International Journal of Research and Review Techniques (IJRRT), ISSN: 3006-1075
Volume 3, Issue 1, January-March, 2024, Available online at: https://ijrrt.com

Changing Paradigm of Land Use and Land Cover in Bawal Municipal Area

Sanju Bala[1], Dr. Rani Singh[2]

[1]Research Scholar, Department of Geography, Baba Masthnath University, Rohtak
[2]Associate Professor, Department of Geography, Baba Masthnath University, Rohtak

ABSTRACT

Land use and land cover is an important component to know the development of an area or a region. After 1989 National Capital Region Development Plan growth in Bawal Industrial area came to the light. Result of it land use and land cover change over the three decades and change was observed in major two class viz decreasing green cover and increasing built-up area and associated other open classes including agriculture to proposed project land or waste land and green cover to open spaces etc. maximum changes were observed in the built-up class from 50 hectare to 308 hectare in last thirty years.

Keywords: Land use, change matrix, classification

INTRODUCTION

Land use and land cover (LU/LC) can be defined as the land which was used according to human intervention whereas land cover can be classified as that land covered with physical features such as hills, forest, river, natural lake, natural grassland etc. LU/LC classification is one of the most widely used applications in remote sensing. There are many approaches which used to correlate image data with features footprint on the earth surface e.g. waterbodies, vegetation, human settlement characteristics etc. Over the last few decades, many studies have been studied by using modern geospatial technologies viz.satellite imagery in characterizing vegetation types (Saadat et. al.).

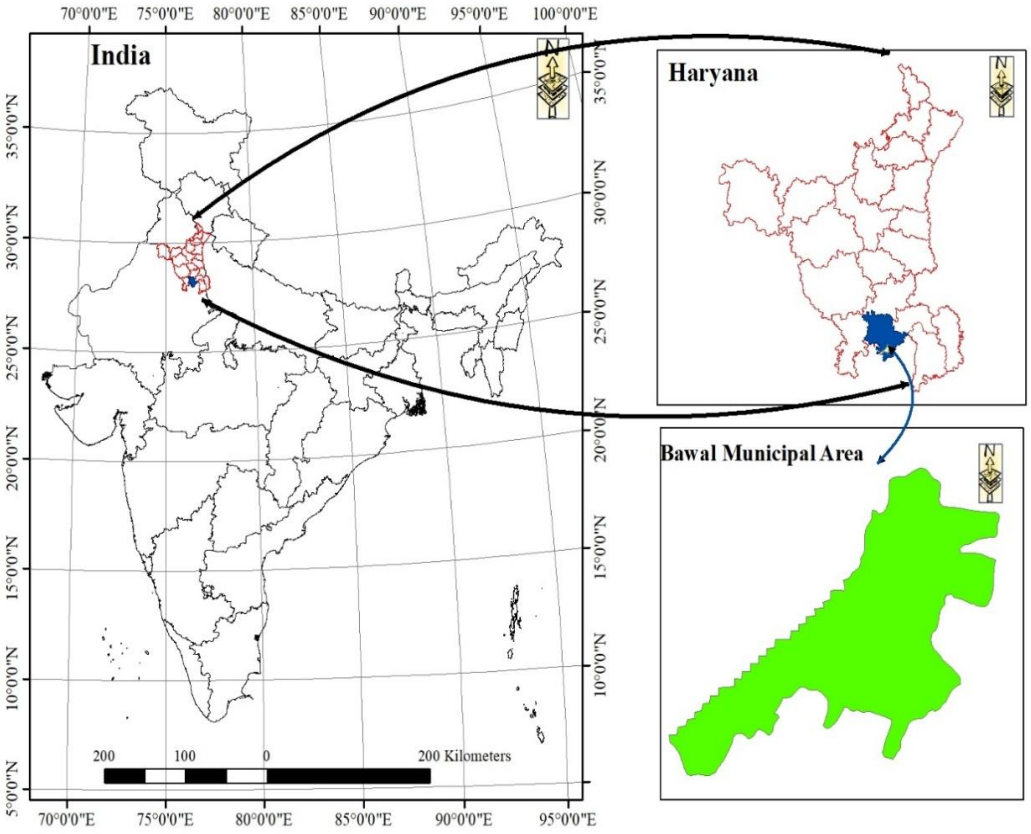
Land-use changes and unsustainable land management are direct human causes of land degradation and many of the nations having domain sectors are related to agriculture and it is degrading as stated (Olsson et. al., 2019).

NRSC (2019), did project on 1:50000 scale by using LISS-3 satellite data and classified into 8 classes and published in the atlas. The classification was made on level-2 classification and classified as built-up, agriculture, forest, grass, barren or wasteland, wetland or water bodies, glacier/ snow etc. by using visual interpretation method.

Lillesand & Kiefer (2015) gave definition of land use and land cover in simple way. Classification was given in level three as comparison to (NRSC, 2019)

Study Area

Bawal is an Industrial town and a Municipal Area (MCA) which is located in Rewari district. Geographical location of Bawal MCA extended from 28°8'1.359" N to 28°1'44.273" N latitude and from 76°30'14.717" E to 76°36'18.328" E longitude.



Source: DIVA GIS, Town and Country Planning Haryana and Google Earth

Figure 1: ***Study Area Map***

This township is under Haryana state Industrial and Infrastructure Development Corporation and lies in southern part of Haryana state and covered total area 3.60 sq. km.

Data used and methodology

Landsat 4 & 5 satellite data was used to classified as LU/LC in five categories and level-I classifications. To classify the LU/LC, unsupervised method was used to interpret the LU/LC classes. Some research paper and other related ancillary datasets and reports were incorporated during this research work.

RESULT ANALYSIS AND DISCUSSION

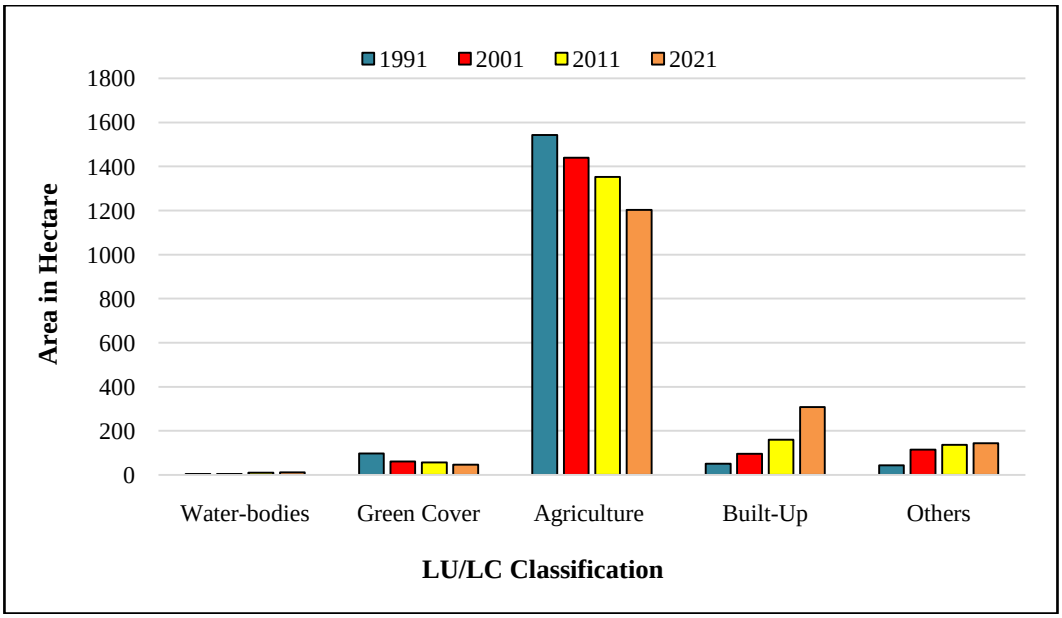
It was found that the demography of Bawal MCA increased not in rapid rate but in a sustainable way since 1991 to 2011 as given in this research work.

Table 1: ***LULC classification from1991 to 2021 (Area in ha.)***

LU/LC	1991	2001	2011	2021
Water-bodies	4.8	4.2	9.7	11.38
Green Cover	97.6	61.7	57.12	46.44
Agriculture	1542.3	1439.35	1352.05	1203.51
Built-Up	50.4	96.4	160	308.23
Others	44.1	115.3	137.25	144.15

Source: Landsat 4-5 & Landsat-8

LU/LC trends of Bawal MCA was showing in figure 2 and table 1 that it was continuous increased in built-up from 1991 to 2021 in a positive way. It was 50.4 hectare in 1991 which increased 308.23 hectare in 2021 as given in table 1.

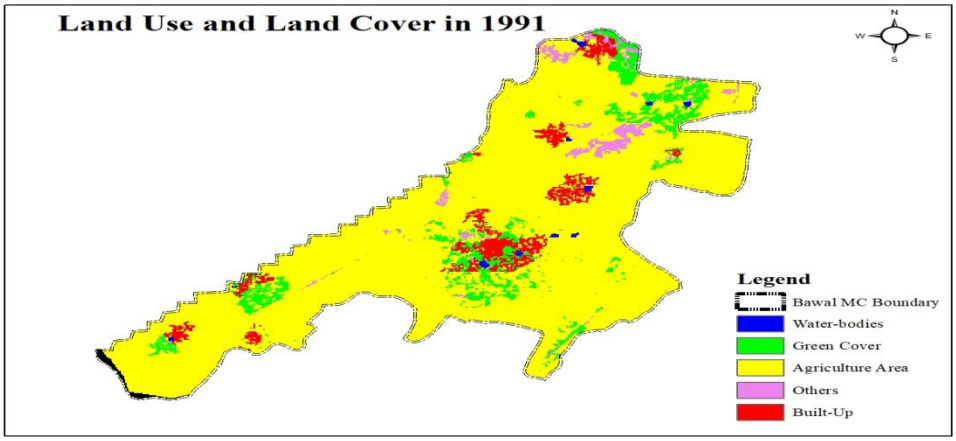


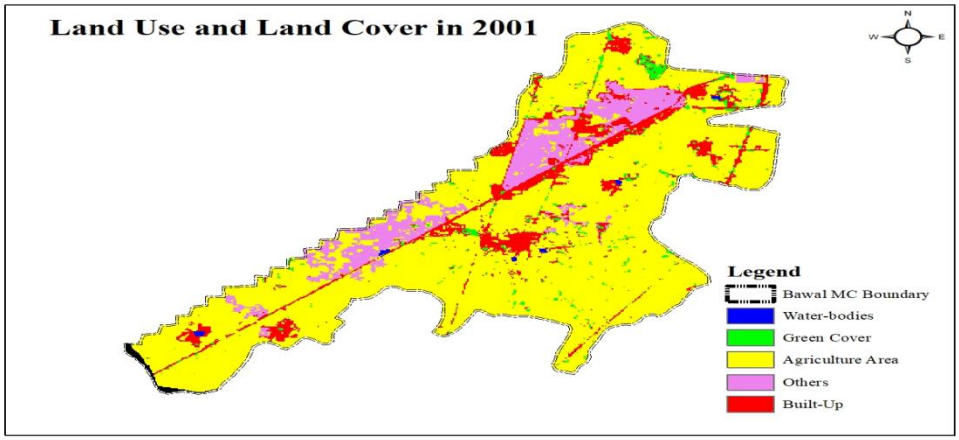
Source: Based on table 1

Figure 2: ***Land use and land cover change from 1991 to 2021***

Year-wise LU/LC classification

Year wise LU/LC distribution of Bawal MCA was given in figure 3 and figure 4. It was revealed that in Bawal industrial township development was going on in linear pattern along the National Highway-48 under IMT township programme.

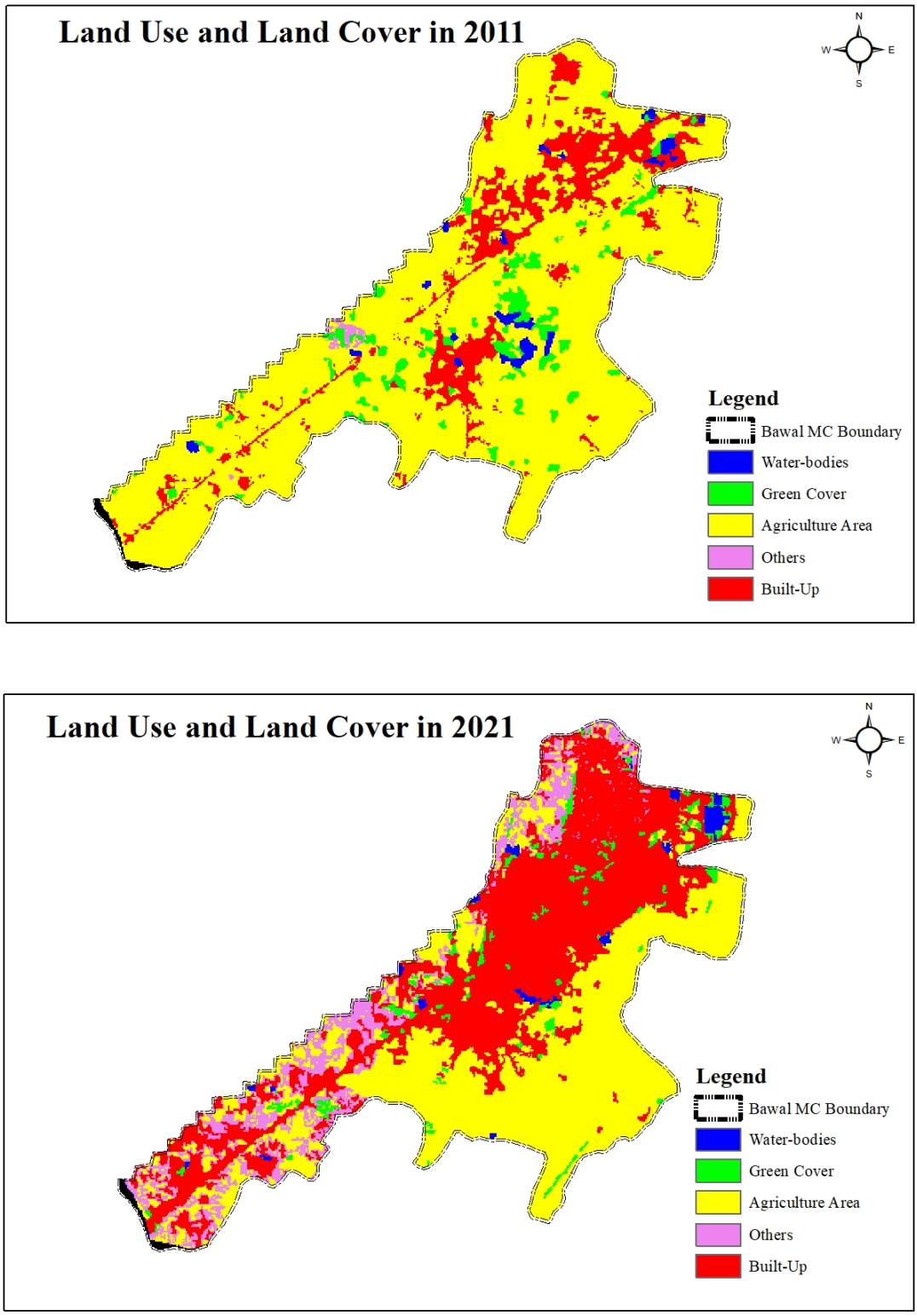




Source: Landsat 4-5

Figure 3: ***LU/LC Distribution in Bawal Township (1991-2001)***

It was found that in 1991 there was normal devilment and built-up was in along the rural settlement which was flourished in 2001 in the form others class. Under others category agriculture land use replaced with early phase of built-up classes as given in figure 3.



Source: Landsat 4-5 & Landsat-8

Figure 4: ***LU/LC Distribution in Bawal Township (2011-2021)***

After stayed in the same class it was totally change into built-up class in 2021 because of many expressway corridor such as Jaipur- Chandigarh trans corridor, nearby Kundali-Manesar and Palwal etc. as given in figure 4.
Another changes was observed in agriculture where land use reduced from 1542 hectare to 1203 hectare followed by green cover where land use reduced from 97.6 hectare to 46.4 hectare.

Observation

i. It was analysed that changes was in linear pattern along the Highway and nearby industries of this township.
ii. Number of urban population was less because of well-connected road and railways, therefore working commuters stayed in nearby city Rewari.
iii. Most of the agricultural land was change to built-up classes Natural resources were also under eliminated from its native place because of unprecedented development and irregular pattern.

CONCLUSION

It was concluded that Bawal MCA was developed at very fast rate as comparison to its population. MC area of Bawal less populated because of the nearest city Rewari (10 kilometers) and most of the working population travelled from Rewari city to Bawal. Change into built-up or industrial class its flora and fauna was vanished from its natural habitat. There was good transport network system in between the Bawal Industrial hub and the Rewari City and Bawal to Mahendergarh because of in mid of Delhi-Jaipur road rage and Delhi-Mumbai rail network, Jaipur-Bhatinda railway network.

REFERENCES

[1]. GoI. (2011). *District Census Handbook of Rewari.* Ministry of Home Affairs, Government of India.
[2]. Jaysawal, N. (2014). Urbanization in India: An Impact Assessment. *International Journal of Applied Sociology vol. 4, issue 2 pp. 60-65.*
[3]. Clemente, D. C., Strano, E., & Batty, M., (2021). *Urbanization and economic complexity.* Scientific Reports, Nature Portfolio.
[4]. Lillesand, T.M., & Kiefer, R.W. (2015). *Remote Sensing and Image Interpretation.* 7th Edition, Wiley, New York.
[5]. NRSC (2019). *Land Use and Land Cover database on 1:50000 scale, Natural Resources Census Project*. National Remote Sensing Centre, ISRO, Hyderabad.
[6]. Olsson, L., Barbosa H., Bhadwal S., Cowie A., Delusca K., Flores-Renteria D., Hermans, K., E. Jobbagy, W., Kurz, D. Li, Sonwa D.J., Stringer L., (2019). *Land Degradation. In: Climate Change and Land: an IPCC special report on climate change, desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems.* IPPC, in Press.