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Rural Land Transformation in Periphery of Chandigarh: A Study of Chandigarh-Kharar Road

Ravinder Singh
Research Scholar,
Dept. of Geography,
Panjab University,
Chandigarh, Punjab, India

Abstract

Chandigarh being a well-designed and planned city acting as the twin capital of Haryana and Punjab states besides being a regional capital for the north-west region and also a Union Territory attracts a large number of students, job seekers as well as those looking for good quality of life. Chandigarh being created as the capital of undivided Punjab after independence of the country in 1947 was designated as the capital of both Punjab and Haryana states after creation of two states in 1966. Majority share of its periphery remained with the Punjab and almost one third went to Haryana. In spite the fact that the city shares majority of its periphery with Punjab but only one major road (Chandigarh-Kharar)was there connecting Chandigarhwith the neighbouring cities of Punjab. As a result the adjacent areas of Chandigarh-Kharar road came under tremendous pressure of population in-migration. This resulted in rapid land use and land cover change. Therefore the present investigation is an attempt to study the land use land cover change along Chandigarh-Kharar road in the last decade.

Keywords: Land Use, Land Cover, Land Transformation.

Introduction

Chandigarh being a first planed city after independence in India is emerging as a rapidly growing urban centre in the nation.It is becoming a regional hub for various areas of service industry, education, health, information technology, food and vegetable processing etc. (Chandigarh Administration, 2016).The city was planned as the capital of undivided Punjab after losing eh old capital of Punjab state to Pakistan after independence. The city was setup in central location of undivided Punjab in 1950s. But after bifurcation of undivided Punjab into Present day Punjab and Haryana in 1966 the majority of the peripheral areas of Chandigarh has gone to Punjab (73%) followed by Haryana (24%) and rest with the city itself (3%) (Chandigarh Master plan-2031).

Initially this city was planned for the approximate population of five lakhs. But over the period of time it has experienced a huge population growth (44.33% from 1991 to 2001, and 17.09 % from 2001 to 2011.However the development of the Chandigarh city is largely in accordance with the original plan even though the controlled periphery and the area within the city have been completely metamorphosed as the result of reorganisation and reconstruction.

The hiked price and land scarcity in the city centre have compelled people to settle down in the peripheral regions resulting in both planned and unplanned development across the area. It is evident from the facts that the people living in the periphery are daily commuting to the city centre and the other parts of the periphery for the purpose of jobs and daily needs. This trend of daily commuting backward and forward and also around the city have put heavy burden on the existing transportation network specially the major roads connecting the city with the nearby urban areas. This has resulted in the rapid transformation of the area adjoining major roads connecting Chandigarh with the neighbouring areas in its periphery. Among all the connecting roads viz. Chandigarh Kharar Roar, Chandigah-Delhi road, Chandigarh-Shimla road and Chandigarh-Amritsar road, Chandigarh-Kharar road is the only major connecting road which connects Chandigarh with the major cities of Punjab. Therefore the present investigation is an attempt to study the impact of this huge population pressure in the land in the periphery of Chandigarh through study of land use land cover along Chandigarh-Kharar road in the last decade.

Review of Litrature

There are various researches being conducted on land use and land cover transformation across the globe. Shaw (2005) studied the peri-urban areas of Indian metropolitan cities concluded that outward expansion of the urban areas gradually led to increasing and more complex interactions with the surrounding rural areas and gradual changes in their land uses and occupations, transforming them into semi-urban or 'peri-urban' areas.

Sharma, (2006) in his study on the futuristic geography, discussed the trends of land use change in the Chandigarh periphery and concluded that the increasing population pressure within and around the city have changed the land use of the region from agricultural to non-agricultural.

Pandey, et al., (2006) carried out a study on land use and land cover change mapping of Panchkula, Ambala and Yamunanagar districts in Haryana. They observed that the heterogeneous climate and physiographic conditions in these districts had resulted in the development of different land use and land cover in these districts. It was inferred that land use and land cover pattern in the area were generally controlled by agro-climatic conditions, ground water potential and a host of other factors.

Turkelboom, et al., (2008) studied multiple effects of land transformation in a tropical environment on land degradation processes. The study discussed that mountain landscape of northern Thailand had changed dramatically during the last few decades due to increased population pressure, agricultural commercialisation, limitation to use old fallows and restoration of upper catchment.

Jaganathan, et al. (2010) discussed Geomatics based assessment on land use land cover change and its impact over ground water conditions in the newly developing sub urban area in southern Chennai. This technology was found to be very effective in identification of land use changes occurred over a period of time with temporal data. They concluded that explosive growth of urbanisation, increasing demand of water for industries and IT parks have resulted in reduction of water bodies and land use in southern urban area of Chennai city.

Objective of the Study

The present study is an attempt to understand the impact of the rapidly increasing population pressure and the demand of land created due to this increasing pressure of population in the periphery of the city. So the present investigation deals with the study of the land use land cover along Chandigarh-Kharar road in the last one decade from 2006 to 2017.

Methodology

Design

For the purpose satellite data from different sources such as Landsat, Indian Remote sensing Satellite (IRS) and Google Earth Pro was utilised. A half a kilometre buffer zone, on both sides of the road connecting Chandigarh with Kharar (part of National Highway 21, Chandigarh – Manali), is delineated to map and analyse changes in land use and land cover transformation. In addition, Global Positioning System (GPS) based field survey was conducted to generate additional data and to verify the land use and land cover patterns generated through Geographical Information System (GIS). Other collateral data available from the secondary sources such as land records were also incorporated into the study. Geographical Information System (ArcGIS 10) was used for processing, analysing and interpretation of the land use and land cover maps.

Study Area

Chandigarh-Kharar road is a part of National Highway number 21 connecting Chandigarh with Manali through Kharar, Roopnagar, Bilaspur and Mandi. Approximately sixteen kilometres of it lies in the Chandigarh periphery from the outer boundary of the city. Kharar is located at the distance of approximately ten kilometres from the city centre. Half kilometre buffer on the both sides of the road was created considering the growth of urban infrastructure in the rural areas along the road during the period of last one decade. The study area was dominated with rural land use at the beginning of twenty first century. It was rapidly transformed into peri-urban and from peri-urban to urban in last one decade.Chandiarh – Kharar road being located in the Chandigarh periphery was protected by the new capital periphery control act of 1952 against unplanned and haphazard growth if urban areas. But majority of the developmental activities in the periphery have been recorded in this area itself.

Methods

For present study Satellite data was procured and then was input into the GIS system. The land use land cover patterns were generated in Arc GIS software with on screen digitization technique. Then the land use land cover maps were generated. After making maps of different time periods. The maps were checked for accuracy with the help of secondary data sources and field survey. Then the final tables and maps were generated for the study.

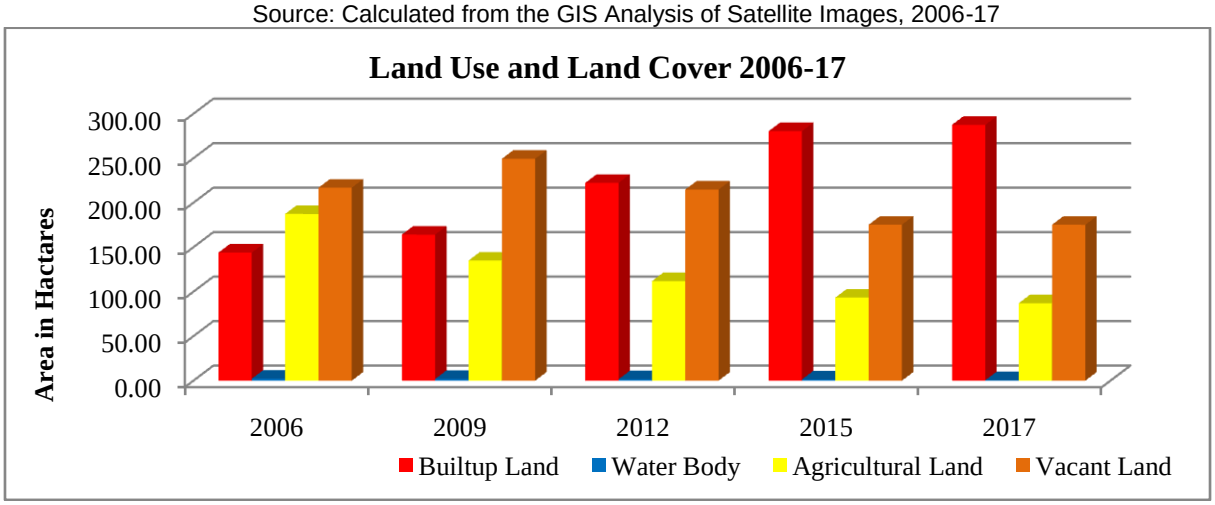
Resultsand Discussion

The area under the study went through a rapid land use and land cover change which is evident through the following table and graph. The Percentage share of each category i.e. Area under built-up land, area under Water bodies, area under cultivation and the vacant land is also calculated here for better understanding.

Chandigarh- Kharar Road Land Use and Land Cover, 2006-2017
(Area in Hectares)

S. No.	Category	2006	%	2009	%	2012	%	2015	%	2017	%
1	Built-up Land	143.95	26.16	164.12	29.82	222.27	40.39	280.38	50.95	287.55	52.26
2	Water Body	2.12	0.38	1.86	0.34	1.5	0.27	1.34	0.24	0.48	0.09
3	Agricultural Land	187.36	34.05	134.99	24.53	111.83	20.32	93.34	16.96	87.01	15.81
4	Vacant Land	216.86	39.41	249.35	45.31	214.72	39.02	175.25	31.85	175.21	31.84
Total		**550.29**	**100**	**550.31**	**100**	**550.31**	**100**	**550.31**	**100**	**550.25**	**100**

Source: Calculated from the GIS Analysis of Satellite Images, 2006-17



Source: Calculated from the GIS Analysis of Satellite Images, 2006-17

Land Use and Land Cover, 2006

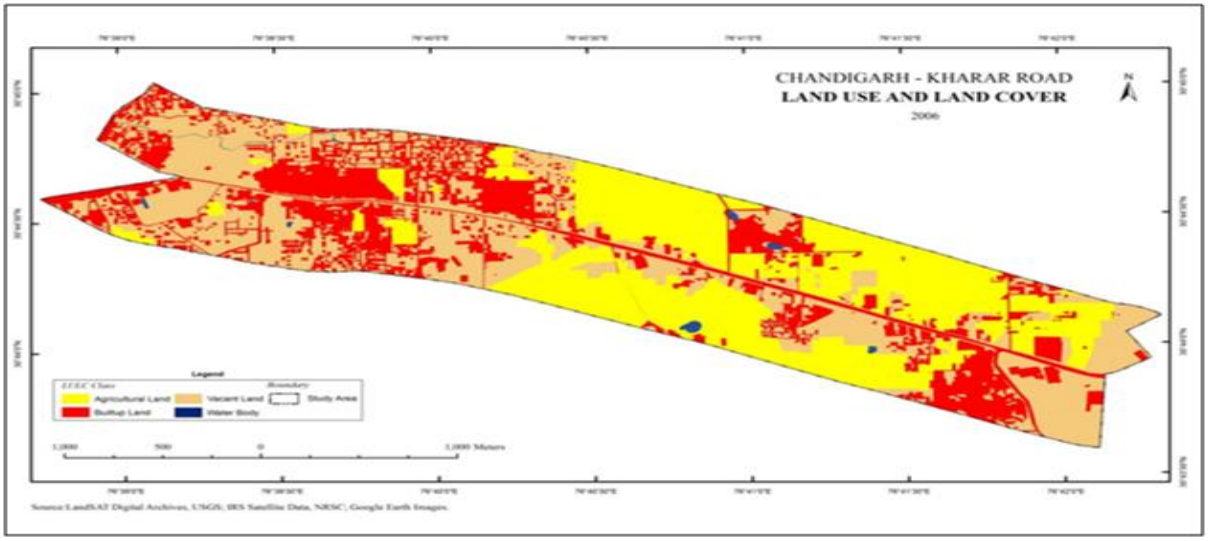
In 2006 approximately 34 per cent area was under agricultural land use (187 ha approx.). Majority of the transformation was witnessed close to the municipal boundary of Kharar. The vacant land expanded to 216.86 ha. On the other hand the built-up land expanded to 26 percent (143.95 ha.) of land. This growth of built-up land was due to the construction of residential colonies in the area. Various new projects such as Sunny Enclave Extension, Gilko Vally, and TDI city etc. transformed rural landscape into the built-up land.

Land Use and Land Cover, 2009

During 2009 the built-up area increased to almost thirty percent (164.12 ha) of land along the Chandigarh-Kharar road. The land acquisition from the villages falling under the Greater Mohali Area Development Authority (GMADA) master plan resulted in growth of vacant land to 249.35 ha (45% approx.). Most of the acquired land was transformed from agricultural to non-agricultural spearing only 134.99 ha (24.53 %) of land under agricultural land use. Water bodies occupied less than one per cent of the total land area covered over 1.86 hectares of land.

Land Use and Land Cover, 2012

In 2012 almost two fifth of the total area was transformed into built-up land (222.27 ha). Another two fifth of the land was converted to vacant land by regular land acquisition by government as well as private agencies (214.72 ha). This gain of built-up land and vacant land was adversely affecting the agricultural land as it shrunk to almost one fifth (111.83 ha) only. Water bodies remained almost same at 0.27 per cent (1.50 ha.).

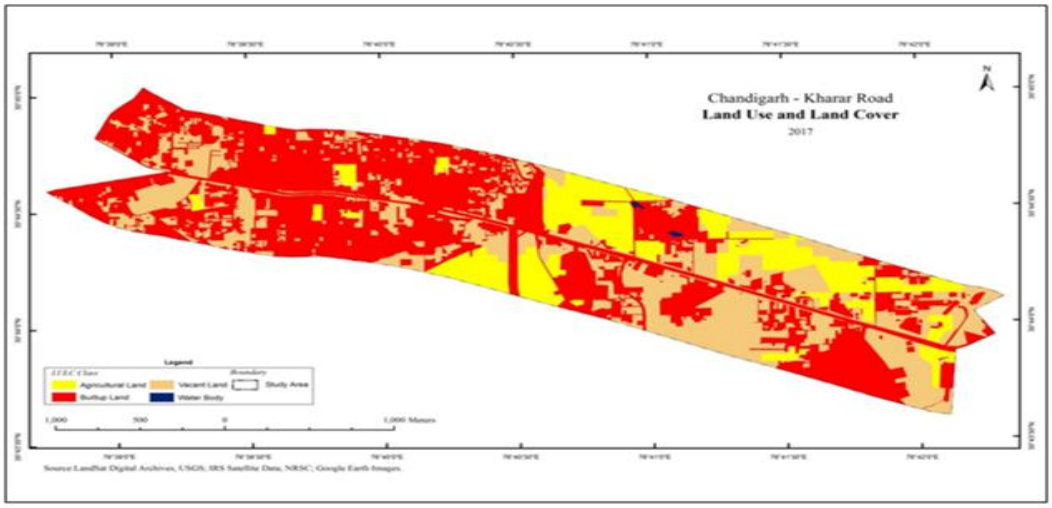


Land Use and Land Cover, 2015

Till 2015 almost one half of the total geographical area along the road was being transformed into built-up land (280.38 hectares) in the form of expansion of existing residential colonies, residential projects, commercial hubs etc. along the road in addition to construction of new roads. Vacant land occupied almost 32 per cent of land (175.25 ha). Agricultural land decreased to approximately 93 ha (16.96%). However, area under water bodies remained more or less stagnant.

Land Use and Land Cover, 2017

At present majority of the area along the road is transformed into non-agricultural activities (94%). Built up land accounts for more than 52 per cent (287.55 ha.) and vacant land occupies 31.84 per cent (175.21 ha.) of total land. Majority of the land being transformed started from the Kharar MC boundary and grew toward the Chandigarh city. Agricultural land occupied only 87.01 ha (15.81 %) as majority of the land under agricultural use was acquired and transformed into non-agricultural use.



Conclusion

It is evident that presently area under built-up land is approximately twice as it was in 2006 where as agricultural land deduced to manifolds. All this transformations adversely affecting the natural resources like water, soil, air etc.as it is observed that water bodies also remarkably reduced from 2006 to 2009.

There as various factors responsible for these on-going transformations of the area. Chandigarh–Kharar road being the major road connecting Chandigarh with rest of the Punjab provided opportunity to the developers and commercial entrepreneurs to set up their business centres and shopping complex along the road as it was attraction of large number of people visiting Chandigarh on almost daily. Chandigarh being a planned city and not providing development of private residential and commercial buildings pushed the developers towards the roads connecting Chandigarh with nearby cities. The growth of built-up land was guided by expansion of existing residential colonies, emergence of new residential projects, development of commercial hubs along the road and construction of new roads.

Urbanisation in the periphery of Chandigarh is in rapid expansion and structural transformation as a result of imperative changes in wealth, social structure, government policies and private entrepreneurship.In spite the huge continuous development in the peripheral region, the burden adhere by the city centre is continuously increasing as the people living in periphery commute regularly to the city for various purposes resulting in heavy burden on the existing roads connecting city to the adjacent places.

References

Census of India (2001) Primary Census Abstract. Directorate of Census Operations, Chandigarh, India.

Census of India (2011) Primary Census Abstract. Directorate of Census Operations, Chandigarh, India.

Chandigarh Master Plan (2014). Chandigarh Master Plan 2031, Chandigarh Administration, Chandigarh. Online available at http://chandigarh.gov.in/cmp_2031.htm

Jaganathan, R., Chelvaraajhan. K. & Mahalingam, S. (2010). Geomatics Based Assessment on Land Use Changes and its Impact Over the Groundwater Condition in a newly Developing Sub-Urban Area- A case Study of Southern Chennai, International Journal of Geomatics and Geoscience, 1(3), pp.271-281.

Pandey, A.C. & Nathawat, M.S. (2006). Landuse Landcover Mapping through Digital Image Processing of Satellite Data-A Case study from Panchkula, Ambala and Yamunanagar District, Haryana state, India. http://www.ijcns.com/pdf/372.pdf

Sharma, P.K. (2006). Chandigarh Peripheral Zone: 2020 (A Study of Futuristic Geography), A Ph. D. Thesis submitted to Department of Geography, Panjab University, Chandigarh.

Shaw, A. (2005). Peri-Urban Interface of Indian Cities: Growth, Governance and Local Initiatives, Economic and Political Weekly, 40(2), pp.129-136. http://www.jstor.org/stable/4416042.

Turkelboom, F.M., Poesen, J., Trebuil, G., (2008). The Multiple Land Degradation Effects Caused by Land Use Intensification in Tropical Steepland: A Catchment Study from Northern Thailand, Catena, 75, pp.102-116.