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\* **Corresponding author.**  
[prasanna.npk74@gmail.com](mailto:prasanna.npk74@gmail.com)

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# Spatial Changes in Landuse Pattern in Tumkur District (1985-86 and 2005-06) Karnataka, South India

K R Prasanna Kumar<sup>1\*</sup>

<sup>1</sup> Associate Professor, Department of Geography, Government First Grade College Vijayanagara, Bangalore-104

## Abstract

*The study of landuse and landuse change is of great importance in geographical studies. It not only helps to understand the temporal change but also is spatial variations. The positive or negative changes in the landuse have its bearing on the socio-economic and technological changes that have taken place during the same period in a region. And also it helps in identifying the other causes that have attributed for the changes undergone over time in the area of investigation. In the following paragraphs the spatial variations in different landuses during the period from 1985-86 and 2005-06, have been analyzed with the help of percentage changes in landuse pattern in Tumkur district*

**Keywords:** Landuse; Spatial Variations

## 1. Introduction

Landuse is the surface utilization of all developed and vacant land on a specific space, at a given time. Lands are used for crops, forest, pasture, mining transportation garden, residential, recreational, industrial and commercial purpose, whereas uncultivable waste land barren and fallow land are unused land. "Landuse is also related to conservation of land from one major use to another general use." The use of land changes according to the changing needs of man. Stamp (1948) has classified the needs of man into six major categories viz., the need for work, home, transportation, communication, defence and recreation.

Among the land resources agricultural land uses has played a vital role since time

immemorial engaging largest percentage of the inhabitants of the world. Owing to increasing pressure of population on land and ever-growing demand for food and raw materials, there is an urgent need for judicious use every piece of land. It calls for scientific, rational and economic planning for the use of land resources without disturbing ecological or socio-economic balance of the area. In the last decades there has been considerable change in the agricultural landuse in India and it applies to our study area too. Many socio-economic factors are responsible for this change but an enormous pressure of population on agricultural resources, diffusion of agricultural innovations, consolidation of holding and the awakening among the farmers are important ones.

Traditional system of cultivation is not only prevalent but they are also deep-rooted leaving no scope for further improvement in the overall productivity of land in the area. At the present juncture of traditional and modernized agriculture practices, a rational assessment of land and its scientific utilization has become pre-requisite with a view to eliminating the misuse of land resources, in fact, land resources use is central to all discussion of land problems and policies.

The land utilization of a large extent is influenced by the natural as well as social factors. The natural factors such as physiography, soil, rainfall, and climate have influenced the surface distribution of the land utilization. Landuse studies relating to small areas pay much dividends to the researchers. Landuse classification depends much on a sound knowledge of the researcher bring on his experience and observation, selective cropping pattern may be adopted according to the texture colour and scope of the soil. The cropping pattern may be followed according to soil sometimes other than soil factors. But in the present study area a sort of human adjustment to physical factors is there. But, at present the socio-economic and recent issues related to globalization are influencing landuse. These aspects need an investigation in the study area. <sup>(1-6)</sup>

## Study Area

Tumkur district in southeast part of Karnataka state extends from 12°-45' North to 14°-20' north and 76°-20' to 77°-31' East. It has a geographical area of 10,788 km<sup>2</sup> with a total population of 25,84,711 (2001). Figure 1 show the broad details of ten taluks of this district. Being a part of Deccan peninsular of South Karnataka it has predominately crystalline rocks like Genesis and granites and resultant red soils. The whole district forms a part of rain shadow region of peninsular India and some its eastern taluks are closer to drought prone region of central southeastern India. District receives around 660mm of annual average rainfall which is again is erratic forcing the whole agriculture to depend on rainfed ground water and tanks. Its dry land agriculture due to no major river and irrigation projects and closeness to Bangalore city 55-160 km has created a sort of 'push' conditions interms of human rural urban migration. District has three national highways (NH48, NH206 and NH4) with a railway line (Bangalore- Miraj broad-gauge line) relatively better all-weather roads. District has more or less agro-based industries than other form of industries. It has made a mark in coconut production and its industries particularly in Tiptur and other western taluks.

## 2 Methodology

Present study is totally based on the secondary sources of data. Data related to landuse both general and agricultural areas

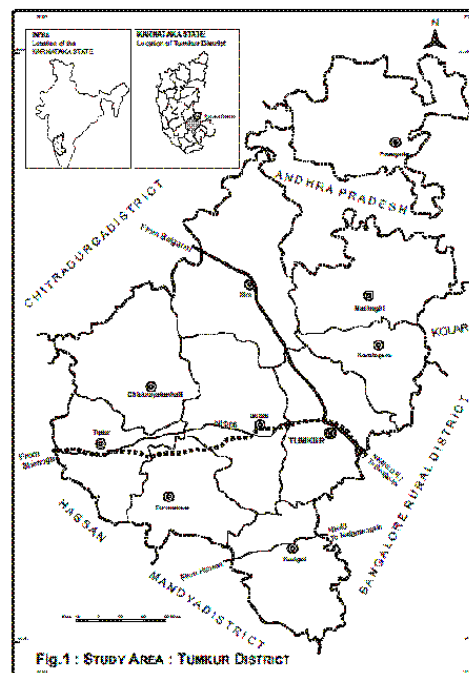


Fig. 1. Study Area

of different crops is obtained from Bureau of Economics and Statistics, Government of Karnataka, Bangalore. Also data on then and other aspects have been gathered from the District at a Glance of Tumkur District, Directorate of Statistics. Data has been analyzed for 1985-86, 1995-96 and 2005-06. Suitable percentages, trends in the form of growth rates and resultant tables, and figures have been computed. Correlation has been worked out between land uses /cropped area for different years and suitable inferences have been drawn.

## Decadal Change in Land use in Tumkur District (1985-86 AND 2005-06)

The study of landuse and landuse change is of great importance in geographical studies. If not only helps to understand the temporal change but also is spatial variations. The positive or negative changes in the landuse have its bearing on the socio-economic and technological changes that have taken place during the same period in a region. And also it helps in identifying the other causes that have attributed for the changes undergone over time in the area of investigation.

In the following paragraphs the spatial variations in different landuses during the period from 1985-86 and 2005-06, have been analyzed with the help of percentage changes in

landuse pattern in Tumkur district.

The past two decades in general have experienced a reckless cutting of forest whatever left in the region have led to ecological imbalance, increasing the aridity, erratic scanty rains and its impact on the socio-economic and physical environment one can see micro level physical changes of increased soil degradation and growth in more of xerotype of vegetation and scrubs in residual hills. On the other side the increasing demand for the food stuffs due to the alarming growth of population has definitely affected the area under not only forest but also on other land uses particularly as the analysis showed there is considerable increase on non agricultural land uses.

It is interesting here to note that in the study area at regional level has not shown any change in the area under forest. The same phenomena is observed in C.N.Halli, Koratagere, Gubbi, Madhugiri, Pavagada, Tiptur and Turuvekere taluks. However, in Kunigal and Tumkur taluks there is an increase in the forest area by 0.3% and 0.4% respectively.

The area under non-agricultural landuse and barren land has shown an increase in area by 0.4% from 1985-86 to 2005-06. The taluk level analysis of data reveals that majority of taluks have shown positive change in all taluks, Tumkur (1.1%), Tiptur (1.0%) and C.N.Halli (0.8%) taluks have high degree of increase in non-agricultural and barren landuse. It is evident from the fact that, these three taluks form a continuous east-west tract at the center of which Bangalore-Honnar state highway runs encouraging the growth and expansion of industrial areas in these taluks. Whereas a small amount of increase in non-agricultural and barren land area is observed in Madhugiri, Pavagada, Turuvekere, Sira, Gubbi, Koratagere and Kunigal taluks with 0.3%, 0.3%, 0.3%, 0.2%, 0.1%, 0.1% and 0.1% respectively (Table 1).

The other uncultivated land like cultivated waste, permanent pasture and miscellaneous trees overall percentage has decreased in the district all the taluks in between these two decades. The spatial analysis has shown this decrease in percentage some taluks have more than the district average they are Gubbi (-7.2%), Sira (-6.3%), Kunigal (-6.3%), Tiptur (-4.7%), Turuvekere (-5.1%) and remaining taluks have less than the district average they are Koratagere (-3.0%), C.N.Halli (-2.4%), Tumkur (-2.4%), Madhugiri (-1.6%) and Pavagada (-0.4%) taluks.

4.5 reveals that there is considerable decrease in the area under current fallows: It has declined from 1985-86 to 2005-06. At district level the decrease in area is to the extent of 7.3%. Amongst the taluks in the district the area under fallow lands in Tumkur (4.1%), Kunigal (3.1%) and Tiptur (1.0%) record an increase in the area under fallow lands, whereas in the remaining all the taluks there was a decrease in the area under this category.

The percentage decrease in the area under current fallow land varies from a minimum of 0.9% in Koratagere to

the maximum of 30.5% in Sira taluk. Sira and Turuvekere (-14.4%) taluks have experienced drastic decrease in the fallow lands to the extent of more than 10 per cent of their total geographical area. However, this decrease in area is compensated very well with an increase in net sown area in these taluks. Remaining taluks are showing decrease in area less than 10% are Madhugiri (-8.1%), Pavagada (-7.6%), Gubbi (-4.9%), C.N. halli (-1.1%) taluks in the district.

Compared to other areas under land uses the area change in net sown area is quite prominent. There is an increase in net sown area of 11.5% in the district. All the taluks in the district show an increase in the net sown area from 1985-86 to 2005-06 except in Tumkur (-.23%) which shows a decrease in net sown area. On the contrary the taluks which have experienced more than 50.0% increase in net sown area are Madhugiri 9.5%, Pavagada (7.9%), Koratagere (6.3%) and remaining taluks C.N.Halli (2.9%), Kunigal (2.8%), Tiptur (2.5%) show a small amount of increase of net sown area. But Sira taluk has recorded an exceptional increase in net sown area to the extent of 36.3% in 2005-06 as compared to 1985-86 because of the good amount of rainfall and development of well irrigation in the recent years.

### 3 Conclusion

Tumkur district in its total geographical area of 10,64,755 hectares has around 50-55% of the area was net sown area in this district based on both physical and man made factors affecting agricultural practices. But there is always the possibility of slight increase in all the taluks with farmers following better dry land irrigation practices. At any cost farmer must learn and practice dry land irrigation and water management. They must practice water management other than present flooding type. This will yield better returns in these days of rising cost of agriculture and impact of globalization. As the Tumkur district is closer to Bangalore city already one can see its impact particularly on flower like horticulture crops cultivated.

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Table 1. Talukwise percentage change in Landuse in Tumkur District (1985-86 and 2005-06)

Sl. No.	Name of Taluks	Forest	Land not available for cultivation (non agricultural & Barren)			Other cultivated land (cultivated waste, pasture, miscellaneous)			Fallow land (current and others)			Net Sown Area					
			1985-86	2005-06	Change +/-	1985-86	2005-06	Change +/-	1985-86	2005-06	Change +/-	1985-86	2005-06	Change +/-			
1	C.N. Halli	7.2	7.2	12.1	No	12.1	12.9	+0.8	24.9	22.5	-2.4	7.2	6.1	-1.1	48.2	51.1	+2.9
2	Gubbi	8.3	8.3	18.2	No	18.2	18.3	+0.1	14.8	7.6	-7.2	10.8	5.9	-4.9	47.8	60.0	+12.2
3	Koratagere	4.9	4.9	13.0	No	13.0	13.1	+0.1	21.2	18.2	-3.0	11.6	10.7	-0.9	49.5	55.8	+6.3
4	Kunigal	6.6	6.9	12.6	+0.3	12.6	12.7	+0.1	22.7	16.4	-6.3	3.2	6.3	+3.1	54.8	57.6	+2.8
5	Madhugiri	2.9	2.9	19.1	No	19.1	19.4	+0.3	17.7	16.1	-1.6	20.9	12.8	-8.1	39.3	48.8	+9.5
6	Pavagada	4.3	4.3	9.7	No	9.7	10.0	+0.3	10.4	10.0	-0.4	19.4	11.8	-7.6	56.1	64.0	+7.9
7	Sira	3.5	3.5	19.0	No	19.0	19.2	+0.2	23.4	17.1	-6.3	33.8	3.3	-30.5	20.3	56.6	+36.3
8	Tiptur	0.8	0.8	9.1	No	9.1	10.1	+1.0	22.3	17.6	-4.7	4.8	5.8	+1.0	62.9	65.4	+2.5
9	Tumkur	0.8	1.2	12.1	+0.4	12.1	13.2	+1.1	15.1	12.7	-2.4	11.2	15.3	+4.1	60.8	58.5	-2.3
10	Turuvekeri	0.8	0.8	8.1	No	8.1	8.4	+0.3	18.8	13.7	-5.1	21.2	6.8	-14.4	57.0	70.4	+13.4
	District	4.2	4.2	13.8	No	13.8	14.2	+0.4	18.9	15.0	-3.9	15.6	8.3	-7.3	47.3	58.8	+11.5

Source : Data compiled from Bureau of Economic and Statistics, Government of Karnataka, Bangalore