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Impact of Health Infrastructure on the Growth of Surroundings Neighbourhood: A Case Study of Bhubaneswar

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***Abstract:** This article looks at the several stages of expansion of Bhubaneswar, a city in eastern India. Because of infrastructural improvements, economic growth, and population expansion, Bhubaneswar has seen fast urban growth. Growth phases in particular locations around KIMS, SUM Hospital, and AIIMS Hospital are examined using data analysis from secondary data. The construction of residential spaces for patients, their families, and medical staff is credited with spurring the rise of prominent medical facilities. The study's objectives are to determine how the health infrastructure affects neighborhood development and growth in the vicinity of Bhubaneswar, as well as to examine the stages of development that various sectors go through over time in specific hospital-influenced zones.*

I. INTRODUCTION

The growth and sustainability of cities are greatly impacted by the complicated issue of urban growth.
Knowing a city's growth stages can help shape future urban planning and development initiatives and offer insightful information ab out how the city has evolved. We shall look at the stages of development of Bhubaneswar at micro level, an eastern Indian city that is growing quickly, in this article. Bhubaneswar has seen tremendous urban growth in recent years, driven by the expansion of its population, the rise of its economy, and investments in its infrastructure.
We use data analysis from many sources, like as government records, academic studies, and satellite imagery, to examine the growt h phases of Bhubaneswar.
Bhubaneswar, the capital city of Odisha, India, has experienced significant growth and development over the years. This article will focus on the study of growth phases for different years in specific areas of Bhubaneswar, namely near KIMS, SUM Hospital, and AIIMS Hospital. To begin with, it is important to understand the context and significance of these areas in the overall growth of Bhubaneswar. Bhubaneswar, known as the "Temple City of India," has a rich cultural heritage and is a major educational hub in Eastern India. Over the years, with the establishment of prestigious institutions like KIIT University, KIMS Hospital, SUM Hospital, and AIIMS Hospital, these areas have witnessed significant growth. Growth was marked by the establishment of hospitals as well as educational institutions, which attracted a significant influx of employee for the organization and students. The presence of renowned medical institutions or specialized healthcare facilities can lead to the development of residential areas specifically catering to patients, their families, and medical professionals. It became an opportunity hub, which attract people towards it.

II. WHY THIS STUDY

This research will demonstrate how the expansion of health infrastructure is causing unprecedented changes in the structural and geographical aspects of cities. The micro-level urban change proved that the expansion of health facilities has led to high rates of residential and commercial growth.

A. Aim the Study

To study the impact of health infrastructure on the growth of surrounding neighbourhood.

B. Objectives of the Study

1) Identify the health infrastructure that influences growth and development in a neighbourhood of Bhubaneswar.
2) To study the growth phases for different sectors over the years in selected zone influenced by hospitals.

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C. Expected out Comes

The presence of healthcare facilities can attract new businesses and jobs, such as restaurants, pharmacies, and medical equipment suppliers, boosting the local economy. Hospitals are beehives of activity, operating around the clock which leads to reduced crime rates of that locality. More residents and businesses could strain local infrastructure, leading to traffic congestion and parking issues.

D. Study Area

Bhubaneswar is the Capital city of Odisha, located in Khordha district. It covers an area of 186 sq Km. The city is physically located in the Eastern Coastal Plains and is bordered to the south and east by the Daya and Kuakhai rivers, respectively. According to the 2011 Census of India, Bhubaneswar has a population of 0.88 million and had grown at a rate of 34.51% between 2001 and 2011. It is connected through National Highway 16 linking, Balasore in the North and Berhampur in South, National Highway 316 linking to Puri.as Bhubaneswar has numbers of well-known multispecialty hospitals and universities. Peoples from across the state and different districts and neighbouring state like Westbenagal depend on it.

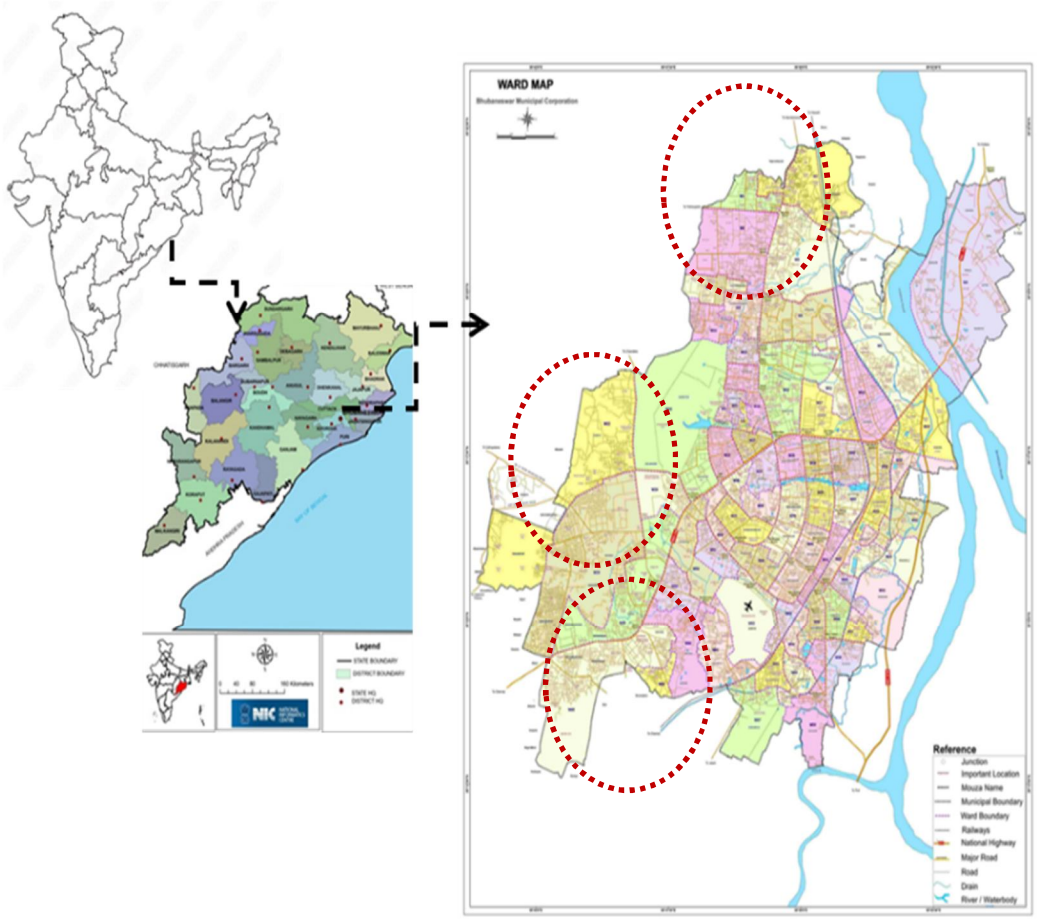


Figure 1 showing, India, Odisha, Bhubaneswar and identified study zones.

III. DISCUSSION

For this study only secondary data are used. The map was digitized in ArcGIS 10.4 and georeferenced with the help of Google Earth features. The processing of satellite images included image registration using projected coordinate system (Universal Transverse Mercator Zone north 45th zone, i.e., Bhubaneswar UA with the World Geodetic System datum 1984). In this paper, four major indicators were utilized to detect urban growth is built-up growth. For the study we identify three multispecialty hospital and its surroundings areas named it as zones to analysis the changes occur in that area over last 20 years. in the present study satellite imagery for the years 2004,2009,2014,2019,2024 were used to prepare LULC map of Bhubaneswar city.

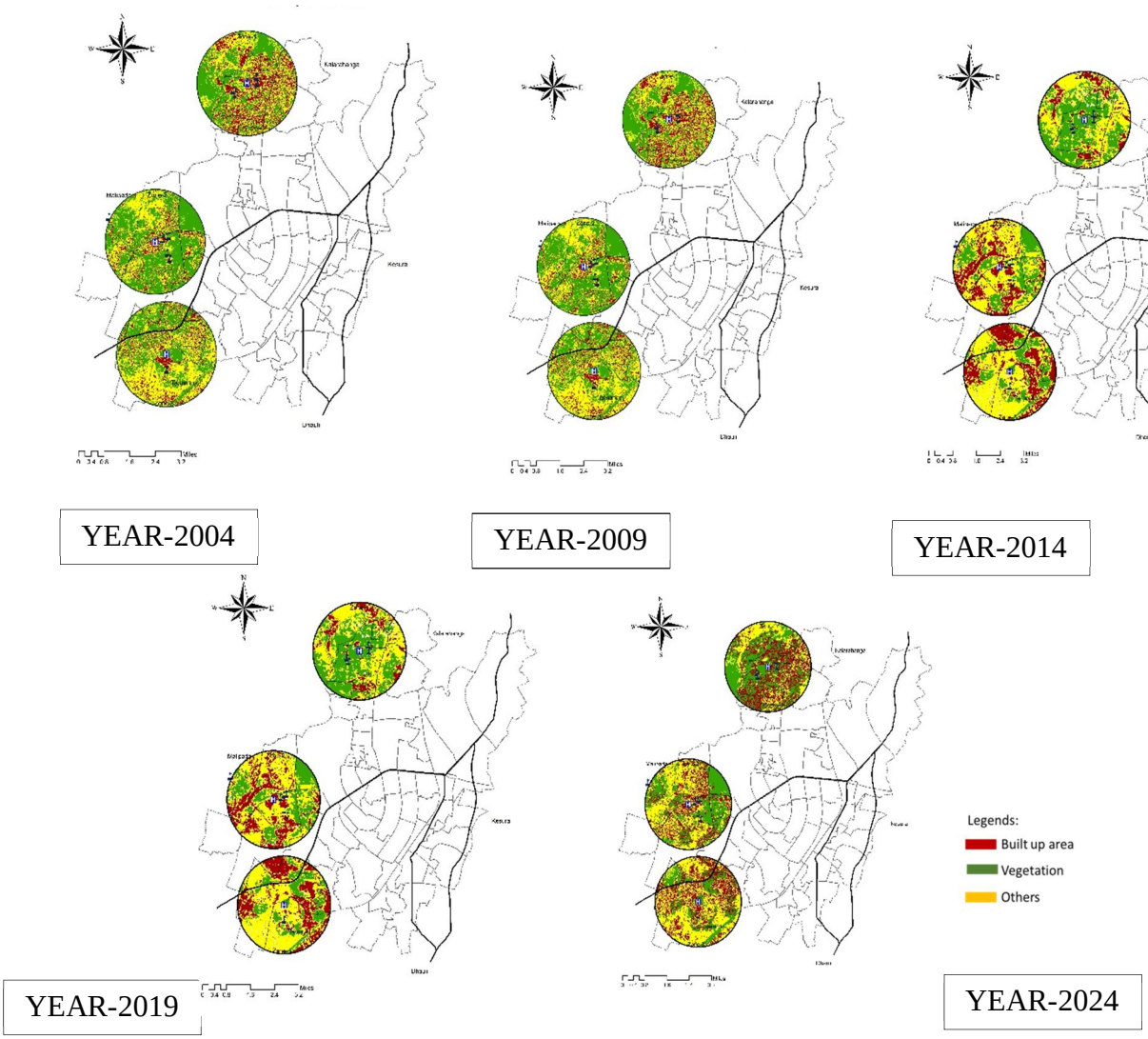


Figure 2 displays land use maps that were created using satellite pictures for the years 2004, 2009, 2014, 2019 and 2024.

Table 1, Land use land cover change result

Land cover change over years					
Indicators	2004	2009	2014	2019	2024
Vegetation(%)	26.7	25.4	14.6	13.4	12
Open Land(%)	30	25	23	22	19
Built-up Land(%)	2	12	18.3	19.3	20

The result of unsupervised classification indicates a significant difference within the zones previously identified. In the year 2004 built up area is very less in comparison to the on built up areas. The amount of undeveloped land experienced change as it was transformed into developed regions.

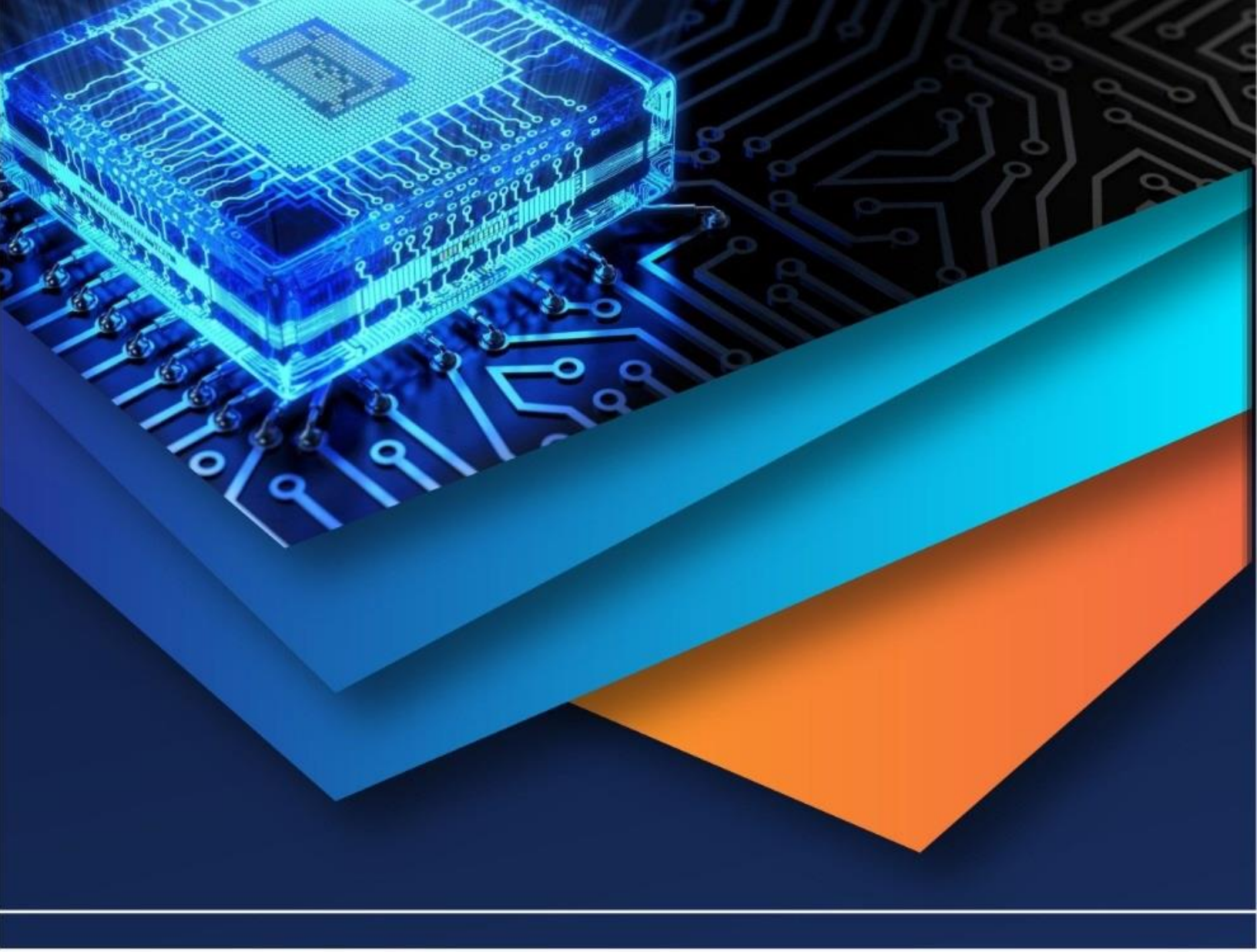
The rate of built up area growth seen during the previous decades. The percentage distribution of built-up, vegetation, and other land use classifications in 2004, 2009, 2014,2019 and 2024 is displayed in Table 1. By 2024, only 12% of the land is covered by vegetation, down from 26.7 % in 2004. Fig.2 illustrates the growing trend in land cover with built up area between 2004 and 2024. The reduction in the open land area between 2004 and 2024 can be caused increase man made concrete or any natural.

IV. CONCLUSION

This study suggests that socioeconomic issues are the driving force behind changes in land use brought about by anthropogenic activities and natural catastrophes. The ensuing decrease in land cover is unsustainable, and the rate at which floras, and vacant lands are disappearing. Despite the fact that this study examined the different land use classifications and coverage of a selected zones nearby hospitals, its conclusions are applicable to other health infrastructure areas due to the general consistency of human interventions and anthropogenic activities. Studies on land usage can play a significant role in promoting the sustainable use of land resources, guarding against the urban agglomeration, unplanned development, water scarcity, degradation of biodiversity, urban heat island effect ensuring that land is used appropriately, and discouraging actions that would cause the depletion of the surrounding vegetation.

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