

## **Landholding Structure among Social Groups in Karnataka: An Analysis of Agro-Climatic Zones**

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**Abstract:** *Land as a productive asset plays an important role not only in the functioning of rural economy but also in changing fortunes of the families and socio-economic groups. Other things being equal, larger the control over land by a family or a group of relatively homogeneous set of families, larger is its socio-economic and political power. The growth in the Proportion of marginal holdings and the area operated by them increase through land markets and demographic growth the land transfer from lower to higher rungs of agrarian structure results in the growth of marginal holdings and landless agricultural labours and impoverishment at the bottom of agrarian structure. "Nowadays land ownership is considered to be one of the most important sources of livelihood and social status by the farmers land market operates largely through tenancy rather than outright sale or purchase". An important issue is that whether the agrarian change characterized by growing number of small and marginal landholdings and declining land frontiers has brought about any changes in the occupational structure within and outside agriculture. There is increase in number of marginal SC farmers across arid, irrigated and coastal/hilly zones. In coastal/hilly zones, the percentage of increase in number of marginal farmers is high, it is around 45.91%. Across other size of landholdings, there is substantial decrease in the number of SC farmers. There is increase in number of marginal ST farmers across arid, irrigated and coastal/hilly zones. In coastal/hilly zones, the percentage of increase in number of marginal farmers is high, it is around 89.96%. Across small size of landholdings, there is increase in the number of ST farmers in arid and coastal/hilly zones. Across other caste, the number of marginal farmers has increased in across arid, semi-arid and coastal/hilly zones. In semi-arid zones, the percentage of increase in number of marginal farmers is high, it is around 21.64%. Across small size of landholdings, the number of other caste farmers has increased in all zones.*

**Keywords:** Size of Land Holdings, Agro-Climatic Zones, Land forms

### **Introduction**

Agriculture is the major occupation. A total of 123.100 km of land is cultivated in Karnataka constituting 64.6% of the total geographical area of the state. Farmers and agricultural labourers formed 56% of the workforce of Karnataka. Agriculture in Karnataka is heavily dependent on the southwest "Monsoon" since the extent of arid land in the state, second only to Rajasthan. The growth in the Proportion of marginal holdings, the area operated by them, increase through land markets, demographic growth and the land transfer from lower to higher rungs of agrarian

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structure results in the growth of marginal holdings and landless agricultural laborers and impoverishment at the bottom of agrarian structure. Nowadays land ownership is considered to be one of the most important source of livelihood and social status by the farmers land market operate largely through tenancy rather than outright sale or purchase.

India is an over-populated agrarian country. Agriculture still is the lifeline of our economy. Today, Agricultural allied service contributes around 28% of the gross domestic product. About 75% of the population is still dependent directly or indirectly, on agriculture, while it provides employment to two-thirds of the total workforce. The solution of several problems which the nation is facing is critically dependent on the rapid development of agricultural allied activities. Since independence agriculture has marched a long way new economic and social relations have emerged. The growth in the Proportion of marginal holdings and the area operated by them increase through land markets and demographic growth the land transfer from lower to higher rungs of agrarian structure results in the growth of marginal holdings and landless agricultural labours and impoverishment at the bottom of agrarian structure.

The following research issues in trends of land holdings among social groups in different agro-climatic zones of Karnataka. They are:-

- 1) Whether the distribution of area number of land holdings among the social groups are uniform or unequal.
- 2) Whether the area of land holdings size has increased/ decreased over the years at all Karnataka level.
- 3) Whether the inter-zonal variation in number and area of land holdings by social groups have reduced over the years.
- 4) Whether there is high reduction in larger land holdings among the social groups over the years at all Karnataka and also across the zones of Karnataka.

### **Review of Literature**

Tyagi (1982) points to three Generalizations First land less labour, Marginal and small Farmers, account for bulk of leased in and leased out area. Second one medium size holdings also lease in land and lease out land in a considerable scale. Third one In some states big-farmers do not lease in considerable land area and in most of the states they lease out considerable area.

Parthasarathy (2006) has examined the consequences of directions of land reforms in the 1990s which is a major issue relevant to the land question in the shift of rural people to the urban area and their prospects, as rural people migrate to the urban areas, access to land may be considered to become less urgent growing shifts tighten the labour market within rural areas ,raise agricultural labour wages and Simultaneously reduce the share of the land owners while raising the returns to labour.

Chenerry (2008) studied the regional disparity in the changes of agricultural land use intensity in China during the 1980 -2002. This paper is based on the cost-benefit data (1980-2002) of farm products and China yearbooks. The present study takes into consideration three aspects, as the degree of intensity, the sown area and the abounded farmland. While reviewing this article, one note should be considered that, china is a large country with high population between limited farmland, so grain security is always remained strategic issue.

Ludwig's *et al* ( 2013) analyzed three aging state -led land reform projects in Amazonia as through time lot turnover consolidation & fragmentation different impact the spatial composition of agrarian structure & land use, in brazil land concentration dates from the colonial

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period & land reform propositions have been part of government's course for at least the last 60 years. This is especially relevant if we consider that goals such as a promotion of Agricultural development & reduction of inequalities on access to land. We discuss the relationship between possession of titles, & land use, and land distribution these findings are then used to discuss the roles of markets & institution in determining changes in the settlements agrarian structure. The land tenure structure in Santarem shows most small holds families with no official titles to their lands, while second area sources point to the opposite condition among large holders.

### **Objectives**

- 1) To examine the trends and patterns in the number and area of operational land holdings among social groups in different agro- climatic zones in Karnataka.
- 2) To Offer policy suggestion to improve the landholding condition in Karnataka

### **Materials and Method**

The study is based on secondary data. The data has been collected from various sources such as; Agriculture census, Karnataka at a Glance and Census of India for Karnataka level. The data thus collected at the district level were aggregated into four agro-climatic zones which have different features of agronomy. According to the Zonal Planning Team constituted by the Planning Commission, Government of India, all the 30 districts in the states were categorized into four sub-zones based on agro-climatic characteristics such as rainfall, soil, temperature, irrigation, cropping pattern, agricultural productivity. The statistical tools that are used in this study are Percentages, Averages, and Variation.

### **Result and Discussion**

**To examine the trends and patterns in the number and area of operational land holdings among social groups in different agro- climatic zones in Karnataka**

#### **Trends in land holdings**

There are four main agro-climatic zones as arrived by the Planning Commission Report. First zone is characterized by dry agriculture and includes districts namely Bagalkot, Belgaum, Bellary, Bijapur, Bidar, Dharwad, Gulbarga, Gadag, Haveri, Koppal and Raichur. The second zone is semi-arid zone consisting districts namely Bangalore rural & urban, Ramnagar, Chitradurga, Kolar, Tumkur, Chikkaballapur and Chamrajnagar. The third zone is irrigated and consists of districts namely Mandya, Mysore, Hassan and Davangere. The fourth and last zone is Coastal and Hilly which includes districts namely Chikkamagalur, Dakshina Kannada, Kodagu, Shimoga, Uttar Kannada and Udupi.

**Table 1: Trends of land holdings across Scheduled Caste in Karnataka**

Size of land Holdings	Number of Farmers				Area of Land holdings (in hectares)			
	Arid Zone	Semi-arid	Irrigated	Coastal & hilly	Arid Zone	Semi-arid	Irrigated	Coastal & hilly
<b>2005-06</b>								
Marginal	127807	161388	134331	50582	82172	79831	58893	22819
Small	131849	66413	45899	16080	190077	93330	63653	22289
Semi-medium	72310	26136	12286	4271	190493	67585	31578	10807
Medium	20601	6631	2095	687	115209	36189	11217	3689
Large	1811	483	107	35	24386	6567	1365	488
<b>Total</b>	<b>354378</b>	<b>261051</b>	<b>194718</b>	<b>71655</b>	<b>602337</b>	<b>283502</b>	<b>166706</b>	<b>60092</b>
<b>2010-11</b>								
Marginal	146557	149205	141126	73804	71544	78754	57554	23162
Small	82470	33202	12043	11482	200625	88910	59546	22350
Semi-medium	60946	23529	11609	4264	185347	59968	29246	10721
Medium	19146	5006	1748	600	105898	26944	9148	3118
Large	1591	401	91	22	21281	5847	1224	320
<b>Total</b>	<b>310710</b>	<b>211343</b>	<b>166617</b>	<b>90172</b>	<b>584695</b>	<b>260423</b>	<b>156718</b>	<b>59671</b>
<b>Percent change in 2010-11 over 2005-06</b>								
Marginal	14.67	-7.55	5.06	45.91	-12.93	-1.35	-2.27	1.50
Small	-37.45	-50.01	-73.76	-28.59	5.55	-4.74	-6.45	0.27
Semi-medium	-15.72	-9.97	-5.51	-0.16	-2.70	-11.27	-7.38	-0.80
Medium	-7.06	-24.51	-16.56	-12.66	-8.08	-25.55	-18.45	-15.48
Large	-12.15	-16.98	-14.95	-37.14	-12.73	-10.96	-10.33	-34.43
<b>Total</b>	<b>-12.32</b>	<b>-19.04</b>	<b>-14.43</b>	<b>25.84</b>	<b>-2.93</b>	<b>-8.14</b>	<b>-5.99</b>	<b>-0.70</b>

Source: Karnataka at a Glance for 2005-06 and 2010-11, Government of Karnataka

Table 1 shows the trends in number and area of land holdings of Scheduled Caste across the zones and size of land holdings. There is increase in number of marginal SC farmers across arid, irrigated and coastal/hilly zones in the year 2010-11. In coastal/hilly zones, the percentage of increase in number of marginal farmers is high, it is around 45.91%. Across other size of landholdings, there is substantial decrease in the number of SC farmers. In total SC landholdings, only in coastal/hilly zones, the number of SC farmers has increased with 25.84%.

There is rise in the area of marginal SC landholdings across coastal/hilly zones in 2010-11, but in other agro-climatic zones, the area of marginal landholdings has seen a decrease. In small landholdings, the area has increased only in arid and coastal/hilly zones. Across other size of landholdings the area of landholdings under SC is also decreasing. In total SC landholdings, the area has decreased in all the zones of Karnataka.

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**Table 2: Trends of land holdings across Scheduled Tribes in Karnataka**

Size of land Holdings	Number of Farmers				Area of Land holdings (in hectares)			
	Arid Zone	Semi-arid	Irrigated	Coastal & hilly	Arid Zone	Semi-arid	Irrigated	Coastal & hilly
	2005-06							
Marginal	73933	62335	36010	19192	41214	28397	12389	8758
Small	75573	34702	17576	6252	109483	46542	13774	8664
Semi-medium	50900	19509	7552	1964	138712	50036	8707	5160
Medium	20454	7412	1928	393	117168	41690	2970	2123
Large	2136	1063	153	59	30370	15136	399	903
<b>Total</b>	<b>222996</b>	<b>125021</b>	<b>63219</b>	<b>27860</b>	<b>436947</b>	<b>181801</b>	<b>38239</b>	<b>25608</b>
	2010-11							
Marginal	87747	60565	41668	36458	48474	29570	17279	16348
Small	82470	33202	12043	11482	117811	46484	16507	15679
Semi-medium	49520	17878	4093	<b>1795</b>	132869	47120	10175	4587
Medium	17423	6454	540	312	97663	36338	2665	1657
Large	1782	913	33	26	24209	12852	509	267
<b>Total</b>	<b>238942</b>	<b>119012</b>	<b>58377</b>	<b>50073</b>	<b>421026</b>	<b>172364</b>	<b>47135</b>	<b>38538</b>
	Percent change in 2010-11 over 2005-06							
Marginal	18.68	-2.84	15.71	89.96	17.62	4.13	39.47	86.66
Small	9.13	-4.32	-31.48	83.65	7.61	-0.12	19.84	80.97
Semi-medium	-2.71	-8.36	-45.80	-8.60	-4.21	-5.83	16.86	-11.10
Medium	-14.82	-12.92	-71.99	-20.61	-16.65	-12.84	-10.27	-21.95
Large	-16.57	-14.11	-78.43	-55.93	-20.29	-15.09	27.57	-70.43
<b>Total</b>	<b>7.15</b>	<b>-4.81</b>	<b>-7.66</b>	<b>79.73</b>	<b>-3.64</b>	<b>-5.19</b>	<b>23.26</b>	<b>50.49</b>

Source: Karnataka at a Glance for 2005-06 and 2010-11, Government of Karnataka

Table 2 shows the trends in number and area of land holdings of Scheduled Tribes across the zones and size of land holdings. There is increase in number of marginal ST farmers across arid, irrigated and coastal/hilly zones in the year 2010-11. In coastal/hilly zones, the percentage of increase in number of marginal farmers is high, it is around 89.96%. Across small size of landholdings, there is increase in the number of ST farmers in arid and coastal/hilly zones. But across other size of landholdings, the number of ST farmers is decreasing. In total landholdings, only in arid and coastal/hilly zones the number of ST farmers has increased with 25.84%.

There is rise in the area of marginal ST landholdings across all the zones of Karnataka in 2010-11. Across irrigated and coastal/hilly zones, the area of landholdings have increased more with 39.47% and 86.66%. Across semi-arid zones, the area of small landholdings has decreased slightly. In irrigated zones, the area of semi-medium and large landholdings is increasing. But among other size of landholdings, the area has decreased. In total area of ST landholdings, the area has increased only in irrigated and coastal/hilly zones.

**Table 3: Trends of land holdings across Other Caste in Karnataka**

Size of land Holdings	Number of Farmers				Area of Land holdings (in hectares)			
	Arid Zone	Semi-arid	Irrigated	Coastal & hilly	Arid Zone	Semi-arid	Irrigated	Coastal & hilly
	<b>2005-06</b>							
Marginal	674129	656577	934227	629114	372446	297782	357414	247004
Small	823760	282038	256738	194716	1202532	397816	354786	272808
Semi-medium	669639	174968	102243	216072	1837887	474593	272640	265194
Medium	336071	77854	25618	39392	1970851	440496	140385	225225
Large	51307	11175	2230	6333	715532	162105	38504	115516
<b>Total</b>	<b>2554906</b>	<b>1202612</b>	<b>1321056</b>	<b>1085627</b>	<b>6099248</b>	<b>1772792</b>	<b>1163729</b>	<b>1125747</b>
	<b>2010-11</b>							
Marginal	758920	798663	785093	665657	442100	349455	390273	260591
Small	911430	298083	257625	199204	1317414	415292	349988	274310
Semi-medium	673007	170603	99086	97544	1649855	456674	257059	260141
Medium	316286	67959	22324	37011	1821340	381589	120132	208180
Large	43907	8331	1931	4911	597590	119398	33995	104948
<b>Total</b>	<b>2703550</b>	<b>1343639</b>	<b>1166059</b>	<b>1004327</b>	<b>5828299</b>	<b>1722408</b>	<b>1151447</b>	<b>1108170</b>
	<b>Percent change in 2010-11 over 2005-06</b>							
Marginal	12.58	21.64	-15.96	5.81	18.70	17.35	9.19	5.50
Small	10.64	5.69	0.35	2.30	9.55	4.39	-1.35	0.55
Semi-medium	0.50	-2.49	-3.09	-54.86	-10.23	-3.78	-5.71	-1.91
Medium	-5.89	-12.71	-12.86	-6.04	-7.59	-13.37	-14.43	-7.57
Large	-14.42	-25.45	-13.41	-22.45	-16.48	-26.35	-11.71	-9.15
<b>Total</b>	<b>5.82</b>	<b>11.73</b>	<b>-11.73</b>	<b>-7.49</b>	<b>-4.44</b>	<b>-2.84</b>	<b>-1.06</b>	<b>-1.56</b>

Source: Karnataka at a Glance for 2005-06 and 2010-11, Government of Karnataka

Table 3 shows the trends in number and area of land holdings of Other Castes across the zones and size of land holdings. Across other caste, the number of marginal farmers has increased in across arid, semi-arid and coastal/hilly zones in the year 2010-11. In semi-arid zones, the percentage of increase in number of marginal farmers is high, it is around 21.64%. Across small size of landholdings, the number of other caste farmers has increased in all zones. But across other size of landholdings, the number of farmers is decreasing. In total landholdings, only in arid and semi-arid zones, the number of farmers has increased with 5.82% and 11.73%.

In area of landholdings among other castes, there is rise in the area of marginal landholdings across all the zones of Karnataka in 2010-11. Across small landholdings also the area of landholdings has increased, except in irrigated zones, where it has decreased by 1.35%. But among other size of landholdings in all the zones, the area of landholdings has decreased. In total area of other caste landholdings also, the area has decreased in all zones in Karnataka.

### Policy Implications and Suggestion

The recent trends in operational landholdings at Karnataka level indicate that there has been a rapid increase in the total number of landholdings during the period of 2004-05 to 2009-10. A rapid increase of marginal landholdings also has implications on productivity and viability of small farming these trends has important implications for policy and also considerations relating equity and justice.

The information on land use pattern is necessary to develop future strategies on land use planning and land use policies. The variable under consideration put forth and propels to evolve appropriate policy decisions. The paucity of land indicates the difficulty of choice of land and its uses. Economic wisdom requires the optimum utilization of land to take full advantage of the

welfare of the society by meeting diverse needs. The land use pattern is ultimately bent by a host of factors like physical, human, technological, socio-economic, political and institutional. Examination of structural changes in the land use pattern over a period of time provides scope for planned and judicious management of land. Annual rate of change was worked out and budgeted to analyze the sectoral changes in land use category to gain knowledge in ecological implications of land use categories.

### **Findings of the study**

#### **Share of different land use categories in Karnataka**

The study has revealed a marginal increase in share of forest and the share of barren and uncultivable land has declined. The share of land put to non-agricultural uses has increased substantially over the years. The permanent pastures and other grazing lands, cultivable wastes and land under miscellaneous tree crops and groves showed the declining shares to meet the mounting requirement of food grains and to meet the need for land put to non-agricultural uses. Moreover, the share has declined sharply in case of permanent pastures and other grazing land. Current fallows showed the declining trend in share while, fallows other than current fallow showed irregular share over the years. The net sown area showed an increasing share up to Period-I and thereafter showed stagnant share.

#### **Changes in land use pattern over two periods in Karnataka**

Percentage changes in the land use pattern between two periods showed that, current fallows exhibited a sharp rise 20.78 per cent. Study found a remarkable increase in the land put to non-agricultural uses in the second period as compared to the first period. There was considerable decrease in the area under barren and uncultivable land, permanent pastures and other grazing lands, cultivable wastes, miscellaneous tree crops and groves and net sown area.

#### **Growth rates in area under different land use categories in Karnataka**

Growth rate estimated for forest revealed that there was a marginal increase in the area under forest, considerable growth in land put to non-agricultural uses and area sown more than once in all the periods. The area under barren and uncultivable land permanent pastures and other grazing lands, cultivable wastes and land under miscellaneous tree crops and groves showed significantly negative growth over the two study periods and also for the entire period, implying that the area under these categories was diverted to other purposes. Current fallows witnessed a significant positive growth in the state for the entire period. The fallows other than current fallow showed a negative growth in Period-I and positive growth in period-II. Net sown area showed considerable positive growth in Period-I. Total cropped area showed significant growth in first and entire periods.

#### **Dynamics of land use pattern in Karnataka**

Dynamics of land use pattern was studied by Markov chain analysis and the results showed that except the area under land not available for cultivation, all other categories showed stability in the Period-I. However, in Period-II except fallow land, all other categories have shown stability in retaining their previous year's shares. Forest area showed similar stability in both the periods. Other uncultivated land was found to be stable in Period-II and was almost comparable with its share in Period-I.

### **Instability of land use pattern**

The instability index was found highest for current fallows followed by fallows other than current fallow lands in both the periods and for the entire period too. This might be due to variations in rainfall and its distribution pattern as many areas in Karnataka falls under dry regions. Permanent pastures and other grazing land also showed considerable degree of instability. The instability for other land use categories varied from 0.050 to 2.642 per cent and this indicated relatively a lower variability in these land uses.

### **Policy implications**

The present study has suggested the following policy options that could be considered for the better management of land resources of the state. The findings could be utilized for evolving long term measures for sustainable land use by planners, policy makers, other agencies and institutions. The agriculture being one of the most important sector necessitates appropriate policy vision to redeem the agricultural sector from the stagnation and instability and put it on the stream of sustainable growth on the one hand and to assert the ongoing tendency of the large-scale commercialization of agriculture. The implications of the study are briefly presented below.

- 1) The forest cover in the state is about 16.13 per cent which is far below the minimum suggested level of at least one-third of the geographical area. Efforts to bring more area under forest could be intensified by afforestation on barren and uncultivable lands as 4.14 per cent of the land is under this category in the state. The government and non-governmental organizations with public partnership should implement a strong afforestation and efficient forest resource management programmes to enhance the forest cover of the state.
- 2) The horizontal expansion of the area under agricultural uses has limitations. However, there is a scope to explore new cultivable area by diverting possibly 4.83 per cent area from cultivable wastes and fallows other than current fallow. Further, the land use policies of the state should ensure that the pressure on cultivable area for want of land for other non-agricultural uses to be regulated from view point of long term food security reasons.
- 3) The high instability index for current fallows is mainly due to variation in rainfall pattern and its distribution, which could be minimized by expansion and stabilization of area under irrigation in the state. Therefore, stabilization of irrigated acreage is perhaps more important step to ensure better utilization of land resources.
- 4) The sharp decline in area (16,070 ha annually) under ecological sector and its consequent shift towards agricultural as well as non-agricultural sectors is witnessed. In recent years such shift is more intense towards the non-agricultural sector (8,929 ha annually) which is happening at the cost of ecological sector. This serious ecological implication which needs to be carefully viewed by the planners. Such shifts from ecological sector to other sectors needs immediate attention and this could be achieved by using land for non-agricultural uses vertically than through horizontal expansion to cope up with the increasing demand of urbanization and industrialization.

### **Conclusion**

This Article has analyzed the trends and pattern of landholdings among social groups and agro-climatic zones of Karnataka across two periods. The variations in number of farmers across marginal and large landholdings by social groups have seen a decline but across small, semi-



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medium and medium land holdings by social groups it has reported an increasing trend. The average size of marginal landholdings stood highest across ST in 2005-06 and also in 2010-11. Across SC, the average size of semi-medium and large landholdings has seen increase, while among other size of landholdings it has declined. Further across agro-climatic zones, there is rise in marginal holdings in each social group across coastal/hilly zone.

#### Authors' Note

This manuscript is the authors' original work, has not been published and is not under consideration for publication elsewhere.

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