Slum Growth in Odisha - A Challenge to Sustainable City Management

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Abstract: *This study aims to analyze the trend and pattern of the slum expansion and its correlation with urbanization in Odisha. It also highlights the growth of slum population by the size and administrative status of cities using secondary data. Demographic predictions indicate a faster population growth in cities worldwide. Existing studies link slum expansion to urban growth, which poses a major challenge to sustainable-city-planning. The study found a positive linear link between total and slum population of metropolis. The values of correlation coefficient were 0.89 and 0.881 for 2001 and 2011 respectively. The slum-reporting towns increased from 47 to 76. Both the number and percentage of slum dwellers increased significantly. A substantial rise in proportion of slum population is seen in larger cities, municipal corporations, and industrial townships. Collaborative effort involving communities and city planners; provision of low-cost housing, remunerative jobs, and other amenities may be key to make towns slum-free.*

Keywords: *Low-cost housing, Slum dwellers and Sustainable City Planning*

Introduction

According to Bhagat (2004), Frankenhoff (1967), and Ward (1976), the term "slum" was first used at the time of Industrial Revolution in Europe and North America,to describe and characterize settlements with distinctive characteristics such as congested, dirty, and decaying inner-city housing. Stokes (1962) was of the view that the slums persist despite the high level of economic progress of metropolitan regions. As a result, no nation in recorded history has been able to stop the slum expansion. Thus, there is a constant rise in the total number of people living in slum conditions worldwide on account of the rapid pace of urbanization. In 1990 and 2000, there were 650 million and 760 million slum dwellers, respectively (UN-HABITAT, 2015). At present around one billion or every eighth people on the globe, live in slum conditions (UN-HABITAT, 2022). Census 2011 data show that about 65 million people or 27% of the urbanites in India live in slum settings. The fact that more than one-third of India's slum population is dispersed over more than 46 million cities is also noteworthy (Census of India, 2011).

By addressing pertinent topics like why, how, and where slum development happens, the creation and growth of slums may be extensively explored (Roy et al., 2014). The reckless rate of urban population increase, coupled with the dismal lack of infrastructure and the haphazard extension of metropolitan regions, is the key driver of slum development. Slums are usually found in and around urban wastelands and underutilized land, or in peri-urban areas. In certain cases, it is also discovered next to dumping sites and cemeteries (Garr, 1996). The phenomena of slum growth suggest movement of epicenter of poverty from rural to urban areas. UN-HABITAT (2007) termed such movement as the "urbanization of poverty". Public authorities around the world are continuously creating new regulations to upgrade the existing slums, and to stop development of new slums to address the vulnerability of slum dwellers. On the other hand, the expansion of slums is usually attributed to institutional failures on the part of the government in housing policy (Sietchiping, 2005).

The government of India increased its efforts and launched initiatives like the Smart Cities Mission, the Jawaharlal Nehru National Urban Renewal Mission, the Atal Mission for Rejuvenation and Urban Transformation, and the Pradhan Mantri Awas Yojana after the Sustainable Development Goals were announced in 2015. These programs are all in line with SDG 11 (UNDP, 2015) and address the challenge of improving urban spaces, especially upgrading slums. Many initiatives have also been undertaken in the state of Odisha. The state government enacted "The Odisha Land Rights to Slum Dwellers Act, 2017", in which identified slum dwellers in the Municipal Council and Notified Council Area are granted land rights. Under the Act, the "JAGA Mission" (Jaga implies place in the local Odia language) has been implemented to upgrade all the slums in the state. It includes provisions such as land rights certificates, access to affordable housing schemes, water supply, street lighting, social amenities, and emergency facilities. In addition, on 23rd March 2021, the state government approved a proposal for amending the Orissa Housing Board Act, 1968, wherein a minimum size of 30 square metersof land will be allotted to rehabilitate the slum dwellers in the State (Sambad English Bureau, March 24, 2021). However, because it is difficult to create and implement a "one size fits all" solution to the issue, the expanding number of people living in slums poses a challenge to policymakers. Furthermore, the dispersed migratory stream from big cities to smaller ones that results in the development of new cities raises the concentration of slums in India to both the degree of urbanization and the size class of the cities (Kumar, 2016; Laquian, 2005). The percentage of slum dwellers in the heart of large urban agglomerations is currently declining due to the forced relocation of slum residents to the outskirts of cities to make them glitzier and alluring to foreign capital (Kundu, 2013). Understanding the dynamics of concentration and spread of slum population in cities has always been important for researchers and policy makers.Due to a lack of data, earlier studies on the slum population that attempted to trace this process were unable to present a complete picture. While Yadav et al. (2021) computed the growth of slum population using data from both Census 2011 and 2011, Rahaman &Das (2017) only dealt with the first phase of slum population data from Census 2001. This study, which covers 47 towns in 2001 and 76 towns in 2011, estimates slum population increases both at the town and district level for the first time in this setting using data from census2001 and census 2011. The common towns (37) in both censuses are also considered in this study. This article will thus surely aid policymakers in comprehending the contemporary dynamics of slums. Furthermore, it will offer a solid foundation for comprehending township slums in the future Census.

Objectives

- To analyze the concentration and spread of slum population and its relationship with urbanization in Odisha, an eastern state of India.
- To highlight the growth of the slum population for the size and administrative status of the cities by using Census data from 2001-2011.

Review of Literature

Depending on urban environments, different countries have different definitions and conceptions of slums (UN-DESA, 2014; Dorelien et al., 2013). According to Agarwal & Taneja (2005), Chandrasekhar & Montgomery (2010), Goli et al. (2011), O'Hare & Barke (2002), the definition of a slum in India is also not consistent and varies by state and even city. Although there are different definitions and classification standards for what defines a slum (Richter et al., 2011), the reality for the people who live there is frequently poor housing, limited access to basic amenities like clean water and sanitary conditions, limited access to medical care, and generally a low standard of living. The National Sample Survey Office (NSSO) and the Registrar General of India (RGI) are the designated organisations in India for gathering, compiling, and distributing data on the population living in slums. The Town and Country Planning Organization (TCPO), the state government, and urban local organizations that regularly carry out slum surveys are other sources. It is known that the slum's name differs depending on the region in the nation. In Delhi, impoverished areas are called "Jhuggi-Jhopdi," whereas in Mumbai, Bangalore, and Chennai, they are called "Jhopadpatti,""Bustees," and "Cheris."Still, all these shantytowns have comparable physical features. When slums are examined from different perspectives, it becomes evident that although each definition of a slum is identical, the meanings of subjective terms like narrowness, dilapidation, overcrowding, lack of ventilation, and lack of sanitation differ. The slum population differs widely because of these variations.

A slum is defined by the United Nations as "a contiguous settlement where the inhabitants are characterized as having inadequate housing and lacking basic services such as access to safe water, improved sanitation, sufficient living area, durable housing, and secure tenure." Shelter deprivation is the absence of any one of these elements. It is important to note, nevertheless, that India's slum population will increase significantly if we use UN-Habitat's definition of a slum. Some estimates place the number of people living in India's slums at approximately 158 million out of the country's total urban population in 2011—a 50% increase over the numbers seen in the Census and NSSO estimations. The reason for this is that, although slums are thought to be an urban phenomenon exclusively, the UN includes Habitat's five criteria for shelter deprivation that apply to both rural and urban locations. Even though there are many villages where residents lack access to necessities, we do not classify these rural communities as slums. We discover two entirely different estimates when we compare the RGI and the NSSO, the two main government sources of information about the population living in slums. There were almost 6.5 crore slum inhabitants in 2011 according to Census data, however only 4.4 crore slum dwellers were reported in 2012 by the NSSO. The NSSO restricts itself to a small sample size, but the Census undertakes a thorough enumeration of the slum population, which may account for the huge discrepancy of 2.1 crore persons.

Urbanization and Slum expansion

According to the UN Population Division (2018), more than 50% of global population presently resides in cities. And it will be growing to around65% in 2050. Davis (2004) and Marx, Stoker, & Suri (2013) viewed it a major concern as metropolitan expansion is directly connected to the growth of slums. Soma, H. et al. (2021) and Patra & Mishra (2018) related the rise in slum population in quickly growing cities to rapid urbanization backed by underlying factors like rising rural-to-urban migration, housing shortages, and limited access to affordable housing. Goncalves, J.M. & Gama, J.M.R.F. (2020) stated that the urban growth with financial and institutional inability to make available low-cost housing leads to large slum formation in developing nations. According to Swami, S.K. (2017), rapid industrialization, a dearth of work possibilities in rural regions, low pay, and unsuccessful land reforms are the main reasons for the rise in number of slum inhabitants in India. The positive side of rural-to-urban migration is

urbanization (an opportunity) and the negative side is the development of slums (a challenge) (Singh, H, 2016).

Research Method

The data relating to slum reporting towns, town/city level urban and slum population of Odisha are collected from census of India and District Census Handbooks for the years 2001 and 2011. Considering the importance of understanding the number of slums at the town level, an effort was undertaken to document the variations in slum growth patterns that transpired from 2001 to 2011. The following formula is used to compute the growth rate of slum population.

$$\frac{\text{Slum population in 2011} - \text{Slum population in 2001}}{\text{Slum population in 2001}} \times 100$$

First, bivariate analysis is used to determine the percentage rise in the population living in urban and slum regions. Furthermore, a scatter graph of typical slum towns fitted with a linear regression line and the R^2 value describes the association between the population of urban and slum areas in Odisha during ten-year period. The correlation coefficient (r) was also calculated in this context. The degree to which the variability of a component is explained by its relationship with another factor is measured by the coefficient of correlation.

Results and Discussion

Urbanizations and Slum Situation in Odisha (2001-2011)

A comparison between Census data from 2001 and 2011 in Table 1 shows that the urban population of Odisha is growing faster than the rural population. The population growth rate in urban areas (27.42%) is more than double in the rural area (12.05%). It may be due to the rural-to-urban migration and shifting focus from agriculture. Further, the slum growth rate (89.53%) is more than thrice the growth rate in the urban population (27.42%) and more than five times the rate of growth in the non-slum population. This is evident not only in large major cities but also in most of the medium and small-sized towns. As per District Census Handbooks 2001, 0.82 million people lived in slums in 22 districts. In Census 2011, the number has increased to 1.56 million, spread across 29 districts.

Table 1: Urbanization and Slum Situation in Odisha (2001-2011)

Population	Census Year		% Change
	2001	2011	
Total	36706920	41974218	14.35
Rural	31210602	34970562	12.05
Urban	5496318	7003656	27.42
Slum	823254	1560303	89.53
Non-Slum	4673064	5443353	16.48

Source: Prepared from secondary data

Relationship between urbanization and slums

The scatter graph below, which shows the link between the population of urban and slum areas for the 2001 and 2011 census periods, has been fitted with a trend line. The claim that the growth of urbanization should not coincide with the development of slums is being investigated. Figures 1 and 2 scatter plot of the census data from both rounds shows a robust, positive, and linear relationship over a ten-year period. The strength of the link is significantly explained by the R2 values of the scatter plot Figures 1 (R2 = 79.34 percent, P-P-value = 0.001) and 2 (R2 = 77.81 percent, P-value = 0.001). The 2001 correlation coefficient (r) value (r = 0.89, P-value = 0.01) and the 2011 correlation coefficient (r = 0.881, P-value = 0.01) also show a positive relationship between urban and slum populations.

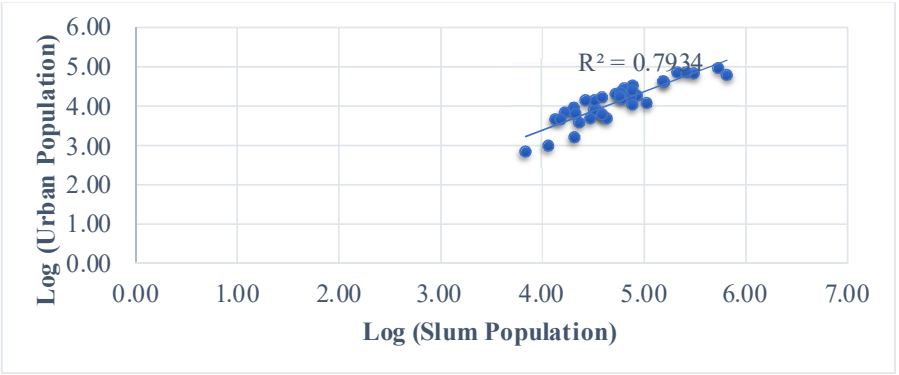

Figure1: Relationship between urban and slum population in Odisha, 2001
Source: Developed from secondary data

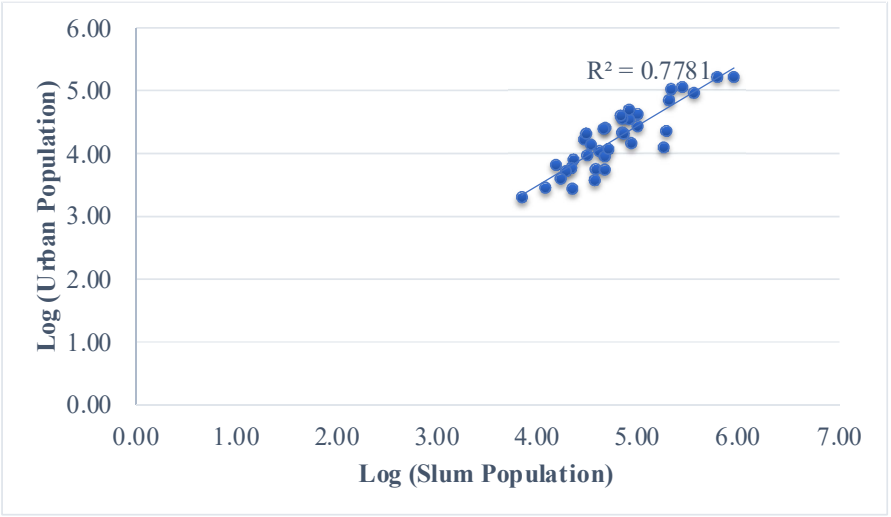

Figure 2: Relationship between urban and slum populations in Odisha, 2011
Source: Developed from secondary data

Size of Slum Growth in Odisha

Between the 2001 and 2011 Censuses, there was a significant increase in the number of towns reporting slums. The reason could be changing definition of slum in 2011, during which data from all statutory and a Census town is collected by the RGI irrespective of population size. This could be the reason for the increase. About 47 and 76urban local bodies, respectively, reported having slums in the 2001 and 2011 censuses (see Table 2). It was found that the 37 towns were common in both Census periods. Major districts like Balangir, Cuttack, Gajapati, Kalahandi, Keonjhar, Khordha, Malkangiri, Puri, Rayagada and Sundargarh have witnessed a sharp rise in the number of embodied slum dwellers (more than 50per cent).Only a few districts have seen a decrease in slum population. There is a decline in the number of slum dwellers in one town of Deogarh, Jajapur, Kendrapara, Koraput and Sambalpur districts. In Balangir, Kalahandi, Khordha, and Malkangiri, however, the population living in slums has grown at a rate that has doubled. The state's urban population rapidly increased during the years 2001–2011, which is the cause of this remarkable increase.

Table 2: District-wise Slum Reporting Towns and Common Towns of Odisha (2001-2011)

Sl No	District	Slum reporting Towns (Nos.)			Common Towns' Slum Population		
		2001	2011	Common	2001	2011	% Change
1	Kendrapara	1	2	1	13885	3716	-73.24
2	Jajapur	1	2	1	8055	5577	-30.76
3	Sambalpur	2	4	2	55742	43070	-22.73
4	Koraput	2	3	2	33000	26307	-20.28
5	Deogarh	1	1	1	8116	7947	-2.08
6	Bhadrak	NSR	1	-	-	-	0.00
7	Boudh	NSR	1	-	-	-	0.00
8	Dhenkanal	NSR	3	-	-	-	0.00
9	Kandhamal	NSR	2	-	-	-	0.00
10	Mayurbhanj	NSR	3	-	-	-	0.00
11	Nawarangpur	NSR	2	-	-	-	0.00
12	Nayagarh	NSR	NSR	NSR	NSR	NSR	NSR
13	Sonepur	NSR	3	-	-	-	0.00
14	Nuapada	2	2	2	11398	11722	2.84
15	Balasore	1	4	1	12000	12570	4.75
16	Bargarh	1	3	1	28079	35187	25.31
17	Ganjam	12	3	3	78616	100432	27.75
18	Jagatsinghpur	1	2	1	16730	21488	28.44
19	Jharsuguda	2	3	2	58382	76976	31.85
20	Angul	1	2	1	7530	10971	45.70
21	Rayagada	3	3	3	24155	39393	63.08
22	Puri	3	3	2	45344	74432	64.15
23	Sundargarh	4	5	4	152521	257695	68.96
24	Keonjhar	2	4	2	37125	65418	76.21
25	Cuttack	1	2	1	92100	163766	77.81
26	Gajapati	1	2	1	4892	8945	82.85
27	Balangir	1	3	1	18295	42034	129.76
28	Kalahandi	1	3	1	15310	35226	130.08
29	Khordha	2	3	2	67962	169526	149.44
30	Malkangiri	2	2	2	4793	12097	152.39
Odisha		**47**	**76**	**37**	**794030**	**1224495**	**54.21**

Source: *Prepared from secondary data*

Growth rates (Actual and Adjusted) of slum and urban population (2001-2011): A Comparison

Census 2011 revealed that only 27.7% of urban residents lived in slums, compared to 16.84% in 2001 (see Table 3 for real estimates). It seems that throughout this period, around 0.75 million more individuals now reside in slums. The adjustment of recently formed slum towns is not reflected in the actual population estimates of the slums for the years 2001–2011. Hence care must be used when interpreting the slum population growth rate.

Growth rates in cities and slums were examined between 2001 and 2011 (see Table 3). It has been computed what the actual and adjusted figures are. The results showed that although the adjusted rate was 54.21% throughout the decade, the real rate of slum expansion was 89.53%. It unequivocally demonstrates that there is a positive correlation between the growth of urbanization and the slum population. People often search for affordable homes when they relocate to large cities for work, hoping to escape the stress of expensive metropolitan living. Typically, low-income families who are unable to pay for transportation or who do not have access to reasonably priced public transit live in squats or slum settlements that are either sufficiently close to or within walking distance of their official or informal place of employment. Not to mention, non-slum regions are expanding at a pace that is comparable to that of cities.

Table3: Growth rates (Actual and Adjusted) of slum and urban population (2001-2011): A Comparison

Actual estimates						Adjusted estimates					
Census Year	Population (slum-reported towns)		% of Slum to Urban Population	Growth Rate		Census Year	Population (slum-reported towns)		% of Slum to Urban Population	Growth Rate	
	Urban	Slum		Urban	Slum		Urban	Slum		Urban	Slum
2001	4888130	823254	16.84	15.29	89.53	2001	3547165	794030	22.38	19.22	54.21
2011	5635459	1560303	27.69			2011	4228960	1224495	28.95		

Note: The computation of adjusted estimates is made using values of common slum-reporting towns. And the percent of slum population to urban population is computed dividing slum population by urban population and then multiplying the fraction with 100.

$$\text{Urban Growth Rate} = \frac{\text{Urban population(2011)} - \text{Urban population(2001)}}{\text{Urban population(2001)}} \times 100$$

$$\text{Slum Growth Rate} = \frac{\text{Slum population(2011)} - \text{Slum population(2001)}}{\text{Slum population(2001)}} \times 100$$

Source: Prepared from secondary data

According to Tables 4 and 5, the size-class analysis of slums shows that, in addition to being concentrated in large cities, there is also a larger proportion of slums in municipalities with less than 0.1 million population in both 2001 and 2011. This suggests that slums are dispersing throughout smaller communities as well as larger ones. From 2001 to 2011, impoverished areas sprung up everywhere.

Table4: Share of slum population by size of common towns: 2001

Size of City	Population		No.	Slum to urban population (%)
	Urban	Slum		
More than 500000	1182686	154100	2	13.03
100000 to 499999	1198267	304327	6	25.40
50000 to 99999	682305	207058	10	30.35
20000 to 49999	420505	110912	14	26.38
Less Than 20000	63402	17633	5	27.81
Total	**3547165**	**794030**	**37**	**22.38**

Source: Developed from secondary data

Table5: Share of slum population by size of common towns-2011

Size of City	Population		No.	Slum to urban population (%)
	Urban	Slum		
More than 500000	1495552	327749	2	21.91
100000 to 499999	1407908	417055	6	29.62
50000 to 99999	767598	297645	10	38.78
20000 to 49999	488342	161478	14	33.07
Less than 20000	69560	20568	5	29.57
Total	**4228960**	**1224495**	**37**	**28.95**

Source: Developed from secondary data

Table 6: Population (urban and slum) w.r.t. town's administrative status (2001-2011)

City/ULB/Town's Administrative Status	No.	Population		Slum to Urban population - 2001(%)	No.	Population		Slum to Urban population - 2011(%)
		Urban	Slum			Urban	Slum	
Municipal Corporation (MC)	2	1182686	154100	13.03	4	2125367	534030	25.13
Municipality (MPL)	21	1810744	464677	25.66	36	2493046	677108	27.16
Notified Area Council (NAC)	23	477570	133977	28.05	35	806634	244027	30.25
Industrial Township (IT)	1	213360	70500	33.04	1	210412	105138	49.97
Total	**47**	**3684360**	**823254**	**22.34**	**76**	**5635459**	**1560303**	**27.69**

Source: Prepared from secondary data

The spread of population in both urban and slum areas of cities with different administrative status was also done to ascertain the size of slum inhabitants. Table 6 described that there has been a noticeable increase in the concentration of slum dwellers in Municipal Corporation sand Industrial Township over the past ten years. When compared to municipalities and NACs, the population of slums has increased significantly in the previous ten years in municipal corporations and industrial townships. The growth of municipal regions because of the union of nearby NACs, municipalities and gram panchayats may be one of the causes of this tendency. It is necessary to look at the causes of rise in the number of people living in slums under municipal corporations.

In Table 7, the adjusted growth rate of slum population with respect to the town's administrative status was computed to estimate rise in number of slum residents over a period of ten years. This Table builds upon the previous table. The findings indicate that during the last ten years, the population of slums has grown more significantly in Municipal Corporations followed by Industrial townships and less significantly in municipalities. However, the proportion of slum dwellers in NACs is decreasing.

Table 7: Growth Rate (Adjusted) of slum population w.r.t. town's administrative status (2001-2011)

City/ULB/Town's Administrative Status	2001		2011		Adjusted Growth Rate (2001-2011)
	No.	Slum Population	No.	Slum Population	
Municipal Corporation (MC)	2	154100	4	534030	246.55
Municipality (MPL)	21	473352	20	494312	4.43
Notified Area Council (NAC)	13	96078	12	91015	-5.27
Industrial Township (IT)	1	70500	1	105138	49.13
Total	**37**	**794030**	**37**	**1224495**	**54.21**

Source: Prepared from secondary data

Discussion

Compared to 2001, more people were living in slums according to the 2011 census's revised definition of a slum. The 2011 Census shows that both the number and percentage of people living in slums are rising. The number slum reporting towns in the 2001 Census was 47, which increased to 76 in the 2011 Census. It was found that roughly 37 towns frequently reported having slums throughout both census years. In addition, the corrected R^2 value was presented alongside a scatter graph of common slum reporting towns fitted with a linear regression line, which presented a substantial positive association between the growth of urban and slum populations. This result is consistent with the results of earlier studies, which demonstrate a robust, positive, and linear association between urbanization and the expansion of slums in developing nations, especially those in Asia (Ooi and Phua, 2007).

Furthermore, the data emphasizes how densely slums are distributed throughout the cities of different sizes. Remarkably, compared to larger cities, there is a greater concentration slum dwellers in smaller cities or towns in both census years. It is evident that slums spread wherever they can and that their size does not affect how big urban centers get. Thus, we can conclude that migration to cities may increase if the rate of urban absorption increases through greater job prospects and infrastructure. But this might not be required given the population living in slums. Moreover, probably, initiatives to reroute or slow down the influx of people from bigger cities to smaller urban areas have contributed to the continued growth of slums in those smaller towns. The results support earlier research findings which indicate a rise in slum living population of smaller towns in developing nations (Laquian, 2005).

Lastly, compared to other administrative units, slums make up a larger percentage of Municipal

Corporations, and Industrial Township districts, because the demographic units in these locations are greater than those in the others. Because of the higher densities in these settlements compared to other administrative divisions, the percentage of slum inhabitants is also higher. A significant section of the population will experience developmental impoverishment if the current rate of growth is maintained. These regions also have more redevelopment initiatives underway, which means there is more funding available. Slums in these regions, as opposed to those in small and medium-sized urban centers, therefore have a higher probability of being rehabilitated.

Conclusion

In summary, the study discovered that the total number of slum dwellers in Odisha is increasing rapidly. The reason for this phenomenon may be migration of people from rural areas to urban region for better employment and other amenities. Between 2001 and 2011, the number of people living in slums rose significantly in all categories of ULBs except NACs. As cities expand, slums might appear. A collaborative effort from all stakeholders involving Slum Development Associations (SDAs), public authorities, industries, and academia would be needed for sustainable town planning. Low-cost housing or granting of land rights, remunerative jobs, and other amenities could be a key to make slum-free towns in Odisha. However, research and fieldwork in these directions are necessary to further understand the ground reality.

References

Agnihotri, P. (1994). *Poverty amidst prosperity: Survey of slums*. MD Publications Pvt. Ltd.

Agarwal, S., & Taneja, S. (2005). All slums are not equal: child health conditions among the urban poor. *Indian Pediatrics*, *42*.

Agrawal, V. & Bandopadhyay, A., (2016). "Identification of Factors for Growth of Slum: Case Study 'jyoti Nagar' Slum Raipur," *International Journal for Innovative Research in Science & Technology*, 3(6).

Badmos, O. S., Rienow, A., Callo-Concha, D., Greve, K., & Jürgens, C. (2019). Simulating slum growth in Lagos: An integration of rule based and empirical based model. *Computers, environment and urban systems*, *77*, 101369.

Banes, C., Huque, R., & Zipperer, M. (2000). *Towards a national slum upgrading program for Ghana-building on 15 years of efforts to improve the living conditions of the poor in Ghana's cities* (No. 21102, p. 1). The World Bank.

Bhagat, R. B. (2004). Dynamics of urban population growth by size class of towns and cities in India. *Demography India*, *33*(1), 47.

Chandrasekhar, S., & Montgomery, M. R. (2010). *Broadening poverty definitions in India: Basic needs in urban housing* (No. 27). IIED.

Chatterjee, N., Singh R., Venkaiah Naidu, M., (2015). Slums in India -A Statistical Compendium. *Government of India Ministry of Housing and Urban Poverty Alleviation National Buildings Organization*.

Cronin, V. (2013). A sustainability evaluation of slum rehabilitation authority housing development at Nanapeth, Pune, India. *Environment and Urbanization ASIA*, *4*(1), 121-134.

Davis, K., (1965). The Urbanization of the Human Population. *Scientific American*, 213(3), 40–53.

Dorélien, A., Balk, D., & Todd, M. (2013). What is urban? Comparing a satellite view with the demographic and health surveys. *Population and Development Review*, *39*(3), 413-439.

Echendu, A. J., & Okafor, P. C. C. (2021). Smart city technology: a potential solution to Africa's growing population and rapid urbanization. *Development Studies Research*, *8*(1), 82-93.

Formation and identification of Slum Enumeration Blocks for Slum Demography, Pub. L. No. No. 9/93/2009-CD(CEN), CENSUS OF INDIA 2011 (2010).

Frankenhoff, C. A. (1967). Elements of an economic model for slums in a developing economy. *Economic Development and Cultural Change*, *16*(1), 27-36.

Garr, D. J. (1996). Expectative land rights, house consolidation and cemetery squatting: some perspectives from central Java. *World development*, *24*(12), 1925-1933.

Goli, S., Arokiasamy, P., &Chattopadhayay, A. (2011). Living and health conditions of selected cities in India: Setting priorities for the National Urban Health Mission. *Cities*, *28*(5), 461-469.

Gonçalves, J. M., & Gama, J. M. R. F. (2020). A systematisation of policies and programs focused on informal urban settlements: reviewing the cases of São Paulo, Luanda, and Istanbul. *Journal of Urbanism: International Research on Placemaking and Urban Sustainability*, *13*(4), 466-488.

Kumar, P. (2016). Slums in India: Results from census, 2011. *Journal of Environmental and Social Sciences*, *3*(1), 124.

Kundu, A. (2013). Making Indian cities slum-free: Vision and operationalisation. *Economic and Political Weekly*, 15-18.

Laquian, A. A. (2005). *Beyond metropolis: the planning and governance of Asia's mega-urban regions*. Woodrow Wilson Center Press.

Marx, Benjamin, Thomas Stoker, and Tavneet Suri. (2013).The Economics of Slums in the Developing World. *Journal of Economic Perspectives*, 27 (4): 187-210.

O'Hare, G., & Barke, M. (2002). The favelas of Rio de Janeiro: A temporal and spatial analysis. *GeoJournal*, *56*, 225-240.

Ooi, G. L., & Phua, K. H. (2007). Urbanization and slum formation. *Journal of Urban Health*, *84*, 27-34.

Patel, A., Crooks, A., & Koizumi, N. (2012). Slumulation: An agent-based modeling approach to slum formations. *Journal of Artificial Societies and Social Simulation*, *15*(4), 2.

Patra, S. K., & Mishra, S. K. (2018). Livelihood and well-being at the lower echelons of the economy: A study of slum dwellers in twin cities of Odisha. *Sidhant-A Journal of Decision Making*,18(2), 144-152.

Pfeffer, K. (2011). Enlisting SDI for urban planning in India: Local practices in the case of slum declaration. *Spatial data infrastructures in context*, 157.

Pugh, C. (2000). Squatter settlements: their sustainability, architectural contributions, and socio-economic roles. *Cities*, *17*(5), 325-337.

Rahaman, M. E. H. E. B. U. B., & Das, D. N. (2017). Nature of slum growth in Indian cities. *Urban India Journal*, *37*(2), 100-116.

Roy, D., Lees, M. H., Palavalli, B., Pfeffer, K., & Sloot, M. P. (2014). The emergence of slums: A contemporary view on simulation models. *Environmental modelling & software*, *59*, 76-90.

Saharan, T., Pfeffer, K., & Baud, I. (2018). Shifting approaches to slums in Chennai: Political coalitions, policy discourses and practices. *Singapore Journal of Tropical Geography*, *39*(3), 454-471.

Sietchiping, R. (2005, April). Prospective slum policies: conceptualization and implementation of a proposed informal settlement growth model. In *Third Urban Research Symposium."Land, Urban and Poverty Reduction* (pp.4-6).

Singh, H. (2016). Increasing rural to urban migration in India: A challenge or an opportunity. *International Journal of Applied Research*, *2*(4), 447-450.

Soma, H., Sukhwani, V., & Shaw, R. (2022). An approach to determining the linkage between livelihood assets and the housing conditions in urban slums of Dhaka. *Journal of Urban Management*, *11*(1), 23-36.

State of the World Cities 2006/7.

Stokes, C. J. (1962). A theory of slums. *Land economics*, *38*(3), 187-197.

Swami, S. K. (2017). An Empirical study of growth of slum population in India. *International Journal of Political Science*, *3*(1).

Swami, S. K. (2017), Genesis and Growth of Slums in Odisha.

The Odisha land Rights to Slum Dwellers Act, 2017.

Turley, R., Saith, R., Bhan, N., Doyle, J., Jones, K., & Waters, E. (2013). Slum upgrading review: methodological challenges that arise in systematic reviews of complex interventions. *Journal of public health*, *35*(1), 171-175.

UN-DESA, (2014), World Urbanization Prospects: The 2014 Revision, Highlights. In UNDESA.

United Nations Human Settlements Programme. (2003). "*In The challenge of slums: Global report on human settlements*." London: Routledge.

UN-HABITAT, (2007), What are Slums and why do they exist. Sustainable Urbanization: Local Action for Urban Poverty Reduction, Emphasis on Finance and Planning:Twenty First Session of the Governing Council 16 - 20 April 2007, Nairobi, Kenya What.

UN-HABITAT, 2015, SLUM ALMANAC 2015 2016 Tracking Improvement in the Lives of Slum Dweller.

UN-HABITAT, (2022). Envisaging the future of Cities. *World Cities Report 2022*.

United Nations Development Programme. (2015). Goal 11: Sustainable cities and communities. *United Nations Development Program Sustainable Development Goals*.

Ward, D. (1976). The Victorian slum: An enduring myth? *Annals of the Association of American Geographers*, *66*(2), 323-364.

Yadav, V., Rajak, R., & Yadav, A. K. (2021). Growing Slums in Indian Towns: Insights from Census Data 2001-11. *Demography India*, *50*(2), 113-130.