



THE URBAN PLANNING USING GEOSPATIAL TECHNOLOGY: CASE STUDY OF CHANDIGARH CITY

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ABSTRACT :

UT Chandigarh was chosen as a case study to apply GIS, to study patterns of Land use, Land cover and other aspects of urban planning which benefit from use of this technology while preparing master plans, development plans and local level action plans. It helps planners in pin pointing area specific problems within a city, via slums, traffic congestions, encroachments, solid waste management system etc.

Land Use and land Cover map gives the information of an area into the digital format. For completing study I used the modern technologies of Geographic Information System. In regional planning with the help of these technologies are very useful to the planners for proper future development plans. Once a city is created into digital format for the administration the decision making for future planning is easier. In this study, I have found about 80% of the total area is urbanized and remaining is rural under agriculture etc. In Chandigarh, I have found a few slums as well.

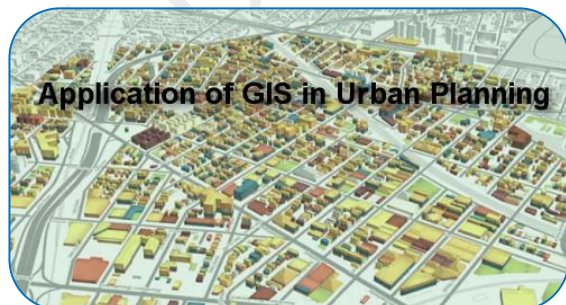
Future research thrust should be based on developing more realistic pattern finding and identifying more future landscape development of GIS environment so that all relevant queries can be raised and optimum solutions found during planning stage of land development itself.

KEYWORDS : LULC, Geovisualization, GIS .

1. INTRODUCTION

The modern technology of remote sensing which includes both aerial as well as satellite based systems, allow us to collect a lot of physical data easily, with speed and on repetitive basis, and together with GIS helps us to analyze the data spatially, offering possibilities of generating various options (modeling), thereby optimizing the whole planning process. This information system also offers interpretation of physical (spatial) data with socio-economic data, and thereby providing an important linkage in the total planning process and making it more effective and meaningful. (Forster B. 1983)

The use of the study is to shows the use of GIS technology in planning of U.T. Chandigarh. With the help of this technology different land use and land cover patterns have been categorized namely; built up areas, agriculture land, waste land, forest, open spaces, water bodies and transportation etc. The use of this technology saves money, time and gives the result with more accuracy by updating database from time to time.



2. STUDY AREA

Chandigarh is a union territory of India that serves as the capital of two states, Punjab and Haryana. The name Chandigarh translates as "The Fort of Chandi". The name was coined from an ancient temple called Chandi Mandir, devoted to the Hindu Goddess Chandi, present in the city's vicinity. It is occasionally referred to as The City Beautiful. UT of Chandigarh has an area of 114 sq. km. out of which 36 sq. km. is rural and remaining 78 Sq. km is urban. The city is divided into 55 dwelling sectors.

As the first planned city of India, Chandigarh is known internationally for its architecture and urban planning. Chandigarh is home to numerous architectural projects of Le Corbusier, Pierre Jeanneret, Matthew Nowicki, and Albert Mayer. The city tops the list of Indian States and Union Territories with the highest per capita income in the country at Rs. 99, 262 at current prices and Rs. 70, 361 at constant prices (2006–2007). As per a study conducted by Ministry of Urban Development, Chandigarh has emerged as the cleanest city in India

3. APPLICATION OF GIS TO STUDY AREA WITH FINDING

3.1 Existing Land Uses of the Study Area

Total Area of the study area is 28521.66 acres in which different land uses categorized as residential, industrial, commercial, public and semi-public, open spaces and play ground, Public utilities and under construction, Drainage and water bodies, Agriculture land, forest, vacant land and roads and parking etc. Further these land uses categorized into sub land uses as residential built up and residential open within built up etc.

Table1: Existing Land Use of the Study Area

Sr. No	Land Uses	Area in Acres	Percent
1	Residential	10467.35	36.7
	Built up	3096.83	10.86
	Open within Built Up	7370.52	25.84
2	Commercial	788.02	2.76
	Built up	230.72	0.81
	Open within Built Up(parking, pavements)	557.3	1.95
3	Industrial	727.19	2.55
	Built up	205.04	0.72
	Open within Built Up	522.15	1.83
4	Public and Semi-Public	2186.96	7.67
	Built up	288.52	1.01
	Open within Built Up	1898.44	6.66
5	Public utilities and Under Construction	182.54	0.64
6	Drainage and Water Bodies	923.03	3.24
7	Agriculture Land	2481.4	8.70
8	Forest	1667.55	5.85
9	Open Spaces and Play Ground	3593.29	12.60
10	Vacant Land	3322.54	11.65
11	Area Under Roads and Parking	2181.79	7.65
Total Area		28521.66	100.00

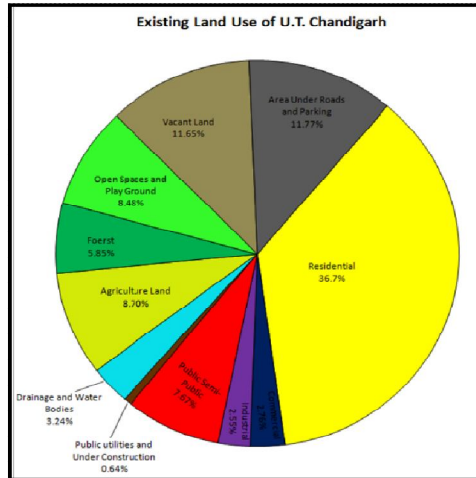


Figure 1: Distribution of Land use Study area

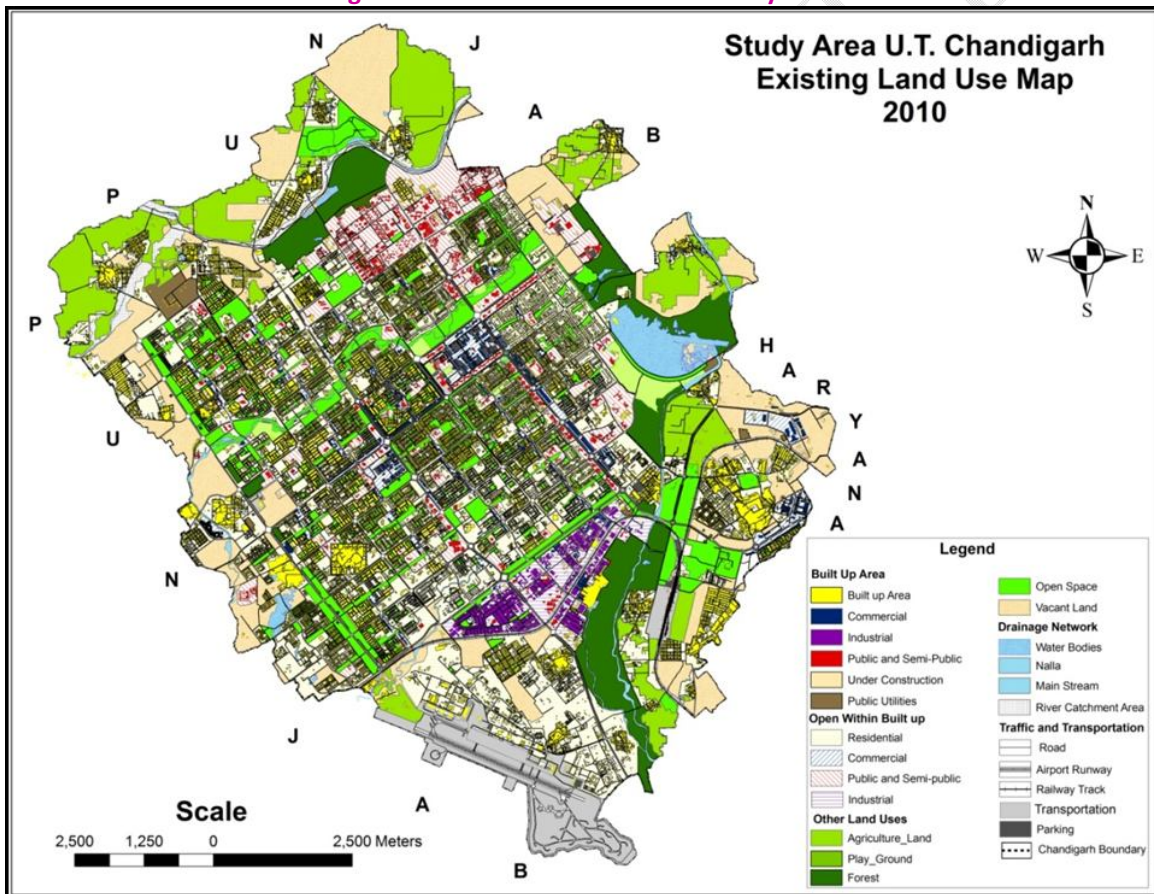


Figure 2: Existing Land use of U.T. Chandigarh

4. CONCLUSIONS

Due to my project, I have observed the significance of GIS in current scenario. It is helpful to know about the existing infrastructure of any place. On the base of GIS, a planner identified the problems of the city and gives good facilities in future.

By using the GIS and, the following conclusions have been derived in Chandigarh.

[A]. There is no land for expansion the roads in the future.

[B]. Greens area is degraded.

[C]. In some part of Chandigarh, Drainage system is not good. Storm water of households direct falls in Sukhna choe and Patiala Ki Rao Choe. These give the hygienic condition in the city and it will be a cause of environment pollution and harmful for groundwater.

[D]. Some slums are identified by with the help of this technology.

[E]. There are 11 percent area is vacant. It can useful for future development.

Thus this technology is very useful in current scenario as well as future development.

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REFERENCES

1. Bracken Ian. 1981. Urban Planning Methods, Research and Policy Analysis, Mathew & Co., USA.
2. Forster B. 1983. Some urban measurements from Landsat data, Photogrammetry Engineering and Remote Sensing, 49: 1707- 1716.
3. Govt. of India. 1988. Report of National Commission on Urbanization, Volume - VI, Published by Govt. of India.
4. MUA&E, 1996m, UDPFI guidelines, I: 1-253.
5. Raghavswamy V. Pathan SK, Ram Mohan P. Bhandari. R.J. and Priya P., 1996. IRS-1C Applications for Urban planning and development, Current Science, 70(7): 582-588.
6. Thakker PS, 2001. Remote Sensing of Cosmic cities in Ancient India. NNRMS Special issue on Archaeological Applications of Remote Sensing, Dept. of Space, Govt.of India, Bangalore, 26: 43-54.
7. AC, Ahmadabad, 1997, revised development plan of Ahmadabad Development Authority area –2011, Volume 1: Remote Sensing and GIS approach. Technical Report SAC/RSAG/TR/12/Aug/1997.
8. Sengupta S. and Venkatachalam P., "Assessment of Social and Physical Environment of a Planned Town with Geographical Information System: A Case of Durgapur, West Bengal, India," In: B. S. Sokhi and S. M. Rashid, Eds., Remote Sensing of Urban Environment, 1999, pp.196-203.
9. Ramesh B, 1988. Monitoring Urban Land uses using Aerial photographs and SPOT Image data, ACRS, Bangkok.
10. Census of India, New Delhi, 2011, <http://www.censusindia.net> (accessed on 11.03.2016)
11. <http://www.gisdevelopment.net/application/utility/transport> (accessed on 16.03.2016)
12. <http://www.interenvironment.org/cipa/urbanization.net> (accessed on 20.03.2016)
13. <http://www.GISdevelopment.net> (accessed on 17.03.2016)
14. http://en.wikipedia.org/wiki/Regional_planning (accessed on 15.03.2016)
15. <http://www.google.co.in/img> (accessed on 25.03.2016)
16. <http://www.chandigarh.nic.in/climate.htm> (accessed on 27.03.2016)



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