

A Geographical Analysis of Urban Sprawl in Dhule City (Maharashtra)

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Abstract:

Urban sprawl is the process by which cities or metropolitan areas expand outward, Urban sprawl is typically driven by factors like population growth, increased demand for housing, and economic development, often without adequate land-use planning and zoning regulations. It can lead to challenges such as higher transportation costs, loss of green space, and environmental degradation. In the present research paper, we studied geographically urban sprawl and its impact in Dhule City. Dhule City are important urban area located in the Maharashtra state of India.

A) Introduction:

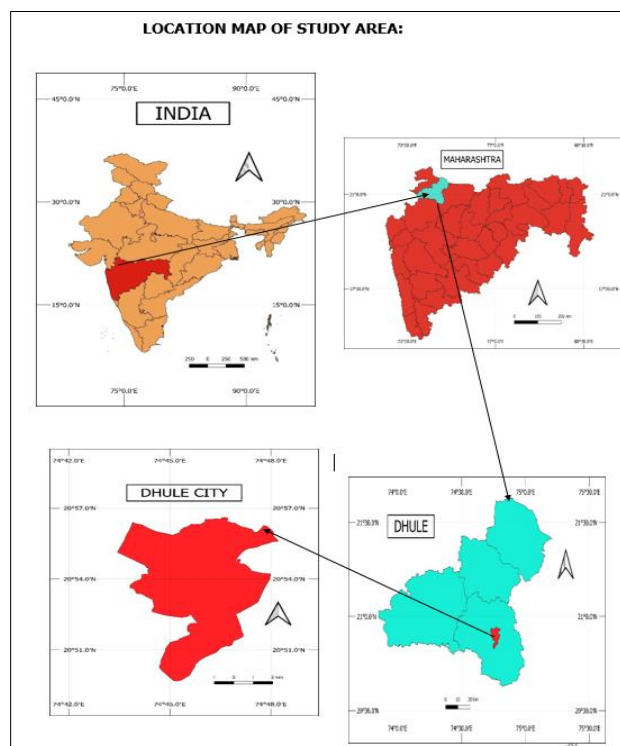
Urban sprawl in Dhule, a prominent city in Maharashtra, has been an ongoing process, marked by the unplanned and rapid expansion of urban areas into neighboring rural or undeveloped lands. This has led to significant geographical, economic, and social changes. Dhule is recognized as one of the few well-planned cities in India, with its town planning executed by Sir Mokshagundam Visvesvaraya.

The city has evolved into a prominent hub for textiles, edible oil, and power looms, benefiting from its strategic location at the junction of National Highways NH-3, NH-6, and NH-211. Additionally, Dhule is part of the Delhi Mumbai Industrial Corridor Project, aiming to develop new industrial

cities as 'Smart Cities' and integrate next-generation technologies across infrastructure sectors. Population growth, Economic Development, improvement in Transportation network, education are the factors responsible to urban sprawl, It can lead to challenges such as higher transportation costs, loss of green space, and environmental degradation.

B) Location and Study Area:

Dhule City is the headquarter of The Dhule district, Dhule District is located in the northern part of the Maharashtra state in the valley of Tapi & Panzara River. The geographical coordinates of Dhule are 20.9°N 74.78°E.



C) Aims and Objectives:

The main aim of a present research paper is to study urban sprawling of Dhule city geographically and its causes and effects. Following are the objectives of the studies

- 1) Geographical Study of Urban Sprawl in Dhule City
- 2) Population Growth of Dhule City

D) Research Methodology :

Primary Data are collected through Field Surveys, Satellite Imagery, secondary data are collected through Census Data, Land Use Maps, Government Reports, Published Studies.

Remote Sensing and GIS techniques are used to detect changes in land cover, built-up areas, and vegetation over time. Statistical techniques are used to analyze the population data.

E) Geographical Analysis of Urban Sprawl in Dhule City :**1) Population Growth of Dhule City :**

Population of Dhule City as 1951 Census is 76880 people , in 1961 census it increases by 28.63 % recorded population is 98893 people , according to 1971 census 38.66 % growth are recorded and population is 1,37,129 people , 1981 census population of Dhule city was 1,93,017 peoples , in 1991 census it was increases to 2,48,748 peoples , in 2001 census population of Dhule city was 3,26,158, in 2011 census it was increases to 3,75,559

The population of Dhule city has steadily grown throughout the decades, showing a consistent increase. The growth reflects urbanization and expansion due to the city's developing infrastructure and economy.

Following table shows the growth of the population

Sr.No.	Decade	Population	Growth in %
1	1951	76880	----
2	1961	98893	28.63
3	1971	137129	38.66
4	1981	193017	28.95
5	1991	248748	22.40
6	2001	326158	23.73
7	2011	375559	13.15
8	2021(Estimated)	433217	13.30

Source: Census of India

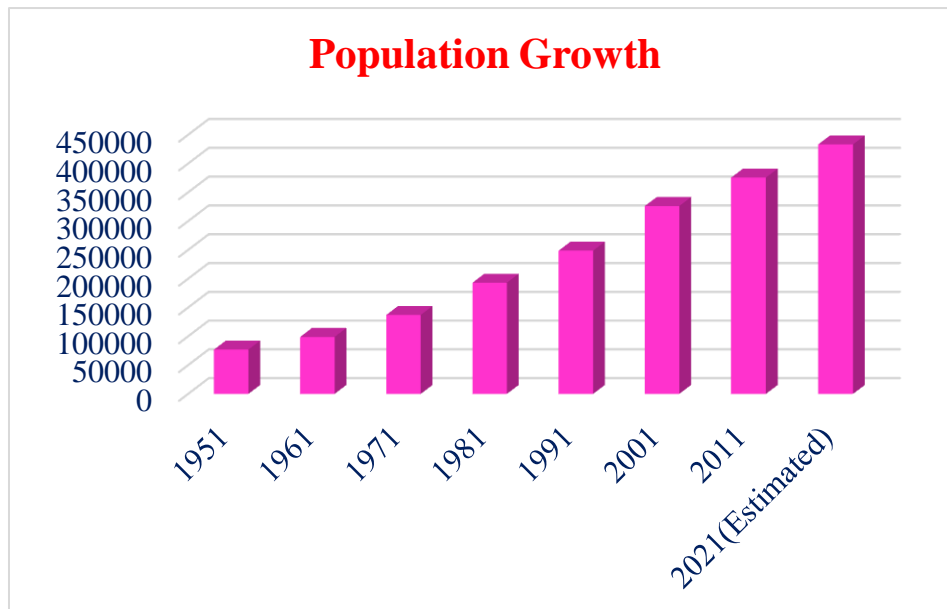


Chart : Population Growth

2) Urban Sprawl in Dhule City :**I) Causes of Urban Sprawl in Dhule**

Population growth, industrialization, and the lack of effective urban planning are the main drivers of urban sprawl in Dhule.

- i) Population Growth: Dhule has witnessed steady population growth, with the city serving as a regional hub for commerce and trade. The increasing population, particularly due to

migration from rural areas and nearby towns, has created a surge in demand for housing and services, pushing the city's boundaries outward.

- ii) Economic Development: As Dhule develops into an industrial and commercial hub, more industries, warehouses, and small-scale factories have been established in and around the city. This growth has created job opportunities,

attracting migrants who need housing, resulting in an expanded urban area.

- iii) **Infrastructure Development:** Improved transportation networks, particularly national highways and better connectivity with nearby cities, have made it easier for people to commute from peripheral areas. The development of roads, railways, and increased access to basic amenities has spurred the growth of residential areas in previously rural zones.
- iv) **Lack of Urban Planning:** The lack of comprehensive urban planning has allowed unregulated and unplanned growth on the city's periphery. Weak zoning laws and inadequate enforcement of land-use policies have led to the conversion of agricultural land into residential and commercial spaces, contributing to urban sprawl.

II) Patterns of Urban Sprawl

Urban sprawl in Dhule is characterized by the outward spread of residential, commercial, and industrial areas into surrounding rural land.

The city's expansion follows a horizontal growth pattern, with low-density, suburban-style residential areas replacing open land, agricultural fields, and natural habitats. These developments are often scattered and disconnected, leading to fragmented urban spaces.

- i) **Suburbanization:** The growth of residential areas on the outskirts has resulted in suburbanization, where affluent populations move to newly developed areas on the periphery, while central areas become more congested. This trend increases the city's spatial extent but leads to less efficient land use.
- ii) **Industrial Expansion:** As Dhule's economy continues to expand, industrial zones have increasingly encroached upon rural areas, particularly along transportation corridors, contributing to sprawl.
- iii) **Increased Vehicle Dependency:** The spread of residential neighbourhoods and lack of compact

development has created car-dependent areas, with long commutes for residents, increasing traffic congestion and pollution.

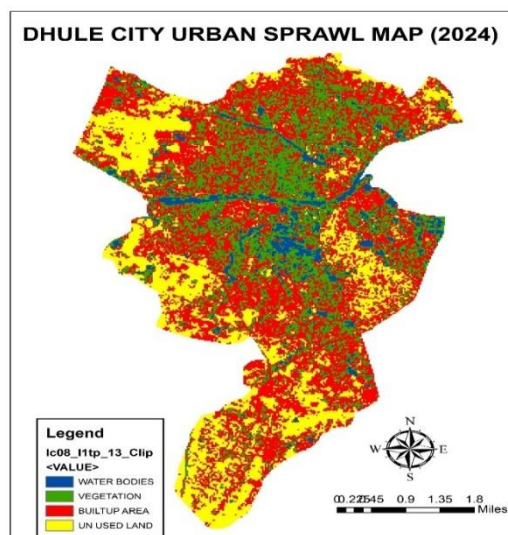
Impacts of Urban Sprawl

III) The impacts of urban sprawl in Dhule :

- i) **Environmental Degradation:** Urban sprawl leads to the loss of valuable agricultural land, increased deforestation, and degradation of natural ecosystems. The conversion of green spaces into built-up areas reduces biodiversity and contributes to environmental imbalances.
- ii) **Pressure on Infrastructure:** Sprawling areas often lack proper infrastructure, including water supply, sewage systems, and waste management. This leads to poor living conditions in informal settlements and strains existing city services.
- iii) **Traffic and Congestion:** The extended geographical spread of the city has resulted in traffic congestion, with inadequate public transport options in suburban areas, leading to increased pollution and longer commuting times.
- iv) **Social Inequality:** Urban sprawl has resulted in uneven development, with wealthier populations moving to newly developed suburban areas, while lower-income groups remain in congested, underdeveloped urban zones. This creates a socio-economic divide within the city.

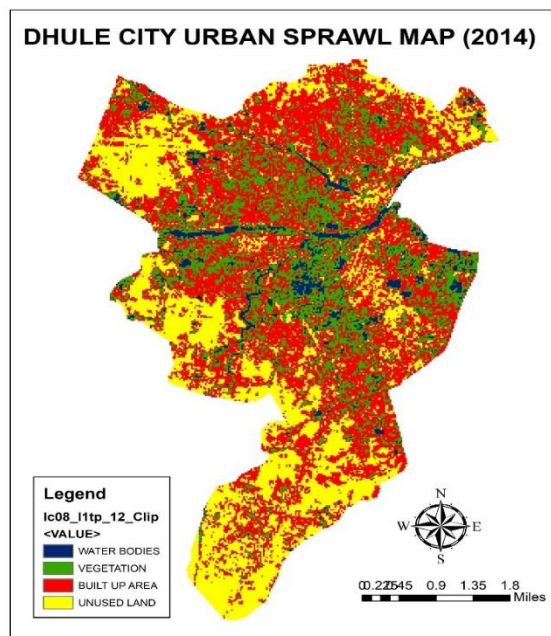
IV) Managing Urban Sprawl

To manage urban sprawl in Dhule, effective urban planning and policy implementation are essential. A comprehensive master plan that promotes vertical development, mixed-use areas, and efficient public transport systems would help prevent the unchecked spread of urbanization. Strengthening zoning laws, encouraging high-density housing, and ensuring equitable infrastructure development are also critical measures to mitigate the negative impacts of sprawl.



In conclusion, while urban sprawl in Dhule has provided economic opportunities and housing for the growing population, it has also introduced significant environmental and social challenges.

Sustainable urban planning and thoughtful management are necessary to guide Dhule toward a more organized, livable, and environmentally sustainable future.



Source : USGS , Landsat 8 , OLI

F. Conclusion :

Urban sprawl in Dhule City presents significant challenges in terms of environmental degradation, infrastructure strain, and social inequality. The total area of Dhule city has expanded to approximately 137 square kilometres due to the inclusion of surrounding villages and the growth of the Dhule Municipal Corporation (DMC) limits. However, with effective urban planning, regulation, and sustainable growth strategies, Dhule can manage its expansion in a way that minimizes negative impacts and promotes a higher quality of life for its residents. By focusing on integrated development, better use of space, and a more balanced approach to urban growth, Dhule can evolve into a well-planned, sustainable urban centre.

References:

1. Dhule District Census Handbook
2. "Urban Sprawl: A Comprehensive Reference Guide" by David A. I. R. (Editor)
3. "The Geography of Urbanization" by Peter Hall and Uwe Schröder
4. "Urban Sprawl and Public Health: Designing, Planning, and Building for Healthy Communities" by Howard Frumkin, Lawrence Frank, and Richard Jackson
5. "The Urban Sociology Reader" edited by Jan Lin and Christopher Mele
6. "Cities and Urban Life" by John Macionis and Vincent Parrillo
7. "Indian Urbanization" by T.R. Jain
8. "Urban Planning and Design: A Guide to the Profession" by Alexander R. Cuthbert

Asst. Prof. Premraj Patil

9. "The Urban Revolution" by Henri Lefebvre
10. "Urbanization and Urban Systems in India" edited by N. V. P. R. Reddy and T. R. Jain
11. "Sustainable Urbanization: The Future of Cities in India" by Prakash Bhandari and Amit Gupta