

TRENDS AND DIRECTION OF LAND USE CHANGE IN THE PERSPECTIVE OF URBANIZATION IN KARNATAKA

Kiran Kumar C R

Associate Professor

Department of Economics, Government First Grade College for Women, K R Nagar, Mysore
District, Karnataka state

ABSTRACT

The research investigated the shifting patterns of land use and their effects on sustainable development within the State. Land utilization is a fundamental factor for the agricultural sector and holds a significant place among all the resources needed for a contemporary economy. Similar to other resources, it possesses two dimensions, namely quality and quantity; both are essential elements and face significant risks due to their extensive and intensive utilization for agricultural and non-agricultural applications. The manner in which individuals manage and utilize land resources is crucial for their socio-economic welfare and the sustainability of those resources. The pattern of land use at any moment is influenced by several elements, including the scale of demand patterns, population density, livestock industry, technological advancements, cultural practices, land location and potential, as well as institutional aspects such as ownership structures, rights, and government regulations. The pattern of land use, while affecting sustainable development, also possesses significant ecological aspects that, if overlooked, could lead to severe consequences. The research identifies notable alterations in land use patterns and an ongoing expansion of utilized areas despite the rising demand for land for both agricultural and non-agricultural uses.

Keywords: Land Use Pattern, Land Utilisation and Agriculture Land Holdings, Sustainable Development.

INTRODUCTION

Alterations in land use patterns affect sustainable land utilization, presenting future challenges such as food security and the necessity for agricultural development. This progress must ensure both an increase in agricultural production and the conservation of natural resources. The preservation of natural resources is crucial due to agriculture's reliance on them. This indicates that the natural environment must be managed and treated to ensure food production is guaranteed both now and in the future. Food security involves not just the amount available, but also the consistency. Agriculture is therefore compelled to strike a balance between growth and preservation. In this process, the careful management of natural resources is crucially significant. One of the essential natural resources that life relies on is the soil.

OBJECTIVES OF THE STUDY

The present research study deals with the following objectives are:

1. To Study the changes of land use pattern in Karnataka
2. To examine the utilization of land in different sector of Karnataka.
3. To analyse the changes in land use pattern and its impact on sustainable development.

METHODOLOGY OF THE STUDY

The analysis of land use pattern in this present research study is mainly based on secondary sources compiled from various reports, economic survey, and published sources. To describe the relative position of the changes land use pattern of the sustainable development. The secondary data were collected from Directorate of Economics and Statistics (DES), Bangalore and State Department of Agriculture, Karnataka, Economic Survey of Karnataka, and Agriculture Census (2011). The CAAGR represents the growth rate of an initial investment assuming, it is compounding by the period of time specified. The concept of CAAGR is relatively requires only three major inputs an investments beginning value, ending value and the time period. The present study used CAGR to know the trend in the fields under changes of land use pattern in the different classification of utilisation in Karnataka from the period of 2013-14 to 2016-17. The formula is:

$$CGR (CGR \text{ per cent}) = [\text{antilog}(\log b) - 1] \times 1000$$

IV Changes of Land Use Pattern in Karnataka: An Overview

In terms of land use the utilization of land in temporal dimension of cropping activity. The most efficiently used land is one which does not remain at all in a given unit of time. Land is one of the most important resources in any production system and constrained by its limited supply. The availability of land and all its resources decides the development of the economy in the country as well as the State in particular. Owing to an upsurge in the growth rate of population and multiplicity of human wants, the assessment of physical resources of land and its utilization pattern has assumed paramount importance in all various of economics activities. Therefore, this is scarce non-renewable natural resource should be used judiciously through proper management.

Utilisation of Land in Different Sector in Karnataka

As per the land utilization statistical data for 2016-17, out of the total area of 19050 hectares geographical area of the State, the net cropped area was 98.55 lakh hectares accounting for 51.73 per cent of the total geographical area. Gross cropped area was 117.79 lakh hectares including 19.24 lakh hectares area sown more than once, this works out to 120 per cent cropping intensity. Around 16 per cent of the area was covered under forests, 7.85 per cent area was under non-agricultural uses, 4.16 per cent land was barren and uncultivable land, and 2.10 per cent land was cultivable waste. Permanent pastures, grazing land and miscellaneous tree crops constituted 6.19 per cent of the total geographical area. About 11.83 per cent of the total area falls under current fallow and other fallow land.

Land use pattern in Karnataka during the period from 2013-14 to 2016-17 with their share is presented in Table-1. It could be observed that in 2013-14, net area sown accounted for 52.09 per cent of the total geographical area. Around 16.13 per cent of area was covered by forest. Barren and uncultivable land and land put to non-agricultural uses occupied 4.13 per cent and 7.58 per cent respectively. Current fallows and fallows other than current fallow accounting for 8.92 per cent and 2.76 per cent respectively. Permanent pastures, cultivable wastes and land under miscellaneous tree crops and groves covered 4.76 per cent, 2.16 per cent and 1.48 per cent respectively.

Table-1 Share of Different Land Use Categories to Total Geographical Area in Karnataka

| Land Use category | 2013-14 | 2014-15 | 2015-16 | 2016-17 | Average | CAGR |
|--|-------------------|-------------------|-------------------|-------------------|---------|-------|
| Area under Forest | 3073 (16.13) | 3073 (16.13) | 3073 (16.13) | 3073 (16.13) | 3073 | 0.0 |
| Barren and uncultivable lands | 787 (4.13) | 787 (4.13) | 793 (4.16) | 793 (4.16) | 790 | 0.30 |
| Land put to non-agricultural uses | 1444 (7.58) | 1461 (7.67) | 1476 (7.75) | 1495 (7.85) | 1469 | 1.15 |
| Permanent pastures and other grazing lands | 906 (4.76) | 904 (4.75) | 907 (4.76) | 905 (4.75) | 905.5 | -0.01 |
| Cultivable wastes | 411 (2.16) | 409 (2.15) | 409 (2.15) | 400 (2.10) | 407.25 | -0.81 |
| Miscellaneous tree crops and groves | 281 (1.48) | 277 (1.45) | 276 (1.45) | 275 (1.44) | 277.25 | -0.68 |
| Current fallows | 1700 (8.92) | 1572 (8.25) | 1453 (7.63) | 1561 (8.19) | 1571.5 | -3.29 |
| Fallows other current fallow | 525 (2.76) | 523 (2.75) | 656 (3.44) | 692 (3.63) | 599 | 11.13 |
| Net area sown | 9923 (52.09) | 10044 (52.72) | 10006 (52.53) | 9855 (51.73) | 9957 | -0.24 |
| Total reported area | 19050 (100.00) | 19050 (100.00) | 19049 (100.00) | 19049 (100.00) | | |

Source: Government of Karnataka, Report of Directorate of Economics and Statistics 2016-17, Bengaluru.

The above land use category was simultaneously increasing position of the State. During 2016-17, forest covered 16.13 per cent, Barren and uncultivable land and land put to non-agricultural uses occupied 4.16 per cent and 7.85 per cent respectively. Permanent pastures, cultivable wastes and land under miscellaneous trees crops correspondingly covered 4.75 per cent, 2.10 per cent and 1.44 per cent. Current fallows and fallows other than current fallow accounted 8.19 per cent and 3.63 per cent respectively. Net sown area occupied 51.73 per cent of the total geographical area.

Land Utilization and Agriculture Land Holdings

During 2015-16, According to Agriculture Census, 86.77 lakh farm holdings are operating 117.24 lakh hectares. Small and marginal holdings accounting for 80 per cent of total

holdings and operate 44 per cent of the total operated area, while semi-medium, medium and large holdings accounting for 20 per cent of the total holdings and their operational land holding is 56 per cent out of the total operational area. The average size of operational holding is 1.35 hectares in the State. The other details of number of operational holdings, area of operational holdings, average size of operational holdings in hectares of land holding in Karnataka during the period from 1995-96 to 2015-16 are given in Table-2.

Table-2 Changes of Land Holdings in Karnataka (1995-96 to 2015-16)

| Year | Number of Operational Holdings ('000) | Area of Operational Holdings ('000 Hectares) | Average Size of Operational Holdings (Hectares) |
|-------------|---------------------------------------|--|---|
| 1995-96 | 6221 | 12109 | 1.95 |
| 2000-01 | 7079 | 12307 | 1.74 |
| 2005-06 | 7581 | 12385 | 1.63 |
| 2010-11 | 7832 | 12161 | 1.55 |
| 2015-16 | 8677 | 11724 | 1.35 |
| CAGR | 7.97 | -0.76 | -8.16 |

Source: Agricultural Census 2015-16 (Phase-1 Provisional Results), Government of India.

Table-3 District-wise Distribution of Land utilization in Karnataka 2016-17
(In Hectares)

| District | Land Utilisation | | | | | | | | |
|----------------|------------------|--------|------------------------------------|-------|--------|-------------------------|--------|-------|--------|
| | GGA | FOR | Land not available for cultivation | | | Other Uncultivated land | | | Total |
| | | | NAU | BAUL | Total | CW | PP | TAG | |
| Bengaluru | 217410 | 5055 | 124791 | 4911 | 129702 | 3889 | 5674 | 7648 | 17211 |
| Bengaluru (R) | 229519 | 11322 | 45468 | 11124 | 56592 | 3898 | 3879 | 13429 | 21206 |
| Ramanagara | 355912 | 69946 | 27671 | 24339 | 52010 | 1178 | 24662 | 3950 | 38417 |
| Chitradurga | 770702 | 73719 | 55450 | 25403 | 80853 | 21612 | 88740 | 11317 | 121669 |
| Davanagera | 597597 | 89918 | 39792 | 20533 | 60325 | 8525 | 19538 | 4955 | 33018 |
| Kolar | 374966 | 20620 | 45677 | 28870 | 74547 | 6397 | 39418 | 7009 | 154687 |
| Chikaballapura | 404501 | 49704 | 32743 | 34302 | 67045 | 4743 | 55550 | 6482 | 66775 |
| Shivamogga | 847784 | 276855 | 88708 | 13312 | 102020 | 16311 | 163463 | 26868 | 206642 |

| | | | | | | | | | |
|----------------------|-------------|--------|--------|-------|------------|-------|-------|-------|------------|
| Tumkuru | 106475 5 | 45177 | 89943 | 67539 | 15748 2 | 62642 | 76453 | 21033 | 2734 17 |
| Chikkamagaluru | 722075 | 202028 | 43579 | 28322 | 71901 | 19322 | 88585 | 19774 | 1276 81 |
| Dakshina Kannada | 477381 | 128476 | 68711 | 58780 | 12749 1 | 27755 | 14401 | 25386 | 6754 2 |
| Udupi | 356446 | 100102 | 42284 | 11595 | 53879 | 36929 | 10625 | 44307 | 1952 23 |
| Hassan | 662602 | 58775 | 79586 | 30365 | 10995 1 | 14142 | 32943 | 6963 | 5404 8 |
| Kodagu | 410775 | 134597 | 24215 | 31010 | 55225 | 9076 | 13884 | 20219 | 4317 9 |
| Mandya | 498244 | 24765 | 63492 | 21519 | 85011 | 41955 | 32049 | 3628 | 9722 7 |
| Mysuru | 676382 | 62851 | 75209 | 45018 | 12022 7 | 21407 | 46808 | 5871 | 7408 6 |
| Chamarajana nagar | 569901 | 275610 | 24627 | 21434 | 46061 | 7637 | 22750 | 4741 | 3512 8 |
| Belagavi | 134438 2 | 190424 | 69830 | 44342 | 11417 2 | 11465 | 24877 | 3093 | 1092 14 |
| Vijayapura | 105347 1 | 1977 | 36266 | 29059 | 65325 | 5502 | 9575 | 1316 | 1639 3 |
| Bagalkot | 658877 | 81126 | 28832 | 24810 | 53642 | 2035 | 3429 | 274 | 5738 |
| Dharawad | 427329 | 35235 | 24059 | 3985 | 28044 | 2669 | 3571 | 184 | 2213 1 |
| Gadag | 465715 | 32614 | 10481 | 11628 | 22109 | 1010 | 2592 | 258 | 3860 |
| Haveri | 485156 | 47454 | 33357 | 5793 | 39150 | 2989 | 12209 | 2290 | 1748 8 |
| Uttara Kannada | 102467 9 | 813595 | 34665 | 16140 | 50805 | 6450 | 16625 | 4806 | 2134 8 |
| Ballari | 813196 | 97017 | 110291 | 53477 | 16376 8 | 24839 | 5472 | 3606 | 3391 7 |
| Bidar | 541765 | 27707 | 22768 | 19127 | 41895 | 19382 | 13964 | 10933 | 4427 9 |
| Kalaburagi | 109412 0 | 35316 | 40769 | 35113 | 75882 | 9417 | 25855 | 1131 | 7819 6 |
| Yadgiri | 516088 | 33773 | 29623 | 27954 | 57577 | 2385 | 11755 | 737 | 1487 7 |
| Raichur | 835843 | 18167 | 20536 | 20084 | 40620 | 10712 | 19816 | 13684 | 4421 2 |
| Koppal | 552495 | 29451 | 42188 | 23465 | 65653 | 2568 | 17842 | 210 | 5908 9 |

| | | | | | | | | | |
|--------------|----------------------|---------------------|---------------------|---------------|---------------------|---------------|---------------|--------------------|---------------------|
| State | 190500 68 | 307337 6 | 147561 1 | 793353 | 22689 64 | 408841 | 907004 | 27610 2 | 2097 898 |
|--------------|----------------------|---------------------|---------------------|---------------|---------------------|---------------|---------------|--------------------|---------------------|

Source: Government of Karnataka, Report of Directorate of Economics and Statistics 2016-17, Bengaluru.

Note: GGA: Geographical Area, FOR: Area under Forest, NAU: Non-agricultural Uses, BAUL: Barren and Uncultivable land, CW: Cultivable waste, PP: Permanent pasture, TAG: Trees and Groves

The changes in land use pattern across the districts of Karnataka are given in Table-3 and Table-4 for the year of 2016-17. It clear found noted from the table that there is a very wide variation in land use across the districts of Karnataka. The Uttara Kannada district has highest forest area of 26.47 per cent, followed by the Shivamogga (9.01%), Chamarajanagar (8.97%), Chikkamagaluru (6.57%), and Belagavi (6.20%) districts are the next highest position of the forest area in the State.

This table found from the district-wise distribution of land not available for cultivation in the State. The Ballari district has highest land not available for cultivation area of 7.22 per cent, followed by the Tumkuru (6.94%), Bengaluru urban (5.72%), Dakshina Kannada (5.62%), and Mysuru (5.30%) districts are the next highest position of the land not available for cultivation area in the State.

Above table found that the district-wise distribution of other uncultivated land are Cultivable waste, permanent pasture, Trees and Groves in the State. The Tumkuru district has highest land not available for cultivation area of 13.03 per cent, followed by the Shivomogga (9.85%), Udupi (9.31%), Chikkamagaluru (6.09%), Chitradurga (5.80%), and Belagavi (5.21%) districts are the next highest position of the land not available for cultivation area in the State. The other details the data of district-wise percentage distribution of land utilization in Karnataka in 2016-17 are given in Table-4.

Table-4 District-wise Percentage Distribution of Land Utilization in Karnataka in 2016-17

| Sl. No | Districts | Area under Forest | Land not available for Cultivation | Other Uncultivated Land |
|---------------|------------------|--------------------------|---|--------------------------------|
| 1 | Bengaluru | 0.16 | 5.72 | 0.82 |
| 2 | Bengaluru (R) | 0.37 | 2.49 | 1.01 |
| 3 | Ramanagara | 2.28 | 2.29 | 1.83 |
| 4 | Chitradurga | 2.40 | 3.56 | 5.80 |
| 5 | Davanagere | 2.93 | 2.66 | 1.57 |
| 6 | Kolar | 0.67 | 3.29 | 7.37 |
| 7 | Chikaballapura | 1.62 | 2.95 | 3.18 |
| 8 | Shivamogga | 9.01 | 4.50 | 9.85 |
| 9 | Tumkuru | 1.47 | 6.94 | 13.03 |
| 10 | Chikkamagaluru | 6.57 | 3.17 | 6.09 |
| 11 | Dakshina Kannada | 4.18 | 5.62 | 3.22 |

| | | | | |
|----|----------------|-------|------|------|
| 12 | Udupi | 3.26 | 2.37 | 9.31 |
| 13 | Hassan | 1.91 | 4.85 | 2.58 |
| 14 | Kodagu | 4.38 | 2.43 | 2.06 |
| 15 | Mandya | 0.81 | 3.75 | 4.63 |
| 16 | Mysuru | 2.05 | 5.30 | 3.53 |
| 17 | Chamarajanagar | 8.97 | 2.03 | 1.67 |
| 18 | Belagavi | 6.20 | 5.03 | 5.21 |
| 19 | Vijayapura | 0.06 | 2.88 | 0.78 |
| 20 | Bagalkot | 2.64 | 2.36 | 0.27 |
| 21 | Dharawad | 1.15 | 1.24 | 1.05 |
| 22 | Gadag | 1.06 | 0.97 | 0.18 |
| 23 | Haveri | 1.54 | 1.73 | 0.83 |
| 24 | Uttara Kannada | 26.47 | 2.24 | 1.02 |
| 25 | Ballari | 3.16 | 7.22 | 1.62 |
| 26 | Bidar | 0.90 | 1.85 | 2.11 |
| 27 | Kalaburagi | 1.15 | 3.34 | 3.73 |
| 28 | Yadgiri | 1.10 | 2.54 | 0.71 |
| 29 | Raichur | 0.59 | 1.79 | 2.11 |
| 30 | Koppal | 0.96 | 2.89 | 2.82 |

Source: Government of Karnataka, Report of Directorate of Economics and Statistics 2016-17, Bengaluru.

Changes in Land Uses Pattern: Its Impact on Achieve Sustainable Development

Impact of changes in land use pattern on sustainable development. Changing in land use pattern is one of the systematic assessments of land and water potential, alternatives for land use and socio-economic conditions in order to adopt the best land use options. Its purpose is to select and put into practice those land uses that will best meet the needs of the population while preservation resources for the future development. The dynamic force in pattern should be the need for change, the need for improved management various pattern of land use dictated by changing conditions. In the process all different types of land use pattern includes - agriculture, forestry, wildlife conservation, urban and industrial expansions, tourism and amenities. Land use developing can be viewed as an iterative and continuous process, whose aim is to make the best use of land resources like assessing present and future essential and evaluating the land's availability to meet them; identifying and resolving conflicts among competing land uses and necessary; devising alternative options and choosing those that best fit identified targets; and also experience of learning.

The objectives and targets identify the best use of the land. It will determine which of the two land uses should be implemented, while the targets will indicate which procedures should be followed. The important goals for land uses and they are efficiency, equity and acceptability,

sustainability, liability and amenity, flexibility, and public investment. The other details of the changing land use pattern and its impact on sustainable development.

Table-5 Impact of Changing in Land Use Pattern on Sustainable Development

| Sl. No | Factors | Description |
|--------|--------------------------|---|
| 1 | Efficiency | <ul style="list-style-type: none"> • The economic viability of the land uses of development. So, one goal of planning development is to make efficient and productive use of the land. • Efficiency is achieved by matching different land uses with the areas that yield the greatest benefit at the least cost in future. • The point of view of individuals, for instance, focuses on the greatest return on capital and labour invested or on the greatest benefit from the area available. • It may include improving the foreign trade exchange situation by producing for export or for import substitution. |
| 2 | Equity and Acceptability | <ul style="list-style-type: none"> • It is represent the social features of land use planning. • Equity refers to the levelling of the living standards of the residents. • People living in the planning area are expected to gain from the land use plan, even if they do not own the land. Living standards may include levels of income, food security and housing. Planning to achieve these standards then involves the allocation of land for specific uses as well as the allocation of financial and other resources. |
| 3 | Sustainability | <ul style="list-style-type: none"> • Refers to a development in land use planning that meets the needs of the present while conserving resources for future generations. • It has to be planned for the community as a whole, because the conservation of soil, water and other land resources is often beyond the means of individual land users. |
| 4 | Liability and Amenity | <ul style="list-style-type: none"> • After the land use development is implemented, the area should still be appropriate areas to live for the inhabitants as well as rendering life pleasant. |
| | Flexibility | <ul style="list-style-type: none"> • The plan should be flexible and leave options for using the land in different ways if needed in the future. |
| 5 | Public Involvement | <ul style="list-style-type: none"> • Individual with an interest in the plan should be allowed to participate in the process, to keep their land use from disappearing through the plan/ to be offered a new land use, as part of the plan. |

The above table shows the sustainable land use planning, should improvement into an interdisciplinary, holistic approach that gives attention to all objectives of the land and actively engages all land users through a participatory process of negotiation platform at national as well state levels at regional levels. The aim of the process is to create the conditions to achieve an environmentally sound, socio-economic appropriate form of land use pattern.

CONCLUSION

The information on changes in land use is needs to develop in the future strategies on land use pattern and land use policies. Economic perception requires the optimum utilization of land to take full advantage of the welfare of the community by the meeting diverse essentials. The land use pattern is ultimately bent by a host of factors like physical, human, technological, socio-economic development, political, and institutional. The structural changing in the land use pattern over a period of time provides scope for planned and judicious management of land. Rational management of land resources plays a crucial role in developing the state economy in general. The non-agricultural land use was recognized as the main factor for changes in common lands as it affected the current fallows is negatively. The land use pattern is of the most important role in the agriculture and non-agriculture activities in the economy. So, it will be spread/ covering of future situation that means sustainable development in the geographical purposes.

REFERENCES

1. Sreeja Mohan, (2004), Land use dynamics in Kerala- an economic analysis. M.Sc. (Agri) Thesis, University of Agricultural Sciences, Dharwad.
2. Subhashini, S., (2001), Import liberalization and consequent shift in cropping pattern – A case study of groundnut in Tamil Nadu. M.Sc (Agri.) Thesis, Tamil Nadu Agricultural University, Coimbatore.
3. Prashantkumar, R.W., (2003), Animal based farming systems for long term sustainability in Northern Karnataka-A Socio-economic Assessment. Ph.D. Thesis, University of Agricultural Sciences, Dharwad.
4. Government of Karnataka, Report of Directorate of Economic and Statistics (DES) 2016-17, P.14.
5. Ibid,P.16
6. Ibid, P.23.
7. Agricultural Census 2015-16 (Phase-1 Provisional Results), Government of India.