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The Effects of Urbanization on Natural Resources in Rajasthan

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ABSTRACT: 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%. The migration will register a slight rise of 24.4%. The populace in urban centres will show the sudden acceleration from this year onwards with 25% and jump to 29.1% in future. The phenomenal rise of 4% in four years 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 2010-2012 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.

KEYWORDS: urbanization, Rajasthan, natural resources, effects, population, smart city, pollution

I. INTRODUCTION

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.¹

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.²⁴ Meanwhile, the population of Rajasthan will also shoot up to 8.15 crore in future. 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.² The growth of population will see a slight fall.

In general, Urbanization is the transformation of unoccupied or sparsely occupied land into densely occupied cities. Urban areas can grow from increases in human populations or from migration into urban areas. Urbanization often results in deforestation, habitat loss, and the extraction of freshwater from the environment, which can decrease biodiversity and alter species ranges and interactions. Human activities in urban areas, such as the burning of fossil fuels and industrial waste also increases pollutants in the environment that can affect the health of humans and other species.³

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Urbanization can impact Rajasthan in a variety of ways, including:

- Causing habitat loss and deforestation, which can decrease species populations, ranges, biodiversity, and alter interactions among organisms.
- The evolution of life cycles and traits that help species survive and reproduce in disturbed or altered ecosystems. For example, some bird populations living in urban environments have altered their beak shape to be able to more effectively eat the seeds in human-made bird feeders.
- The transmission of diseases. Humans living in densely populated areas can rapidly spread diseases within and, with the ease and volume of transportation, among populations.⁴
- Increasing the transport of invasive species, either intentionally or by accident, as people travel and import and export supplies in and out of cities. Urbanization also creates disturbed environments where invasive species often thrive and outcompete native species. For example, many invasive plant species thrive along strips of land next to roads and highways.
- Increasing regional temperatures. The use asphalt and other dark colored materials in urban areas increases the amount of sunlight absorbed. This creates urban heat islands, whereby cities experience higher temperatures than surrounding areas.
- Paving land with concrete can increase water runoff, increasing erosion and decreasing soil quality. This can also decrease water quality by increasing sediment and pollutants in rivers and streams.⁵
- Changing how much and how fast water cycles through the biosphere and atmosphere. Trees and other plants return a significant proportion of precipitation to the atmosphere via a process called transpiration. Thus, the loss of plant productivity and biomass decreases the amount of water cycling through the biosphere and atmosphere, while increasing plant productivity and biomass increase the amount of water cycling.⁶

II. DISCUSSION

Major threats due to urbanization in Rajasthan:-

- Intensive urban growth can lead to greater poverty, with local governments unable to provide services for all people.
- Concentrated energy use leads to greater air pollution with significant impact on human health.
- Automobile exhaust produces elevated lead levels in urban air.
- Large volumes of uncollected waste create multiple health hazards.
- Urban development can magnify the risk of environmental hazards such as flash flooding.²⁵
- Pollution and physical barriers to root growth promote loss of urban tree cover.
- Animal populations are inhibited by toxic substances, vehicles, and the loss of habitat and food sources.⁷

However we can have solutions to problems:-

- Combat poverty by promoting economic development and job creation.
- Involve local community in local government.
- Reduce air pollution by upgrading energy use and alternative transport systems.
- Create private-public partnerships to provide services such as waste disposal and housing.⁸
- Plant trees and incorporate the care of city green spaces as a key element in urban planning.

Urban populations of Rajasthan interact with their environment. Urban people change their environment through their consumption of food, energy, water, and land. And in turn, the polluted urban environment affects the health and quality of life of the urban population. People who live in urban areas have very different consumption patterns than

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residents in rural areas.¹⁰ For example, urban populations in Rajasthan consume much more food, energy, and durable goods than rural populations. In Rajasthan during the 1970s, the urban populations consumed more than twice as much goats as the rural populations who were raising them.¹¹ With economic development, the difference in consumption²³ declined as the rural populations ate better diets.²⁶ But even a decade later, urban populations had 60 percent more meat in their diets than rural populations. The increasing consumption of meat is a sign of growing affluence in India where many urban residents are vegetarians, greater prosperity is seen in higher consumption of milk.⁹

Urban populations in Rajasthan not only consume more food, but they also consume more durable goods. In the early 1990s, their households in urban areas were two times more likely to have a TV, eight times more likely to have a washing machine, and 25 times more likely to have a refrigerator than rural households.¹² This increased consumption is a function of urban labor markets, wages, and household structure. Energy consumption for electricity, transportation, cooking, and heating is much higher in urban areas than in rural villages. For example, now in Rajasthan urban populations have many more cars than rural populations per capita. Economies, therefore, often become more efficient as they develop because of advances in technology and changes in consumption behavior.²⁷ The urbanization in Rajasthan populations, however, will increase aggregate energy use, despite efficiencies and new technologies. And the increased consumption of energy is likely to have deleterious environmental effects.¹⁰

Regions downwind from large industrial complexes also see increases in the amount of precipitation, air pollution, and the number of days with thunderstorms.¹⁷ Urban areas affect not only the weather patterns, but also the runoff patterns for water. Urban Rajasthan would reduce the infiltration of water and lower the water tables.²² This means that runoff occurs more rapidly with greater peak flows. Flood volumes increase, as do floods and water pollution downstream. Many of the effects of urban areas on the environment in Rajasthan are not necessarily linear.¹¹

III. RESULTS

The urban environment in Rajasthan have problems include inadequate water and sanitation, lack of rubbish disposal, and industrial pollution.¹⁸ Unfortunately, reducing the problems and ameliorating their effects on the urban population are expensive. The health implications of these environmental problems include respiratory infections and other infectious and parasitic diseases.²¹ Capital costs for building improved environmental infrastructure — for example, investments in a cleaner public transportation system such as a subway — and for building more hospitals and clinics are higher in cities,¹² where wages exceed those paid in rural areas. And urban land prices are much higher because of the competition for space. But not all urban areas have the same kinds of environmental conditions or health problems. Some research suggests that indicators of health problems, such as rates of infant mortality, are higher in cities that are growing rapidly than in those where growth is slower.¹⁹

Many towns that grew up near rivers have succeeded in cleaning up the waters they befouled with industrial development.²⁰ But cities in Rajasthan at the beginning of development generally have less wealth to devote to the mitigation of urban environmental impacts. And if the lack of resources is accompanied by inefficient government, a growing city may need many years for mitigation. Strong urban governance in Rajasthan is critical to making progress. But it is often the resource in shortest supply.²⁰ Overlapping jurisdictions for water, air, roads, housing, and industrial development frustrate efficient governance of these vital environmental resources. The lack of good geographic information systems means that many public servants are operating with cataracts.²⁸ The lack of good statistics means that many Rajasthan urban indicators that would inform careful environmental decision making are missing.²¹

When strong urban governance is lacking, public-private partnerships can become more important.²² These kinds of partnerships can help set priorities that are shared broadly, and therefore, implemented. Some of these public-private partnerships have advocated tackling the environmental threats to human health first.¹³ “Reducing soot, dust, lead, and microbial disease presents opportunities to achieve tangible progress at relatively low cost over relatively short periods,” concluded conferees on environmentally sustainable development.²³ But ultimately Rajasthan urban environmental priorities that produce chronic problems for both people and the environment over the long term that also have to be addressed.¹⁴

Much of the research that needs to be done on the environmental impacts of urban areas in Rajasthan has not been done because of a lack of data and funding. Most of the data that exist are at a national level. But national research is too

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coarse for the environmental improvement of urban areas in Rajasthan.¹⁵ Therefore, data and research at the local level need to be developed to provide the local governments with the information they need to make decisions. Certainly the members of the next generation, the majority of whom will be living in urban areas, will judge us by whether we were asking the right questions today about their urban environments. They will want to know whether we funded the right research to address those questions. And they will also want to know whether we used the research findings wisely.¹⁶

IV. CONCLUSIONS

Climate change occurring may negatively impact vital economic and social infrastructures, worsening the quality of life in urban Rajasthan, where most of these amenities are located. The most affected populations are the urban poor – i.e., slum residents– who usually live in desert areas near polluted grounds, in unstable structures vulnerable to destruction.¹⁷

- Over Exploitation of Natural Resources: the increased population density is driving up the urban ecological footprint in Rajasthan with the rising rate of consumption of natural resources (such as water, energy, fossil fuel, etc.). People's expensive lifestyle makes the immediate compensation of natural resources difficult to attain, causing problems such as scarcity of drinking water, power cuts due to excessive use of electricity, etc.
- Air Pollution: anthropogenic activities carried out in many industries release pollutants such as carbon monoxide, oxides of nitrogen, toxic metals and others. These, when released in the air, cause a chemical reaction, resulting in acid rain.¹⁸
- Noise Pollution: vehicles, social functions and industries promote noise pollution in urban areas, which interferes with breeding cycles and is even rushing the extinction of some species.²⁸
- Unusual Rise in Temperature: the unplanned construction of large buildings in urban areas absorbs solar radiation, which is emitted in the form of heat radiations later in the day. Global warming is likely to reach 1.5°C.²⁹
- Management of Solid Waste: urban areas consume large quantities of material and, consequently, release a lot of solid waste (including municipal, industrial and hazardous wastes), creating poisonous gases.³⁰
- Development of Slums: slums are defined as the areas within cities and towns without basic facilities. Due to the lack of proper sanitation, sewages flow chaotically, being drained into neighboring streams, rivers, lakes, or even seas. This contamination of water causes diseases – like cholera or enteric fever – which can be a serious threat to the population of Rajasthan¹⁹

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