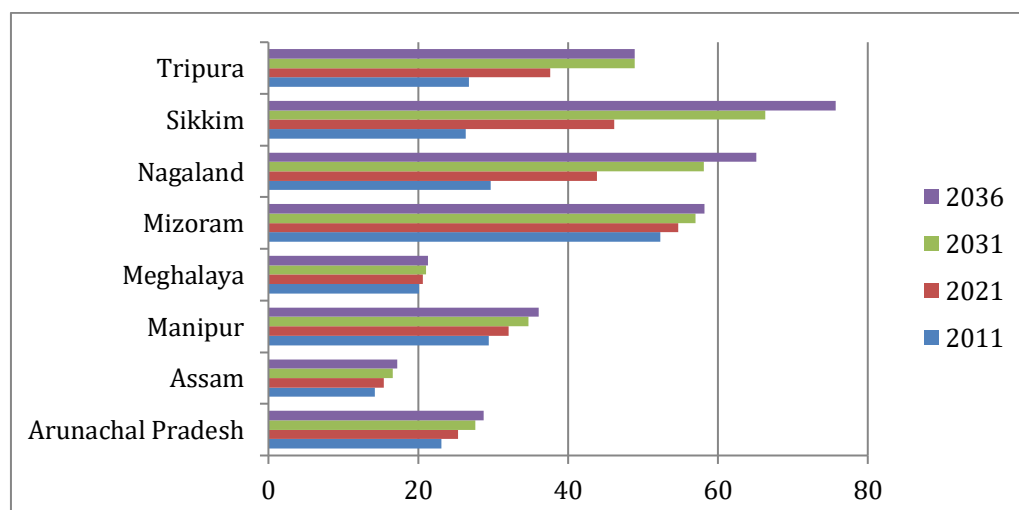


Fig. 2: Projected urban to total population (%) in North-East (2011-2036)

The population projection of urban population for the North-Eastern states reflect that Sikkim (75.69 %) will be going to the highest percent of urban population to total population in 2036, followed by Nagaland, Mizoram, Tripura, Manipur, Arunachal Pradesh, Meghalaya and Assam respectively. It is an alarming indication for the authorities to make appropriate arrangement of urban housing and other amenities in the rapidly growing urban centres. Lack of adequate actions in this regard will pose threat to urban sustainability in the region.

Assessment of Urban Sustainability in North- East through urban SDG indices:

As the issue of urban sustainability has grabbed attention in the entire world, Government of India has taken a series of initiatives to enhance the provisioning of urban amenities in North-Eastern states through the Atal Mission for Rejuvenation and Urban Transformation and Smart Cities Mission. These initiatives have significant impacts on the performance of North-Eastern urban centres in achieving sustainable development goals. NITI Aayog has released the urban SDG indices for all states, including North-East. It is a comprehensive study on the state's capability in reaching urban SDGs through utilisation of urban policy initiatives by GOI. It also reflects the goals to be achieved and policies to be formulated to enhance urban sustainability in this region. Although, this region is famous for greenery and landscapes gifted by the nature, but growing built up and construction activities and expansion of trade and commerce necessitates planned urbanism for the restoration of urban resilience. Otherwise, the occurrences of hazards would be much more frequent.

The issue of urban sustainability has been discussed in this paper with the help of NITI Aayog's urban SDG index, 2022 (Refer to Table 4)

Table 4: Urban SDG Indices of North-Eastern State's Capital Cities

States	Arunachal Pradesh	Assam	Manipur	Meghalaya	Mizoram	Nagaland	Sikkim	Tripura
Capitals	Itanagar	Guwahati	Imphal	Shillong	Aizwal	Kohima	Gangtok	Agartala
SDG 1 (No Poverty)	58	58	69	80	75	52	57	60
SDG 2 (Zero Hunger)	61	55	73	69	66	70	66	56
SDG 3 (Good Health & Well-being)	40	65	56	64	67	57	41	63
SDG 4 (Quality Education)	56	56	62	78	67	61	74	52

SDG 5 (Gender Equality)	44	48	83	81	80	90	77	88
SDG 6 (Clean Water & Sanitation)	65	62	66	65	57	66	72	64
SDG 7 (Affordable and Clean Energy)	98	68	53	89	97	83	79	69
SDG 8 (Decent Work & Economic Growth)	37	30	50	21	30	51	47	46
SDG 9 (Industry, Innovation & Infrastructure)	34	48	60	70	58	66	45	40
SDG 10 (Reduced Inequalities)	42	62	67	53	55	5	56	67
SDG 11 (Sustainable Cities and Communities)	39	43	26	50	49	29	47	55
SDG 12 (Responsible consumption & Production)	50	100	52	50	75	60	93	96
SDG 13 (Climate Action)	65	42	52	100	100	87	64	64
SDG 16 (Peace, Justice & Strong Institutions)	85	44	70	86	91	36	92	87

Composite Index	55.29	55.79	59.93	68.29	69.07	58.07	65.00	64.79
AI Rank	54	53	43	17	13	50	31	32

Source: Urban SDG Index, 2022, NITI Aayog

Table 5: The best and the worst performer in terms of specific SDGs and Composite Indices within N-E Region

SDGs	Best Performer Capital City	Worst Performer Capital City
SDG 1	Shillong	Kohima
SDG 2	Imphal	Guwahati
SDG 3	Aizwal	Itanagar
SDG 4	Shillong	Agartala
SDG 5	Kohima	Itanagar
SDG 6	Gangtok	Aizwal
SDG 7	Itanagar	Imphal
SDG 8	Kohima	Shillong
SDG 9	Shillong	Itanagar
SDG 10	Imphal, Agartala	Kohima
SDG 11	Agartala	Imphal
SDG 12	Guwahati	Itanagar. Shillong
SDG 13	Shillong, Aizwal	Guwahati
SDG 16	Gangtok	Kohima
Composite Index	Aizwal	Itanagar

Source: Author's derivation from table no. 4

In this analysis, SDG – 14 (Life below water), SDG- 15 (Life on Land) and SDG- 17 (Partnerships for the goals) are excluded due to non-availability of composite index scores in the dataset. SDG-11 which is specific to urban sustainability incorporates – (i) Percentage of houses completed against sanctioned under PMAY (Urban), (ii)Percentage of Municipal Solid Waste (MSW) treated against MSW generated, (iii) Swachh Survekshan Score and (iv) Death rate due to road traffic accidents per 1,00,000 population. Hence, the measurements of specific urban sustainability for the cities in terms of these four components provide the insights into the state capital city's accomplishment towards sustainability, in particular. A spider diagram has

been drawn to represent the performances of north eastern capital cities in reaching urban specific SDG 11 and their scores for composite indices. In fig.3, The SDG-11 scores for the cities clearly reflect that the cities with better performer (Aizwal, Shillong) in the specific SDGs, have also attained good composite scores (about 70) and all India ranks 13 and 17 respectively amongst 56 Indian cities. Agartala too has shown good score for SDG-11 but its composite score is not up to the mark (AI Rank 31). It indicates lack of efficiency in the policy measures for attainment of other SDGs in the city.

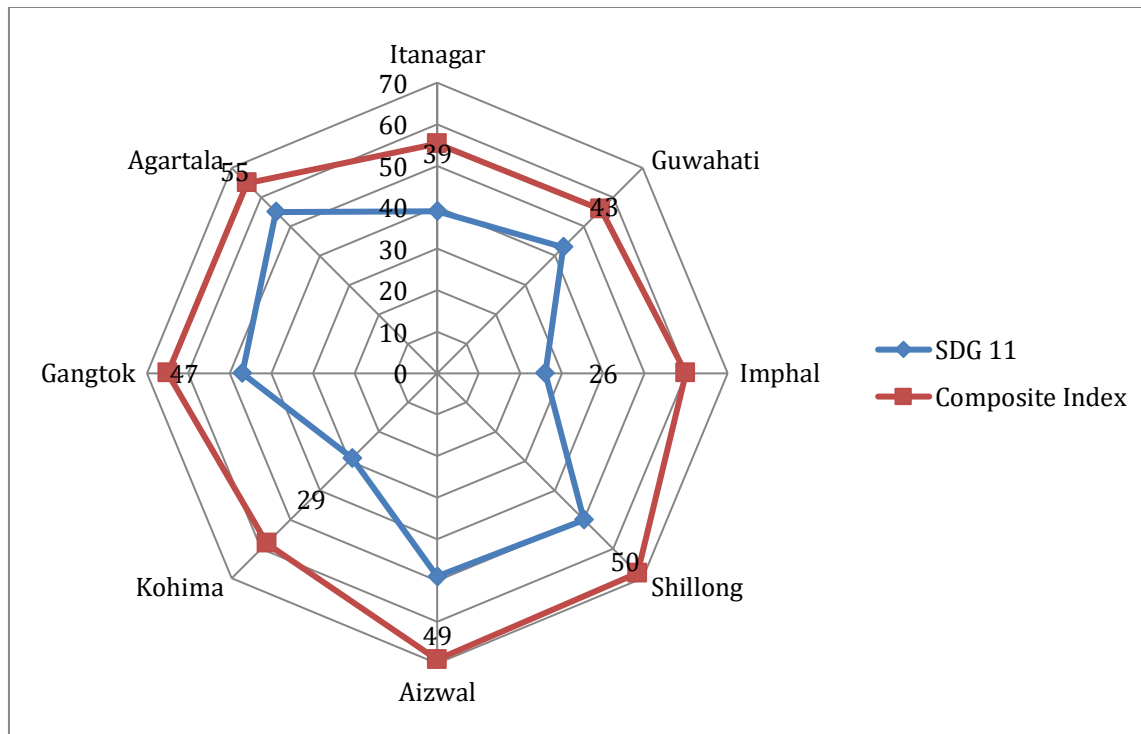


Fig. 3: Spider Diagram exhibiting the specific SDGs for sustainable cities and composite indices for North-Eastern capital cities

Source: Urban SDG Index, 2022, NITI Aayog

CONCLUSION AND RECOMMENDATIONS:

Urban sustainability has been emerged as urban planning actions making balance between present –use and future-use of resources. It advocates action-oriented approach to make the cities self-sufficient in terms of energy, water supply, sanitation, distribution of resources, food supply etc. This paper tries to explore the attainment levels of urban sustainability in North-Eastern India. The city specific analysis of SDGs helps to identify the gaps in the policy-making for the hundred percent attainments of urban sustainable development goals. Accordingly, it navigates the designing of development agenda of N-E region incorporating eco-friendly practices and reshaping urban systems. However, this study does not attempt to explore the relationship between development indicators and their impacts on SDG indices which may be tried out by future researchers, using advanced tools for analysis -regression and factor analysis (Roy et al., 2023). North-East India, being gifted with abundance of natural resources, should be developed only by mainstreaming environment into development planning. Enhanced community participation, extensive use of green technology with less emissions, appropriate use of resources and coordination amongst various government departments and different tiers of governance should be needed to restore sustainable urbanism in the north-east.

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