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## Urbanisation and its Impact on Environment - A Case Study of Central Region of Rajasthan

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**Annotation:** *Urbanization refers to the process of transformation of a society which is predominantly rural in character, economy, culture and life style, to the one that is predominantly urban which is basically engaged in industrial and service sector. Urbanization can be said to be an old process but the rapidity in urbanization is seen in recent decades. According to United Nations (2014) nearly two third of the world's population is poised to live in urban environments by 2050. Indian scenario in this regard is that the country has a low level of urbanization (31.2% in 2011) as compared to developed world but has a very large number of people living in urban areas and constitutes 10.6% of world's urban population. Urban areas are emerging as economic growth drivers for the entire country and Rajasthan is no exception. But the state is witnessing a moderate rise in urbanization in 2011 i.e. 24.87% as compared to 31.2 % of all India. Study of trends and levels of urbanization has been an important aspect of Urban Geography since beginning. In the present paper Census of India (1901 to 2011) data are used to demonstrate temporal change through excel based cartography and spatial pattern through ArcView GIS based choropleth map. Increase in urban population in Rajasthan is prominently due to rural-urban migration and inclusion of 100 rural settlements as census towns in 2011 census. The present paper is focused on understanding the trends and inter-district variation in the levels of urbanization in Rajasthan using Indian Census data during 1901 to 2011. Major findings of the study are that urban population in Rajasthan increased more than eleven times during the last eleven decades i.e. from 1.48 million in 1901 to 17.05 million in 2011. Level of urbanization in the state has increased from 14.41% in 1901 to 24.87% in 2011. Kota, Jaipur and Ajmer have a very high level of urbanization i.e. 60.3% ,52.4% and 40.1% respectively. While the districts of Dungarpur (6.4%), Barmer (7.0%), Banswara (7.1%), Pratapgarh (8.3%) and Jalore (8.3%) exhibit very low level of urbanization. Districts having high rate of poverty are less urbanized and vice versa.*

**Keywords:** *urbanization, rajasthan, population, low, impact, pattern, environment, central, study, case.*

### Introduction

Today most people are traveling from rural areas to urban areas to seek employment opportunities and make their life better using the better society of Urban Areas. As per the data from the United Nations

Sustainable Development Report, 2019, almost half of the population of the world are living in the urban areas of different regions, states and countries. And it is also said that this urbanization is going to increase more by 2030.

Urbanization is a process where people leave the rural area for the betterment of their lives and move to urban areas. And this data as well as other data shows that urban areas such as cities and metropolitan cities lead to the economic growth of both people and the city and the country. And it is one of the factors to increase the GDP of the country too. According to UNISDR, by 2019, urban areas will lead 60% of the global GDP.[1,2]

Similar to the rest of the world urbanization is also taking place in different states of India. Rajasthan is one of the states of India where there are many rural areas and people from that rural area are moving to urban areas for employment and other similar purposes. If we have a look at the urbanization data according to the census 2011, India's urban population increased from 17.97% in 1961 to 27.81 % in 2001 to a furthermore percentage of 31.14% in 2011.

If we talk specifically about Rajasthan, it has increased dramatically from 16.28% in 1961 to 23.39% in 2001 to a percentage of 24.87% in 2011. The ratio shown is the ratio of people in urban areas to the total population of that particular region. In this case Rajasthan.

If we look at the numbers instead of percentage figures, in 2001, the total urban population of Rajasthan was 1.32 crores, out of which there were 69.39 lakhs females and 62.21 males. And subsequently, in 2011, the total urban population was increased to a value of 1.7 crores out of which 81.39 lakh female population and 89.09 male population.

Specifically in the male to female distinction males were always having dominion in Rajasthan urban areas in 2001 as well as in 2011. The percentage of the male population in 2001 was 52.92% and that of females in 2001 was 47.08%. Whereas in 2011 that of the male population was 52.26% and of females, it was 47.74%. We can see that there is a very minute change in the percentage of males and females in the urban areas. Moreover, the male percentage decreased and the female percentage increased with a small change.[3,4]

Jodhpur, popularly known as "Sun City" is also referred as the "Blue City" due to the light blue painted houses around the Mehrangarh Fort which is fortified by a wall with several gates. Jodhpur is the second largest city of Rajasthan; It is centrally situated at the distance of 335 kms from state capital, Jaipur and 200 kms from the city of Ajmer. Jodhpur is a popular tourist destination, featuring many palaces, forts and temples, set in the stark landscape of the Thar Desert. The city has expanded extensively outside the wall city over the past several decades. Due to the rapid urbanization, like other big cities of India, Jodhpur city is experiencing the problems of urbanization. Acute shortage of water supply, poor urban services, proliferating slums and shanty colonies underline realities of transformation in Jodhpur. Growing dissatisfaction among the people and deteriorating service delivery mechanisms is a sign of struggling urban lifestyle in Jodhpur city.[5,6]

Relief structures are representative of the topographical conditions of the region. Jodhpur district divided into three distinct physiographical units, namely, the alluvial plains. Escarpments, Ridges and Sand dunes. The western & north-western part of district is characterized by sand dunes. There is no perennial river in the district. However, there are two rivers in the district i.e. Luni and Mithri rivers, the Luni river, which flows in the district near Bilara. Main source of irrigation besides rainwater is wells and tube wells. The major and important minerals are available in the district is sand stone, lime stone, building stone, stone slab, flagstones, quartz & clays of various colours, dolomite and red color sandstone of the Jodhpur district is very famous and found in abundance.

## Discussion

Rapid growth of communities create new challenges in the developed world and one such challenge is an increase in food waste also known as urban food waste. Food waste is the disposal of food products that can no longer be used due to unused products, expiration, or spoilage. The increase of food waste can raise environmental concerns such as increase production of methane gases and attraction of disease vectors. Landfills are the third leading cause of the release of methane, causing a concern on its impact to our ozone and on the health of individuals. Accumulation of food waste causes increased fermentation, which increases the risk of rodent and bug migration. An increase in migration of disease vectors creates greater potential of disease spreading to humans. Waste management systems vary on all scales from global to local and can also be influenced by lifestyle. Waste management was not a primary concern until after the Industrial Revolution. As urban areas continued to grow along with the human population, proper management of solid waste became an apparent concern. To address these concerns, local governments sought solutions with the lowest economic impacts which meant implementing technical solutions at the very last stage of the process. Current waste management reflects these economically motivated solutions, such as incineration or unregulated landfills.[7,8] Yet, a growing increase for addressing other areas of life cycle consumption has occurred from initial stage reduction to heat recovery and recycling of materials. For example, concerns for mass consumption and fast fashion have moved to the forefront of the urban consumers' priorities. Aside from environmental concerns (e.g. climate change effects), other urban concerns for waste management are public health and land access.

- Literacy Rate: In Rajasthan, the literacy rate always seemed to increase from 1961 to 2011. In the urban areas of Rajasthan, the literacy rate was 79.70%, and that of rural areas was 61.4%. If we see the data of Rajasthan, the literacy rate in 2001 was 60.4% and the same in 2011 was 66.11%.
- Sex Ratio: In urban areas of Rajasthan this feature kept on increasing from 2001 to 2011. The sex ratio of Rajasthan in 2001 was 890 females per 1000 males. Subsequently, in 2011 it was 914 females per 1000 males. Overall, the sex ratio has increased. However, in the urban areas, it seemed to follow a balanced pattern.
- Population of Children: If we compare the data of the 2001 and 2011 censuses, it tells that the child population of complete rejection of children between the age of 0 to 6 years stayed constant during the 10-year duration. Whereas, in urban areas, it increased from a value of 20.61 lakhs to 22.35 lakhs, from 2001 to 2011 respectively.
- Popularity of Cities in Rajasthan: The biggest city in Rajasthan is Jaipur city, which has a 30.46 lakh population. Following it the next city with large urbanization is Jodhpur followed by Kota and at the end Bikaner. The lowest urban population is in a city named Banswara.[9,10]

To sum up, in India we can see people moving to urban areas for their family and their development purpose. As urban areas provide better living, better culture, better employment and many more. Speaking about Rajasthan if we compare the census of 1961, 2001 and 2011, we can see that the urbanization in cities of Rajasthan increased to form a percentage value of 17.97% to 27.81% to 31.14% respectively. And Jaipur became the most populous city with urban areas in Rajasthan. Followed by Jodhpur, Kota and then Bikaner and at last Banswara. Moreover, the literacy rate, sex ratio and child population also increased from 2001 to 2011. Overall, the urban areas are getting more and more developed in Rajasthan.

Urbanization is very interesting issue among academicians and planner. Now a days towns and small urban center continuously increasing. The world is undergoing the largest wave of urban growth in history. More than half of the world's population now lives in towns and cities. Tribal sub plan area of Rajasthan has very low urbanization in comparison to other areas of Rajasthan.

The sector development program (SDP) will complement past and ongoing efforts of the Government of Rajasthan to improve water supply and wastewater services to the residents of the state of Rajasthan. The SDP comprises (i) a program, financed by a policy-based loan, to support policy reforms, including institutional development and governance improvement in the urban sector in the state; and (ii) a project, financed by a project loan, to invest in the water distribution network in five project cities and sewerage systems in the six project cities

Jodhpur, one of the largest districts is situated in the western part of the Rajasthan state. The average elevation of the city from mean sea level is 250-300 meter. It is situated between to at north latitude and between to at east longitude, covering geographical area of 22850 sq. kms. It is bounded in the east by Nagaur district, West by Jaisalmer district, North by Bikaner districts and Barmer as well as Pali on Southern side. The Jodhpur city has good connectivity with the surrounding settlements anti major cities of India, by Road, Rail and Air transport. The NH-65, NH-112 and NH-114 passes through the city. [11,12] Jodhpur is the divisional headquarter of the North-western railway and important railway junction in western Rajasthan. The city is connected with railways to major Indian cities like Delhi, Mumbai, Kolkata, Chennai, Bangalore, Trivandrum, Pune, Kota, Kanpur, Bareilly, Hyderabad, Ahmedabad, Indore, Bhopal, Jabalpur, Dhanbad, Guwahati, Nagpur, Lucknow and Jaipur.

The DFC passes through Phulera-Ajmer-Marwar. About 58% area of the state falls within the influence area of the DMIC (Delhi Mumbai Industrial Corridor). Based on the strengths of specific regions across the state, five development nodes are identified in the influence area of DMIC. Jodhpur district is also in the influence zone of the Node-11; Pali-Marwar Industrial Area of the DMIC. In terms of prominence of economic activity. The Climate of Jodhpur is extremely hot and arid. The summer season is from April to June followed by rainy season from July to mid-September. The winter season is from November to March. The annual average rainfall is 366 millimeters, but this is not uniform throughout the year. The City receives most of the rain during monsoon reason. The temperature shoots up to in summer and drops to in winter. In the summer season the winds are predominant and generally moderate during rest of the year. During the winter season winds blow from northerly or northwesterly directions. By March southwesterly and westerly winds begin and these become predominant in the summer months. Wind direction mostly between south and west during the period June to September. Prevailing hot wind in is an important phenomena in summer, which is locally called as Loo.[13,14]

Urbanization may improve environmental quality as a result of numerous reasons. For instance, urbanization upsurges income levels which instigates the eco-friendly services sector and increases demand for green and environmentally compliant products. Furthermore, urbanization improves environmental eminence through superior facilities and better-quality living standards in urban areas as compared to rural areas. Lastly, urbanization curbs pollution emissions by increasing R&D and innovations. In his book *Whole Earth Discipline*, Stewart Brand argues that the effects of urbanization are primarily positive for the environment. First, the birth rate of new urban dwellers falls immediately to replacement rate and keeps falling, reducing environmental stresses caused by population growth. Secondly, emigration from rural areas reduces destructive subsistence farming techniques, such as improperly implemented slash and burn agriculture. Alex Steffen also speaks of the environmental benefits of increasing the urbanization level in "*Carbon Zero: Imagining Cities that can save the planet*", .

However, existing infrastructure and city planning practices are not sustainable. In July 2013 a report issued by the United Nations Department of Economic and Social Affairs warned that with 2.4 billion more people by 2050, the amount of food produced will have to increase by 70%, straining food resources, especially in countries already facing food insecurity due to changing environmental conditions. The mix of changing environmental conditions and the growing population of urban regions,

according to UN experts, will strain basic sanitation systems and health care, and potentially cause a humanitarian and environmental disaster.[15,16]

## Results

The occurrence of eutrophication in bodies of water is another effect large urban populations have on the environment. When rain occurs in these large cities, the rain filters down the pollutants such as CO<sub>2</sub> and other greenhouse gases in the air onto the ground below. Then, those chemicals are washed directly into rivers, streams, and oceans, causing a decline in water quality and damaging marine ecosystems.

Eutrophication is a process which causes hypoxic water conditions and algal blooms that may be detrimental to the survival of aquatic life. Harmful algal blooms, which produce dangerous toxins, thrive in eutrophic environments that are also rich in nitrogen and phosphorus. In these ideal conditions, they overtake surface water, making it difficult for other organisms to receive sunlight and nutrients. Overgrowth of algal blooms causes a decrease in overall water quality and disrupts the natural balance of aquatic ecosystems. Furthermore, as algal blooms die, CO<sub>2</sub> is produced, causing a more acidic environment, a process known as acidification.[17,18]

The ocean's surface also has the ability to absorb CO<sub>2</sub> from the earth's atmosphere as emissions increase with the rise in urbanization. In fact, it is reported that the ocean absorbs a quarter of the CO<sub>2</sub> produced by humans. This has been useful to the environment by decreasing the harmful effects of greenhouse gases, but also further perpetuates acidification. Changes in pH inhibit the proper formation of calcium carbonate, a crucial component for many marine organisms to maintain shells or skeletons. This is especially true for many species of molluscs and coral. Regardless, some species have been able to instead adapt or thrive in a more acidic environment

The Indian Subcontinent witnessed its first urbanization in the middle of the third millennium BC as a result of continued cultural development that started around the beginning of seventh millennium BC at Mehargarh on the Kachi Plains. Extensive research in other parts of India, revealed the presence of contemporary early farming cultures, with characteristic rural features. The recent archaeological evidence from Bagor, Balathal and Gilund (Mewar, Rajasthan) suggests independent origin of a settled life style around the middle of 4th millennium BC contemporary with the Pre/Early Harappan cultures of western Indian subcontinent. These sites have brought to light traces of infant urbanization or pro-urbanisation associated with the Ahar culture of Mewar. Available evidence demonstrates the influence of Harappan urbanization on Chalcolithic sites, though on a much smaller scale as a result of interactions and trade contacts between the two by the middle of the 3rd millennium BC.[19,20]

Thirty-five percent of the total population in Rajasthan will live in urban areas by 2050. The population projection made by the National Commission for Population states that demography of desert state is fast tilting towards urban areas. However, the pace of urbanization is much lower than other states with the same demographic compositions.

The urban populace shot up from 23.9% in 2001 to 24.2% as on March 1, 2017. The migration will register a slight rise of 24.4% by 2022. The populace in urban centres will show the sudden acceleration from 2022 onwards with 25% and jump to 29.1% in 2026. The phenomenal rise of 4% in four years from 2025-2026 can be attributed to the high growth rate in early 2000.

“The rise of 4% population in urban areas in four years against 2% rise in the 12 years from 2010-2022 proves that Rajasthan has seen the slowest growth in urban population. The reason being a self-sustained model in villages followed by the development of suburban towns at every district had restricted the migration,” said Laxmi Thakor, head of the department, population studies, MDS University, Ajmer. Raising alarm over the projections, KB Kothari, former policy advisor and planner, UNICEF, New York,

says, “State needs to pull up its infrastructural needs in urban centres to meet the mass exodus of population from the rural areas. The government needs to create suburban cities at strategic locations else cities like Jaipur, Udaipur, Kota and Jodhpur will see the fast demographic change,” said Kothari.[21,22]

Reports say that 28%-32% of the population in the urban areas live in slum areas in the state. “Migration from the rural areas will add to the urban poor kitty . It will put the burden on already stressed facilities like medical, community development and education. The idea is to build capacity of suburban areas like it was done in Noida and Gurugram. Both the cities sharing the extended urban space of Delhi,” said Kothari.

A SMART city document related to Udaipur city points out that city receives over a lakh floating population from villages in a range of 50 kms. Those beyond 50 kms add up in the slum areas. “Our study says that if a network of roads can be created, the population which could add burden to the urban space will turn into a floating population,” said Reepunjaya Singh, professor, urban development, Rajasthan Institute of Public Administration.

Meanwhile, the population of Rajasthan will also shoot up to 8.15 crore by 2026. The population of the state as on March 1 was estimated to be around 7.39 crore with 3.86 men and 3.53 women. Every year, the population is rising by 10 lakh. The growth of population will see a slight fall between 2025 and 2026.

The industrial development in Jodhpur has led to the economic growth of the city. Jodhpur is the third largest industrialized district of the Rajasthan state. The Handicraft industry has been the largest industry in the city. Many workers are in manufacturing of motor parts, textiles, metal utensils, bicycles and ink, handloom and sport goods. Lot of cottage industries are involved in manufacturing of glass bangles, cutlery, carpet, marble products and traditional items of tourist interests such as Tie and Die textile products. There were 6806 industrial units in 2000, which are increased to 6983 in the year 2001. Total area under industrial use in 2001 was 1968 acres which is 12.62% of the developed area. RIICO have developed different industrial areas in Jodhpur like Basani, Boronada, Mandore, Bhagat ki Kothi and Pal.

Housing is an important sector which provides security to the people at one hand and at other hand employment opportunities in the construction sectors. The population of Jodhpur city as per 2011 census is 10,918 persons and 192494 households with 5.4 average household size within Municipal area in Jodhpur city. There are 17983 residential houses in Jodhpur city.[23,24]

High cost of urban land and lack of sufficient affordable low cost housing for the urban poor has resulted in the growth of slums. In the past there have not been adequate efforts on the part of Rajasthan Housing Board(RHB), Urban Improvement Trust(UIT) and Government of Rajasthan to provide sufficient low cost housing/ land for the urban poor. Non availability of housing to large number of shanty colonies with poor hygienic conditions.

Study shows that out of 217 slums in Jodhpur, 37 slums are fully & partially settled on forest land. Over the last two decades, Jodhpur has witnessed significant increase in its slum population. Majority of the population living in these slums are a migrant from the adjoining areas comes to Jodhpur in search of better livelihood and employment opportunities. The total population of the slums in Jodhpur is 2, 65, 443. The total numbers of households in slums are 46,364. The total numbers of houses are 43376 out of which 29845 (68.8%) houses are pucca houses, 8337 (19.2%) are semi pucca houses and remaining 5194 (12.0%) houses are Katcha houses. From the above analysis it is evident that there is a shortage of 2988 houses in slums.

## Conclusions

Urbanization forms one of the most important watersheds in the phases of historical growth and events. A study of urbanization, it's economic, political, social and religious linkages and other variables is a field yet untapped. An attempt has been made in this book to discuss some aspects of urbanization and its role in shaping history. Similarly, trade routes also shaped the economy and polity of a certain period. Major

trade route became centers of urban units. Inter-relations of urbanization and trade-route forms the major focus of the book, which is an outcome of the ideas exchanged at the National Seminar on “Urbanization and Trade Routes : With Special Reference to Rajasthan”, Organized by Department of History, Jai Narain Vyas University, Jodhpur. City Managers’ Association, Rajasthan is a registered society and membership fees based organization. All urban local bodies and development authorities and institutions working in the area of urban development are the institutional members of the association. Governing Board of the association which is called as ‘Executive Committee’ comprising of 35 people from various urban departments and ULBs across the state. Transformation refers to a process or instance of change in the myriad cultural, economic, political and social forces that shape a society. It entails change in production and distribution systems, social relations and cultural practices which transform conditions in the local community. The process of transformation has varied meanings for different strata of society according to their phase of development. Its course becomes even more interesting when studied in relation to the tribal groups as firstly, they are isolated and little is known about them; secondly, these societies are highly marginalized and exploited by the subjects of mainstream society; thirdly, they are most neglected mainly because of their distinct and little known cultures and lastly, any little change in their social or economic sphere can never be studied in isolation but has to be studied in a holistic fashion. Rajasthan is the largest state in India with tribes forming an important segment of its society. The tribes in the state are dispersed across the state living in different physical environments, exhibiting varied lifestyles, social habits, religious beliefs and cultural patterns. The issue becomes even more appealing and complex in case of Rajasthan as some tribes are segregated while others are intermingling with the non-tribal population.[24]

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