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A Geographical Study of General Land Use In Pune District

Smt. Sangita Subhash Bharati
Hon.B.J.Arts, Commerce and Science College Ale, Tal-Junnar Dist-Pune
Email: bharati.sangita@gmail.com

Abstract:

Pune District has undergone a significant transformation in its land use patterns, driven primarily by rapid urbanization, population growth, and economic development. Historically, the district was characterized by a dominance of agricultural and forest lands. However, over the past few decades, there has been a considerable shift toward non-agricultural uses, particularly built-up areas for residential, commercial, and industrial purposes. This paper examines the spatial distribution of land use in Pune District, the changing landscape of Pune, and offers insights for sustainable land management and future policy interventions.

Keywords: Land Use, Land Cover, Pune District, Urbanization.

Introduction:

Land use and land cover (LULC) analysis is a critical component of geographical and environmental studies, as it provides a framework for understanding the human-environment relationship. Pune District, located in the state of Maharashtra, India, is a prime example of a region experiencing profound LULC changes. Situated on the leeward side of the Sahyadri mountain range, Pune has emerged as a major IT and industrial hub, attracting a large influx of population. This rapid demographic and economic growth has put immense pressure on land resources, leading to a visible shift from traditional land uses to urban and industrial ones. This study aims to provide a detailed geographical analysis of this transformation, exploring the historical trends, current patterns, and future implications of land use in the district.

Objective:

To Study of General Land Use in Pune District.

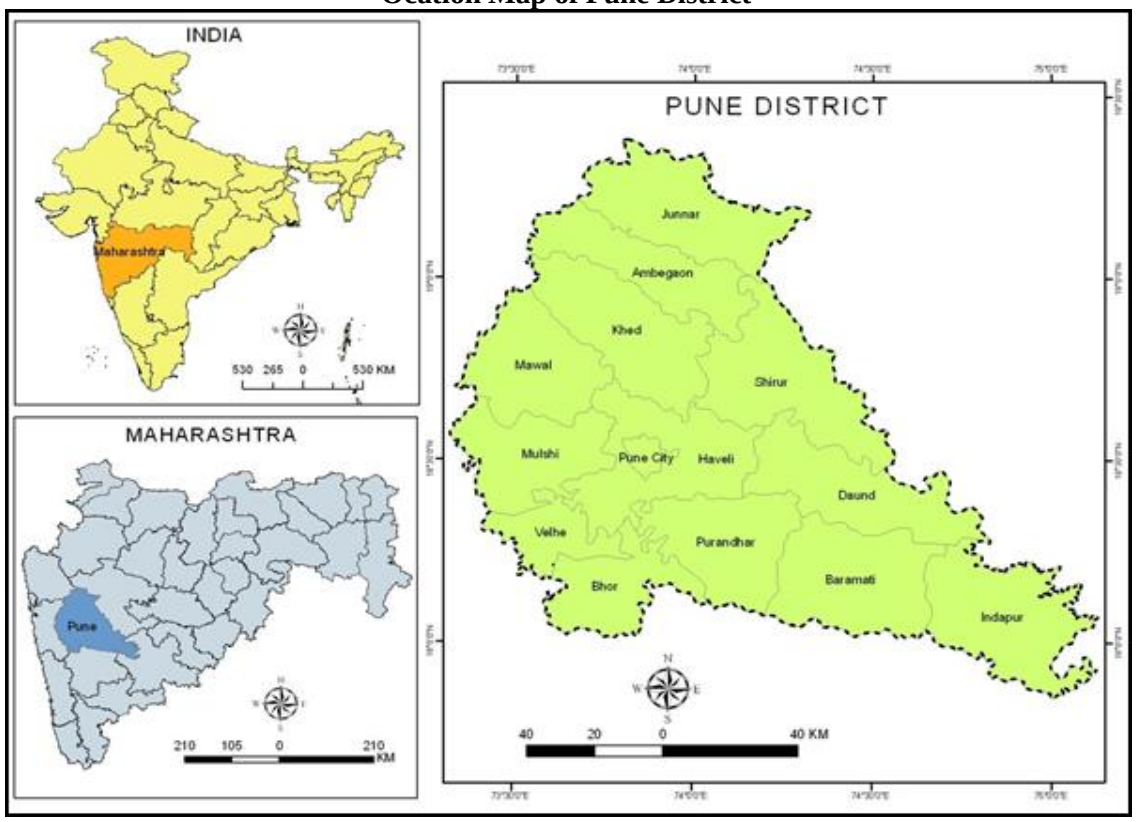
Database and Methodology:

The present study generally depends on the secondary data. Data Collected through the District Statistical Department, Censes handbook of Pune District, and Socio-Economic Review of Pune District.

Study Area:

Pune district lies between 17º 54' N and 19º 24' N latitudes and between 73º 19' E and 75º10' E Longitudes Pune district occupies an area of 15,642 km2, which is 5.10 percent of the total geographical area of the state. Out of 15021 sq. km. area falls under rural and 621 km2 falls under urban area. The landscape of Pune district is spread triangularly in western Maharashtra at the foothills of the Sahyadri range and is divided into three parts: Ghatmatha, Maval and Desh. Pune district is bounded by Ahmadnagar district in the northeast, Pune district in the southeast, Satara district in the south, Raigad district in the west and Thane district in the northwest.

Ocation Map of Pune District



According to the 2011 India Census, Pune district had a total population of 94.29 lakhs, a share of 8.39 percent of the total population of Maharashtra. Of the total population for the 2011 census, 60.99 percent live in urban areas of the district and 39.01 percent of the population lives in rural village areas. Pune district has 2 municipal corporations, 3 boards and 14 tehsil's namely Ambegaon, Baramati, Bhor, Daund, Haveli, Pune city, Indapur, Junnar, Khed, Maval, Mul shi, Purandar, Shirur and Velha.

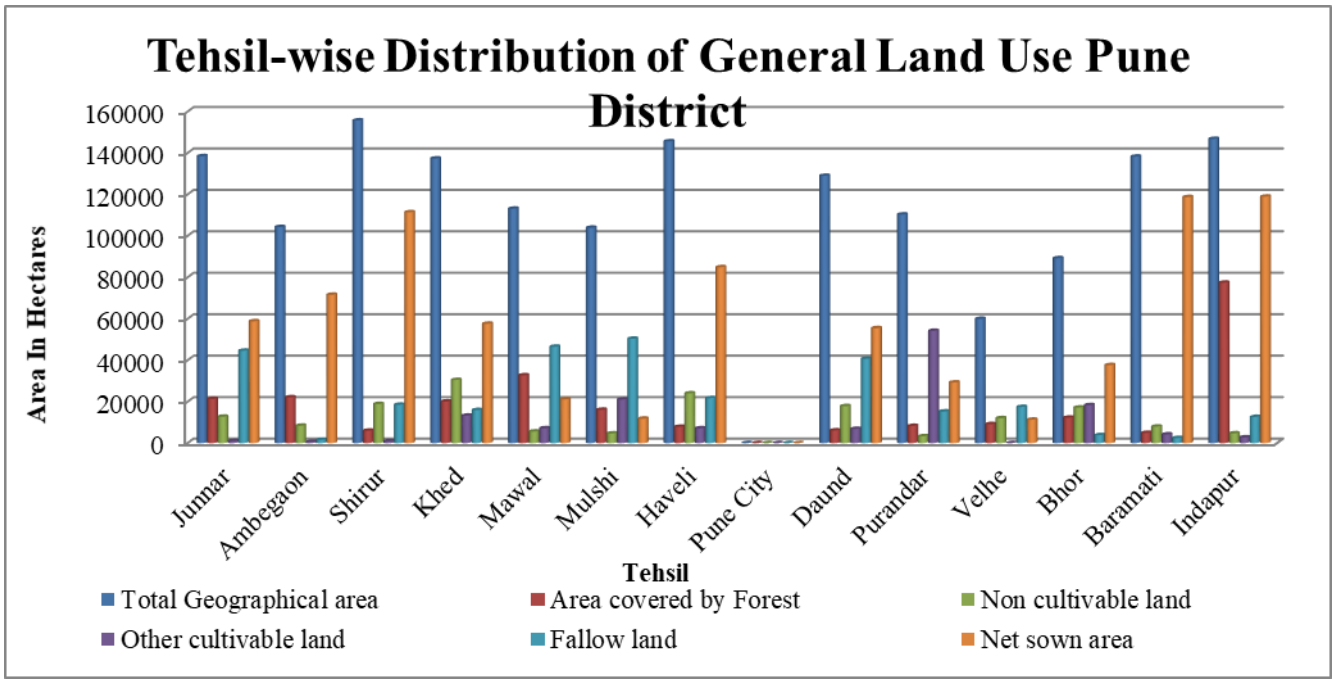
General Land Use:

Technical Committee on Co-ordination of Agricultural Statistics (T.C.C.A.S.) suggested standard classification of the total land area geographically available for major uses were categorised in 1950. An earlier appraisal of all land use categories in imperative, they are balancing to each other. An extension of any one category inevitably results in an advance upon the others. As such the various mechanisms of land use have been taken into deliberation and accordingly classified by the Government of India 1) Area Covered by Forest (2) Non cultivable Land (3) Other Cultivable Land (4) Fallow Land (5) Net sown area (6) Double Cropped Area (7) Gross Cropped Area.

Table
Tehsil-wise Distribution of General Land Use Pune District (Area In Hectares)

Sr. No	Tehsil	Total Geographical area	Area covered by Forest	Non cultivable land	Other cultivable land	Fallow land	Net sown area
1	Junnar	138452	21338	12735	974	44604	58800
2	Ambegaon	104275	22100	8389	600	1600	71586
3	Shirur	155727	6019	18877	912	18510	111409
4	Khed	137354	20079	30463	13248	15965	57600
5	Mawal	113135	32736	5592	7155	46522	21130
6	Mulshi	103931	16100	4669	21008	50362	11791
7	Haveli	145617	7864	24018	7142	21698	84895
8	Pune City	0	0	0	0	0	0
9	Daund	128986	6126	17849	6876	40677	55458
10	Purandar	110313	8301	3302	54193	15263	29254
11	Velhe	59955	9177	12019	16	17444	11300
12	Bhor	89234	12285	17146	18310	3851	37642
13	Baramati	138248	4931	7951	4200	2451	118715
14	Indapur	146791	77433	4723	2751	12623	118951
Total Pune District		1562018	176799	167733	137385	291569	788531

Source: 1. Socio-Economic Review and District Statistical Abstract, Pune District 2019.



Based on the provided data, Pune District's total geographical area is 1,562,018 hectares, with its land use divided into five main categories. The dominant land use is **Net Sown Area**, accounting for the largest portion at 788,531 hectares, indicating the district's significant agricultural activity. This is followed by **Fallow Land** at 291,569 hectares, showing that a considerable amount of land is either left uncultivated for a season or for a longer period. **Area covered by Forest** stands at 176,799 hectares, suggesting a notable presence of forest cover, particularly in certain tehsils. The district also has 167,733 hectares of **Non-cultivable land** and 137,385 hectares of **other cultivable land**.

Among the tehsils, **Indapur** has the highest net sown area (118,951 hectares), followed closely by **Baramati** (118,715 hectares), highlighting their importance as the agricultural heartlands of the district. Conversely, tehsils like **Mawal** and **Mulshi** have significantly lower net sown areas,

likely due to their hilly terrain, and instead have a larger proportion of forest cover and fallow land, respectively. **Junnar** has the highest area of fallow land, at 44,604 hectares. The data for **Pune City** shows a value of zero for all categories, which is likely a data anomaly or a way to categorize it as a completely urbanized area where these land use categories are not applicable. The overall distribution shows a clear distinction between the predominantly agricultural eastern tehsils and the more geographically diverse western tehsils.

Land Use Pattern and Dynamics:

Pune District's land use has undergone a major transformation, primarily driven by rapid urbanization and population growth. The most notable change is the significant expansion of Built-Up Area, which has been converting agricultural and barren lands, particularly in response to the development of the IT and automobile sectors in areas like Hinjawadi. This expansion has led to a notable decrease in Agricultural Land, threatening food security and rural livelihoods, despite some eastern tehsils still relying heavily on farming. Forests and Vegetation have seen mixed trends, with some localized increases in green cover being overshadowed by a general loss due to urban and infrastructural development, especially in peri-urban areas. Similarly, Barren and Uncultivable Land has decreased as it's been converted for both agricultural and urban uses. Finally, while the area of Water Bodies has changed with the construction of dams and reservoirs, these resources are increasingly threatened by pollution from urban and industrial waste, highlighting the environmental challenges of the district's rapid development.

Impacts of Land Use Change:

The significant land use changes in Pune are driven by interconnected factors, primarily **urbanization and industrialization**, which have fueled the city's growth as an IT and industrial hub. This has led to a massive demand for land and the conversion of rural areas, exacerbated by **exponential population growth** from both natural increase and migration. The development of new highways and transport networks, or **infrastructural development**, has made peri-urban areas more accessible, encouraging further expansion. This growth is often characterized by **haphazard and unregulated development**, resulting in issues like urban sprawl and traffic congestion. These drivers have serious consequences, including **environmental degradation** through the loss of agricultural land, vegetation, and water bodies, and **socio-economic challenges** such as a loss of livelihoods and rising living costs. Additionally, the conversion of floodplains into built-up areas has led to **increased vulnerability to hazards**, particularly the risk of flooding during heavy rains.

Conclusion and Future Outlook:

The primary challenges for land use planning in Pune District are complex and interconnected, requiring more effective management policies to balance economic growth with sustainability. A key issue is the lack of integrated planning, where a disconnect between urban and regional strategies results in chaotic, unregulated development in peri-urban areas. Furthermore, the enforcement of regulations is often hindered by political and social pressures, making it difficult to control development effectively. This rapid, unplanned expansion has also created a significant infrastructure deficit, with services like water supply, sanitation, and transport unable to keep pace with population growth. To ensure a sustainable future, a holistic approach is crucial, focusing on promoting compact urban growth, protecting vital agricultural and ecologically sensitive areas, and making significant investments in public transport and green infrastructure.

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