

# Role of Urbanization in Transition of Land Resource Utilization of Ranchi City



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## Abstract

Land urbanization and provincial development are commonly fortifying, and urban land expansion is both the driver and outcome of financial growth of city. Study spatio-temporal traits of land use change are principal for understanding and assessing ecological effect of urbanization. Additional demand on natural resources thereby causing land-use changes especially in capital cities of India. Land use and land cover change (LU/LC) has been perceived as a vital drive of environmental change on all spatial and temporal scales. Therefore, significant problems related with quick development, for example, extra foundation, casual settlements, environmental pollution, obliteration of biological structure and shortage of common assets. These issues are essential for government, as they are related with financial growth, asset portion, imbalance, social agitation and supportability has been considered painstakingly utilizing remote detecting and GIS advances for a quickly developed city Ranchi. The present research work aims to analyzing the changes that occurred in land use /land cover (LU/LC) over a time span of last decades using modern technology. The present research work also evaluates the land use/land cover (LULC) changes and urban expansion in Ranchi city and features the real effect of quick urbanization and populace growth on the land cover changes which needs prompt consideration. The geological reach out of Ranchi city is 23° 22'N latitude and 85°20'E longitude on the north-west bank of Subarnrekha River. It comprises of 55 authoritative wards with the aggregate populace of 12, 57,340 (Census, 2011). The spatio-temporal investigation of land use/land cover is done from the year 2000 to till now. Urban land extension is more escalated when compared with urban populace growth in Ranchi city inquire about has discovered that in 2000 the aggregate populace living in prefectural city 224 sq.kms expanded by seventy-five percent. On the other hand, developed urban region increased throughout the Next decade up to 177.19 sq.kms. in 2011.

**Keywords:** Urbanization, Land Use/Land Cover, Development, Population, Growth.

## Introduction

Urbanization is one of the dynamic and difficult issues at present because fast urbanization comes about the random and spontaneous growth of cities. The weight of a consistently developing populace turns into a weight on the constrained open facilities which are for all intents and purposes crumbling; there is the need to adjust give necessities of land accessible facilities while considering future needs. Urbanization is a procedure through which the gainful agrarian land, woodlands and surface water bodies are as a rule hopelessly diminishing. Quick growth of cities has represented a danger to their Central Business District (CBD). This is clear from the developing excitement of the general population to look for settlement in rustic urban periphery areas (Tali, 2012). Land use and land cover change (LU/LC) has been perceived as a critical drive of environmental change on all spatial and worldly scales (Turner, 1994). Observing land-use changes is fundamental for neighborhood and territorial level arranging things about so as to survey urban growth patterns. The arranging studies ought to be founded on exact and breakthrough land use design

The pattern of urban growth towards urban periphery area has significant effect on the ecosystem, natural assets and land cover elements on the loose. As the procedure of worldwide urbanization has quickened both in force and area, there is a developing enthusiasm for understanding its suggestions on environment and atmosphere at neighborhood, territorial and worldwide scales. Remote detecting innovation and GIS are efficient

instruments for identification of issues identified with land use, land use arranging and displaying.

**Objectives of the Study**

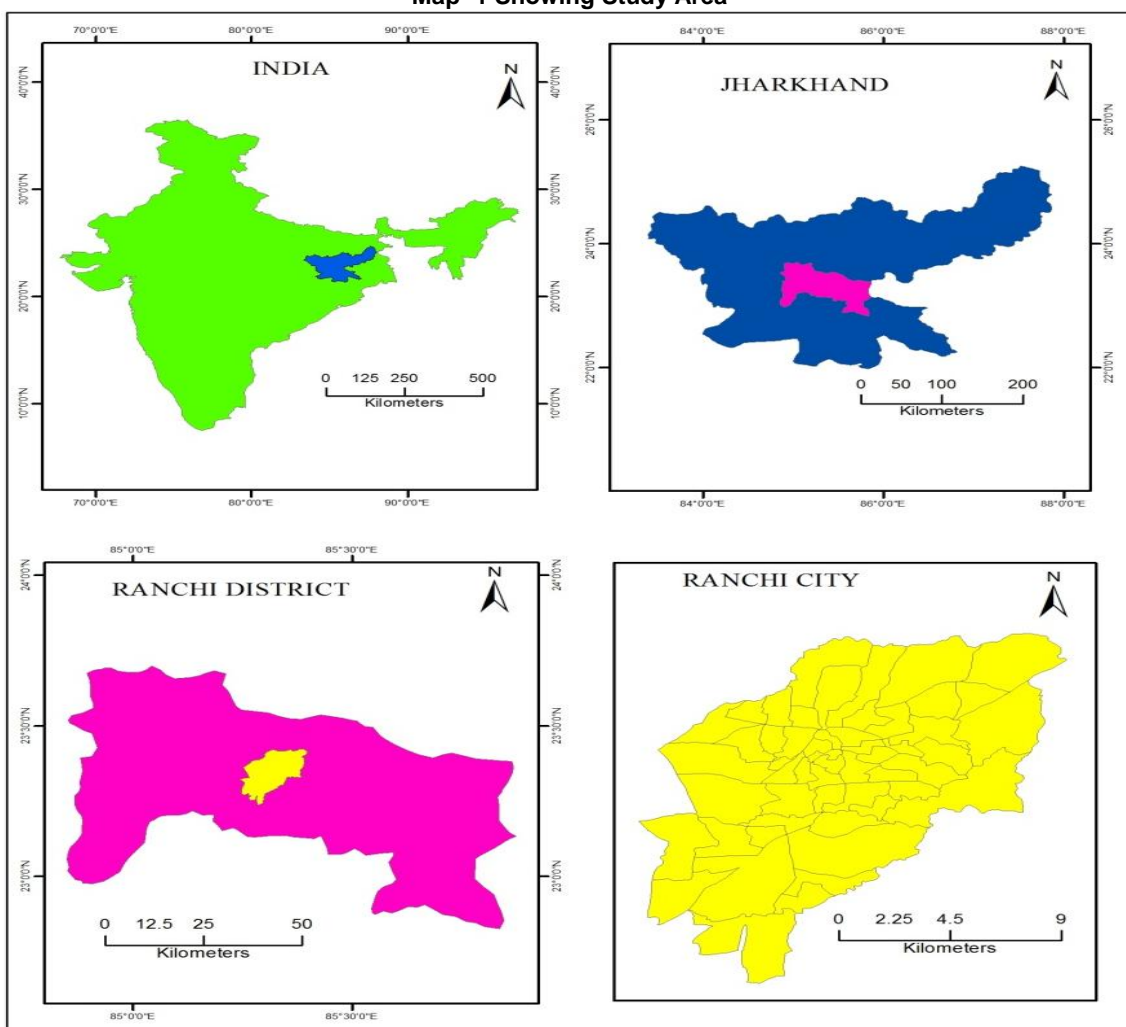
1. To identify the Land use/Land cover change of Ranchi City.
2. To identify the pressure of Urbanization on land resource.

**Study Area**

Jharkhand is a piece of the old Chotanagpur Plateau which is portrayed by a complex geographical structure, rough geology and smaller scale physical units. An extensive segment of land is covered by timberlands, and that is the reason in the medieval period this area had been named as "Jharkhand". At the time of formation, Jharkhand state had 18 districts but now it has 24 districts. From the perspective of economic assets the state happens to be one of the

wealthiest states in the whole nation. Ranchi city is found halfway on the Chotanagpur level and stretches out more than 182.09 sq. Km. Ranchi a quick changing city now, was at one time a shockingly little tribal town in the pre British period. Its quick growth began amid the Second World War when its military significance expanded all of a sudden. After autonomy it began creating as an imperative instructive focus; however the most critical factor behind its extraordinary growth has been the advancement and growth of the Heavy Engineering Corporation (H.E.C.) in Hatia. H.E.C. modern complex was built up to help the industrialization procedure in India. At a certain point of time it had more than twenty four thousand workers and had likewise turned into an instrumental factor for the foundation of a few backup/auxiliary businesses in Hatia and different parts of Ranchi.

**Map -1 Showing Study Area**



**Research Method**

This research is mostly based upon secondary data and personal observation. Author used charts, Tables, Plates and Diagrams for this research work.

The present work involved in utilization of GIS and Remote Sensing data of the Ranchi city area for deriving spatiotemporal information on the urban land use. This allowed generation of information on

important physical environmental parameters of urbanization including city infrastructural details. The study of urban transition in a region followed by the analysis of urban land use change and its impact on environment requires an integration of a number of processes which are discussed below.

**Results and Discussion**

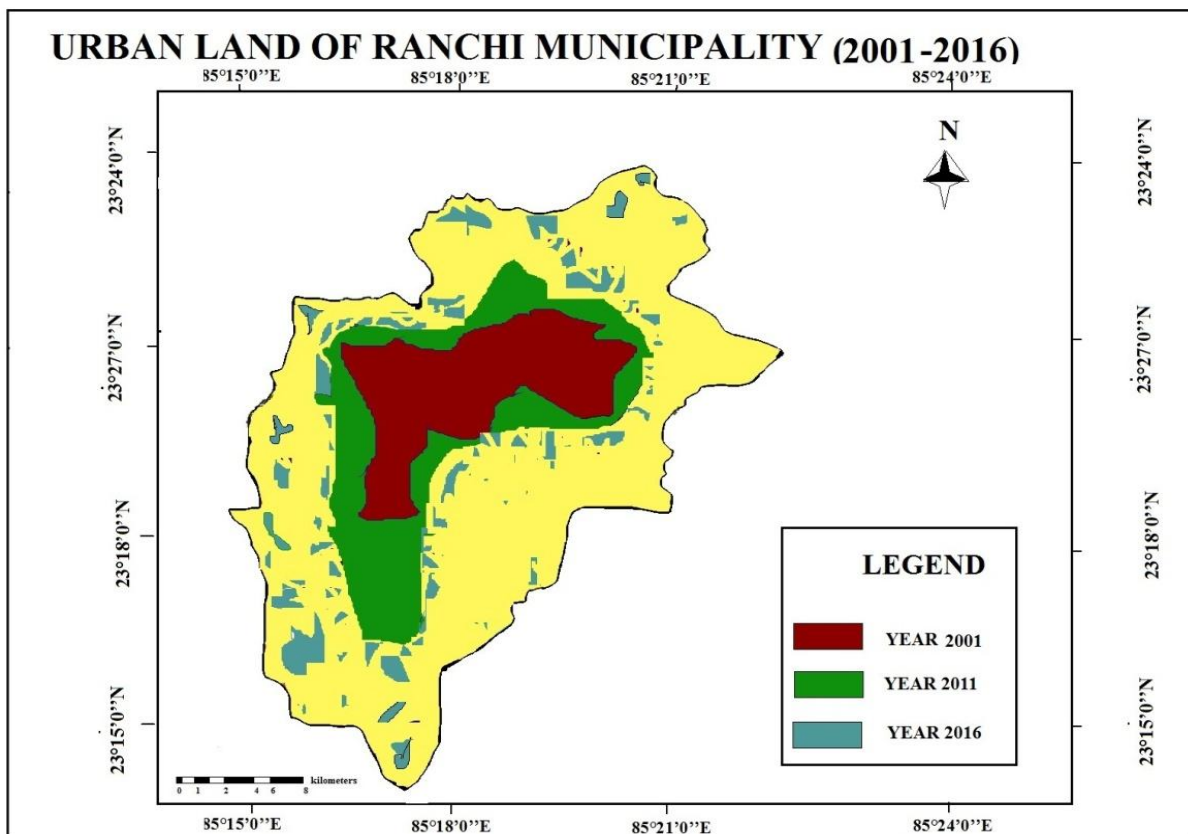
The penetration of populace in substantial number inferable from a few push factors like

infrastructural and institutional enhancements, instructive, wellbeing and recreational facilities, serene financial condition and accessibility of better chances of work, the city of Ranchi has additionally experienced changes in structure and spatial degree in the course of the most recent two decades. In 2001, the aggregate area (Urban) was 224 sq. kms, which wound up noticeably 175.12 sq. kms in 2011. In 2016 the urban area has been 177.19 Sq.Km separately. Presently a-days one can locate a north-west and south-east developing city in contrast with the city area of 2001. With the steady growth of the city towards the south-east and north-western edges, the business area, parks and other recreational facilities alongside other common facilities have likewise determined changes. This outward growth of facilities is further going about as a force factor for populace movement pulls in more individuals and at last the city continues expanding. Aside from this physical extension, the city has likewise endured changes in statistic and related economic profile. There has been convergence of more riches in less hand and the poorer winds up noticeably poorer.

**Urban Land Transition**

The location maps created from the elucidation of GIS uncovers, as like whatever other prosperous prevalent city of India, Ranchi is likewise under the hold of Transition. A cautious examination of these sprawls furnishes us with data in regards to the growth flow of these new urban agglomerations. As far as sprawl heading, it can be unmistakably represented from GIS and topographic information translation that the city is growing towards the north-west and south-east separately. The prime causes behind such development has been accessibility of land at impressively less expensive rate in those areas, great transport communicational system, accessibility of better infrastructural and institutional civilities, closeness to the primary city and so on one of the significant cause has likewise been movement from country to urban areas. While Speaking as far as sprawl design, it can be noticed that the city of Ranchi is seeing two noteworthy typeof sprawling, linear and radial. Aside from this, in a few areas, events of polycentric sprawl can likewise be unmistakable.

**Map 2-Showing last two censuses to till now the transition of urban land**



**Urban Population Transition**

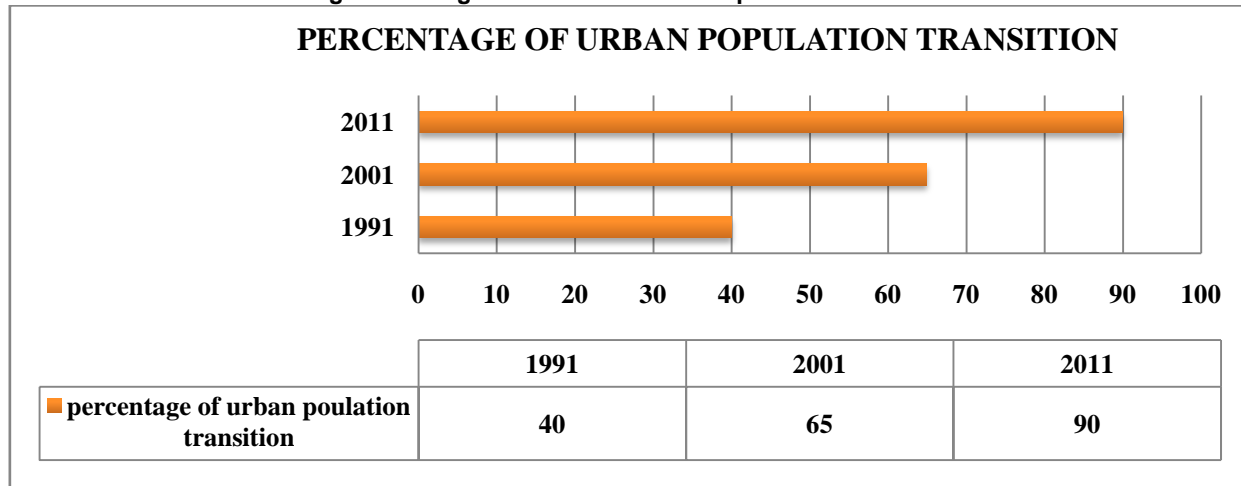
It is observed that during 1951-1981 the population density of Ranchi city continuously declined from 5315 to 2761 persons per sq. km. In spite of high growth in urban population; the density had regularly declined. This is because the increase in area of Ranchi was higher than population growth during 1951 to 1981. In 2001, for the first time population growth rate of Ranchi exceeded its areal growth. As a result, the population density of the city

also started increasing. In 1981 the overall population density of Ranchi was 2761 persons per sq. km. and it increased to 3251.30 persons per sq. km. in 1991 and 3829.19 in 2001 it 216.5 square kilometre divided into 37 municipal wards 1991-2001 the growth rate was only 30.73 and 32.32 percent respectively. So one can assume that, in last two decades the processes of urbanization in Jharkhand have slowed down. And 2011 census year population was 1,120,374.

As per our data It may be observed that the 1991 population percentage in Ranchi city was 40 the smallest in population size, Their population had increased to 15173 and 24638 in 2001 it around 65

percent 8, 47,093 persons respectively in 2001 .On the other hand, the biggest in population size in 2011 with a population of 65 percent to 90, respectively the population are 1,120,374.

Fig-1 Showing the Extent of Urban Population Transition



Source: District Gazetteer, Ranchi (1991), Census of India, (2001), Rural-Urban Distribution, Jharkhand

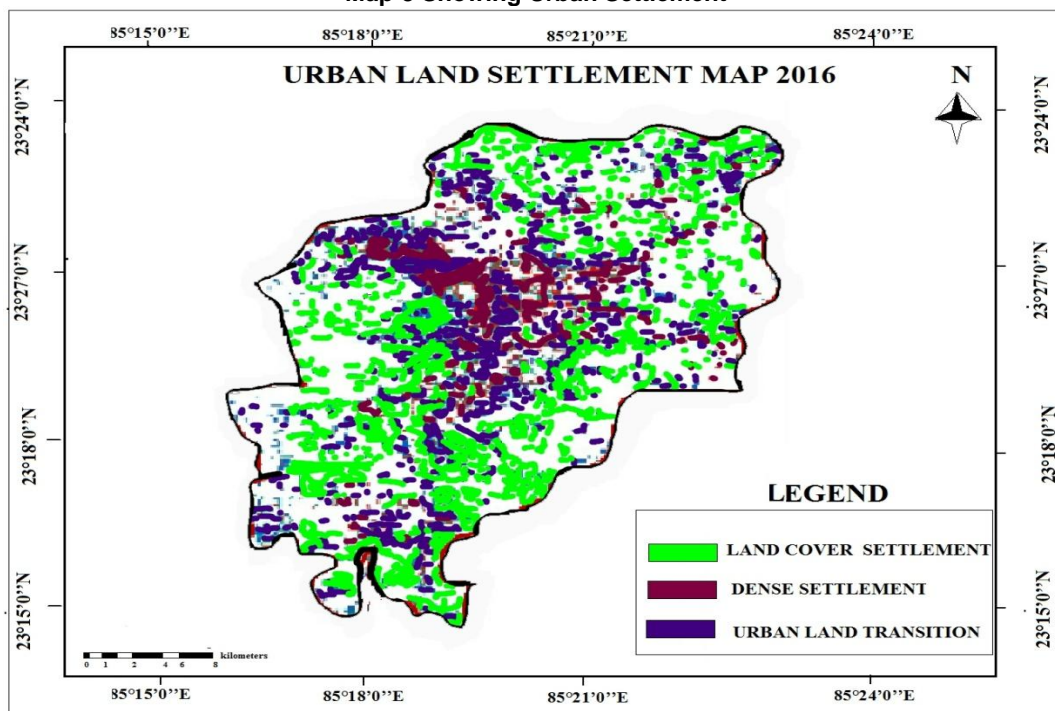
There are 55 wards, in the Center of city having higher populace densities, yet there are no less than three wards (4, 20 and 25) in Ranchi which are not situated in the center of downtown area, but rather have densities more than 8000 people for every sq. km. In actuality, there are a few wards having similarly more noteworthy location points of interest; for instance a decent number of lodging provinces are all around associated with transportation and communication facilities. For example, ward 25 has a few lodging settlements (Kusai Colony, Electricity Board Colony, Nepal House and others) along the Doranda-Namkum Road bringing about a higher

thickness. Additionally in Ward No. 4, numerous local locations have been created along the Ratu Road.

**Urban Settlement**

The settlement agglomerations in Ranchi Which created between 2001 to 2011 demonstrates the development inside the support area of two kilometers from the fundamental transport lines. One reason behind such growth might be settlements settling on thought of good transport organize. And it is some degree genuine. The distinctive street ventures embraced by govt. of India and Jharkhand Govt., in the study area have decreased the problem of transportation from rustic to urban all things considered.

Map-3 Showing Urban Settlement

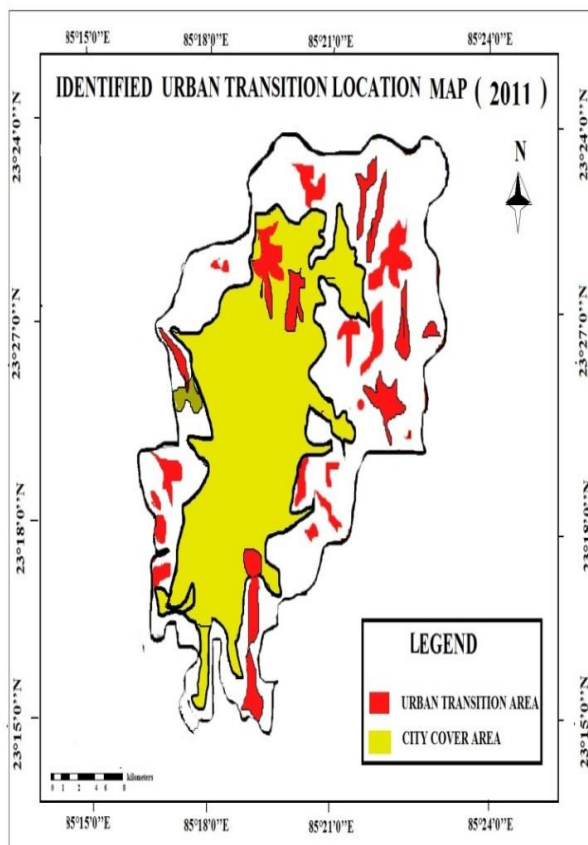
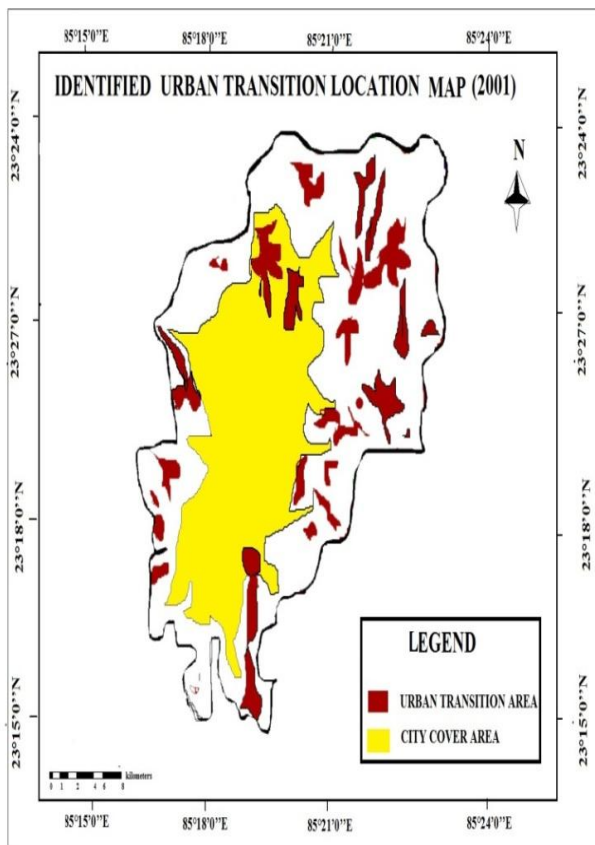


Besides, the accessibility of more place at significant less expensive rate than the primary city area, development of legitimate infrastructural and institutional courtesies along these real tracts, Love for nature has been the distinctive different causes. Be that as it may, the areas bordering the fundamental urban area show the qualities of Radial Sprawl Pattern (Different example maps), trailed by a comparable event in the northern piece of the study area. While some scattered new growths are found in patches at various parts of eastern and southern parts of the Ranchi town area.

**Landcover Utilization**

The study of the land use land cover would empower us to understand the city as conceived in the past and the course of its future growth and development. This area investigates the changing example of land use land cover after some time. A change in land use /land cover is unavoidable after some time. It mirrors the requirements and demands of the inhabitants of the city. The land use/land cover in 2001 has been contrasted and the current land use/land covers in 2011 and 2016 in the resulting section.

**Map-4 Showing Urban Transition Land Use of Past Two Censuses**



There is a sharp change in the extent of a portion of the land uses from 2001 to 2011. In 2001, after perceptions are made, 39% of the aggregate study area was farming land which has diminished 12% thus neglected land was expanded by 9% of the aggregate area. Areal degree of developed land expanded 15% which unmistakably shows the development of the city amid this period. Amid 2011 the developed land has developed from 15% to 18% enrolling an expansion of 3% area of developed land. Amid this period farming land and decrepit land somewhat changed. This demonstrates the city is in developing stage. At long last between 2016 decrepit land has developed from 24% to 42% enrolling an expansion of 18% and rural land diminished 18% of the aggregate land. Developed area likewise expanded 1% of aggregate area.

**Conclusion**

With the number of inhabitants in town expanding as ever, the weights on land and assets

are likewise expanding. The urban sprawl is viewed as one of the potential dangers to reasonable development where urban arranging with compelling asset use and assignment of foundation activities are key concerns. The study endeavors to recognize such transition change for 2001 to 2011. The study was done, (Ranchi Development Authority) Jharkhand, utilizing the strategies of GIS and remote sensing to distinguish and recognize the urban sprawl. The spatial information alongside the property information of the district helped to examine remotely detected and factually.

This exploration conceptualized urban transition from a geographic point of view with a specific end goal to survey the spatial appropriation of land examples and LULC change. The Research demonstrates that Ranchi City has expanded towards south and western headings in uncontrolled way, immersing used profitable edited areas. Transition might be discovered effect to the city and its

encompassing environment in the accompanying way:- Slums and related wellbeing risks, Traffic blockage, pollution and health perils, Reduced social communications because of low-density sub-urban development.

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