

Geography of Land Governance and Management: A Geospatial Valuation of Land Utilisation and Sustainable Agricultural Development in India

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ABSTRACT

There is experienced and found existed an ever-changing relationship between land, power and people over the periods. Land is a noteworthy matter of concern in the emerging economies and developing countries of the world like India. In agrarian economies, the land is most important assets of the people as 'to own the land is the highest mark of esteem; to perform manual labour, the lowest'. There has been found continuous decline in the share of agriculture and allied sectors in the Gross Domestic Product (GDP) from 14.60 per cent in 2009-10 to 13.90 per cent in 2013-14. Such falling share of agriculture and allied sectors in the GDP is an expected outcome in a fast growing and structurally changing economy. So, in order to keep up the momentum gained during the 11th Plan and achieve the targeted growth rate of 4.00 per cent during the 12th Five Year Plan, there have already been focused on such approaches and schemes to attain the target growth in the economy of the country, India. In addition to this, the number of measures were taken to remove the land tenancy under the land tenancy reforms process. It was resulted into greater liberation, so that about more than 11.50 million cultivators have been given tenancy rights over land. There are number of strategic issues in land governance and development under different plans and policies. The main objective of land reform implementation is to provide social justice to the people particularly the cultivators, land owners, landless labourers and rural population. So long as the population is tied to the soil, there will be an increase in agricultural production and economic growth. Accordingly, for good land governance, the Land Information System (LIS) has been proposed and implemented in around 593 districts and 640 districts during 2001 and 2011, respectively, in India.

Key words : Land Governance, Land Reform, Land Use Land Cover, Agricultural Development

INTRODUCTION

Historical Background :

The land governance is a noteworthy matter of concern in the emerging economies and developing countries of the world like India. The land governance is dealing with the various issues as the land, agrarian reform, land tenure and administration. More appropriately, the "land governance concerns the rules, processes and structures through which decisions are made about access to

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land and its use, the manner in which the decisions are implemented and enforced, the way that competing interests in land are managed”. In agrarian economies, the land is most important assets of the people. In addition to this, ‘to own the land is the highest mark of esteem; to perform manual labour, the lowest’ (Myrdal, 1968). Land ownership is also considered important for purpose of effective permanent improvement on land. It is also considered a prerequisite for technological changes in agriculture. Due to industrialisation in the country, the dependence on agrarian economies has not weakened. For instance, there has been large labour force employed in agriculture and allied activities of about 58.40 per cent for their livelihood in India in 2001. Likewise, more than two-third of the net state domestic product (NSDP) is contributed by agriculture. And, the land accounts for more than 50 per cent of total assets of rural households. So, it is widely recognised that land is a critical governance issue, at large.

Land comprises by the physical land as well as the related natural resources occurred over surface and beneath of the earth surface. The genesis of the structure of power and authority in rural India can be traced to land over the centuries. There is an ever-changing relationship between land, power and people. The shifting nexus between the rural elite and agrarian power structure centres on issues relating to land. Land is one of the primary source of existence. Land provides basic necessities like food, clothing and shelter to human kind. The value of land is ever increasing and requires little renewal and replacement. The economists tend to treat land as a special kind of property. Besides this, there have been found clashes over land and resources which are at present a marked feature of the Indian economic growth and development. Passionate citizen confrontation and their electoral repercussions are leading capitalist and state interests to call land acquisition the “biggest problem” for economic growth (Ranganathan, 2010), even as symbolic attempts at “inclusive growth” are made. The Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement Act 2013 (RTFCTLARRA) is one such effort at “inclusion” (Sampat, 2013), with state-determined social impact assessments, higher compensation, and, rehabilitation and resettlement mechanisms.

During the recent past, India has permanently cross the threshold, a new land price regime with exceptionally high land values (Majumdar, 2003). This is obsessed by an increasing supply of money, high income disparities and shortage of land. The Land Acquisition Rehabilitation and Resettlement Bill 2012’s compensation provisions, at four times the market rate in rural areas and twice in urban areas. This will raise land prices exponentially and will fundamentally obstruct economic growth and urbanisation. Compensation purpose is to meet the “reservation price” of landowners through parameters determined by each state independently. There are landowners unenthusiastic to give up land that is “priceless” lands; because of individual cultural values, should be kept out of the purview of acquisition altogether. All agencies including the state should undertake consent based land acquisition (Chakravorty, 2013). So, the State should expedite transparency and information symmetries to generate well-functioning land markets. There is furtherance for evaluation of the largely ambiguous land and property markets in India.

The population of the country, India is accounted for about 1.21 billion persons in 2011. India implemented a series of economic reforms in the past two and half decades began in the early 1990s. The land reforms have led to rapid economic growth 8–9 per cent per annum in recent years. This has been started by liberalising and reforming the manufacturing sector. The most rapid poverty reduction occurred from late 1960s and the late 1980s. This is the period of the so-called green revolution and agricultural growth which was high due to the use of modern technologies and the strong policy support to agriculture. On the contrary, agriculture was not a major factor behind

poverty reduction during the era of reforms. In fact, agricultural growth fluctuated and remained around the same levels of the 1980s, if not marginally lower. During 1991-2003 agricultural Gross Domestic Product (GDP) grew at 2.70 per cent a year compared to 2.90 per cent a year between 1980 and 1990. Agricultural growth escalated immediately after reforms began in 1991, at 4.10 per cent a year till 1997 before plunging again to 2.01 per cent. Agriculture growth was encouraged primarily by interventions outside agriculture. The land reforms were actually impelled by macro imbalances and thus started with macroeconomic and non-agricultural reforms. The land reforms were commanded to impressive rates of economic growth in the 1990s, on the one hand. Whereas, such reforms were limited to the non-agricultural sectors, on the other hand.

Indian economy is still based on agriculture and allied activities in which about 58.40 per cent of the population is directly involved. Agriculture and allied sectors of the economy together contributed about 18.21 per cent of the Gross Domestic Product (GDP) of country, India in 2010-11 (ACI, 2013). From an economic point of view of “it is the agriculture sector that the battle for long term economic development will be won or lost” (Myrdal, 1968). In case, the agriculture goes wrong, nothing else will have a chance to go right in the country, India. In a holistically consideration, the problem of food production in India can be resolved by the use of environmentally sustainable agriculture which is referred to as the “evergreen revolution” which is manageable through a number of means to attain a hunger-free India, such as monsoon management, safeguarding biological diversity, and food security in India (Swaminathan, 2010). While broad-based economic and trade reforms resulted in the new export orientation of the agricultural sector and improved the incentive framework of agriculture. This has resulted to agricultural sector more exposed to international competition because of persisting constraints to productivity improvement in the domestic front (Chakraborty, 2006). By virtue of this, there has been attempted a marketing reforms and removal of regulatory constraints at least in some of the states by amending Agriculture Produce Marketing Committee Act., although Essential Commodities Act. still remains in place, in India.

Economics of Developments :

During the post-independence period, the Zamindari system was abolished and the cultivator's right over agricultural land were restored under the law of the land. For instance, a number of land reform legislations have been passed by the Central and State Governments of the country, India. For better land governance still there is further need for land reform for betterment of the cultivator and landless agricultural labourers. Because, at present, there are voluminous defaulter landlords who are still possessing more land than the permits provided by the Ceiling Act. of the country, India. So, the marginal and landless farmers will require a strong social protection system through well targeted social security and employment policies in India. There has been the predominance of small farms that is below two hectares which has implications for rural employment. The owners of landholdings above two hectares, accounted for less than 20 per cent of total landholdings but over 60 per cent of cultivated area, often lack the incentive to practise labour intensive cultivation (Dogra, 2002). Reforms are required to optimise land use and eliminate distortions such as concealed tenancy in land markets. Land leasing is restricted affecting private investment as well as the scope for consolidation into larger and more efficient operational holdings. So, given the high population and land ratio, approach to deregulation is naturally cautious, allowing for a minimum set of safeguards prevent absentee landlordism and increase in landlessness in the country, India.

There is a need for more spending on agricultural research, education, and rural roads which is the most effective way for promoting agricultural growth and poverty reduction (Fan *et al.*,

1999). The improved intellectual property right regime under World Trade Organisation (WTO) stimulated private research and patenting activity in India. There are lots of scope for private research which would be more effective if complemented by favourable policies in the area of tax, investment and input imports (Datta, 2009). But, the policy makers need to be aware that the private sector tends to privilege higher value crops and concentrate in areas where agriculture is already advanced and flourishing. Besides this, to reduce poverty in marginal regions, public research spending should target poorer farmers in less preferred environmental regions as semi-arid tropics and rain fed areas (Fan and Thorat, 2000). The irrigation is affected by real politics as free electricity for pumping water is offered for political rent seeking. There are flourishing numbers of private tube well owners and weak institutions and infrastructure that make monitoring of water withdrawals and revenue collection difficult. The technological innovations to improve yields seem more feasible in the short and medium term than management reforms for improving water use efficiency, given the political and institutional constraints in the country, India.

In connection with the broad trade liberalisation, there has been made progress in reducing protection levels in the country. India was capable to sustain its current growth rate with lower foreign direct investment (FDI) inflows and a relatively less export orientation. The WTO membership can provide the much needed outside pressure to advance efficiency and implement reforms in tradable inputs such as seeds, fertilisers, and pesticides as well as agricultural implements and machinery, where markets are inefficient either due to government intervention or lack of infrastructure. The Policy makers must inspire higher speculation in research to increase yields and expand cultivation given the export potential of the crops, positive impact on small holders, and growing domestic demand at large (Fan and Thorat, 2000). In India, there are still more than 300 million rural poor people, based on the international standard of one dollar a day. These people are mostly concentrated in the eastern States as Bihar, Orissa and West Bengal, central States as Madhya Pradesh and northern States Uttar Pradesh where rural poverty is higher than the all India average of 27 per cent as of 2004-05. In addition to this, there is a good point of reference in this respect since extensive participation of panchayats and civil society at various stages of the formulation and implementation of the programmes ensures the tailoring of programmes to local needs, thereby improving their influence and effectiveness in the country, India

Although, there was political will to carry out reforms, but in practice outcomes were shaped by the different patterns of governance (Akella and Nielsen, 2002). The country as a whole is a “debating society” where political differences are expressed freely. The Policy maker are exposed to the pressure of various interest groups and there are long debates before decisions are taken for implementation. Such lengthy bureaucratic procedures, envisioned to ensure checks and balances in the system, often delays decision making and implementation (Bandopadhyay, 1986). This exercise is well matched with the needs of a free and dynamic polity but in reality is a key reason for slow pace of economic reforms in the country, India. For the developing and emerging economy of the country, India, continued growth is must, owing to pressure from growing population and the need for creation of more jobs (Ahluwalia, 2002). It is also a circumstance for a more stable society. Assumed there is high expectation of the citizens, the lack of growth or even slower growth could lead to turbulence in the country. The limited natural resource base can be an acute restraint to growth. The country’s future economic growth is increasingly depends on imports of energy, for which future prospects are uncertain. As a result, the future growth must be based on higher efficiency and will require to invest in science and new technologies to harness energy and water resources, optimise their economic structures for allocative efficiency, and reform their fiscal,

financial, banking, and insurance systems in the country. In addition to this, there is a need to pursue more pro-poor economic development and growth, which is not only a development objective in itself, but also a precondition for future growth in long-term of the economy (Fan and Thorat, 2000). There is also a need to address the weaknesses and build on their strengths in order to achieve the national goals and accomplish the aspirations of the people. Such lessons learned from the experiences will also help other developing countries and in the global fight against hunger and poverty. Hence, the long-term solution is to lessen the reliance of rural population on land by the expansion of non-agricultural economic activities. Nevertheless, the grass root level change in rural society is primarily possible through the agricultural development in which the agrarian reforms have a greater role in fundamental development of the people.

Research Objectives :

The land governance is a complex matter of discussion and it has been paid a lots of attention since long world widely for the betterment of human society. The present research discover the people's role in land governance, and also to see the historical background of land governance in the country, India. Besides this, there are several key issues in land governance which are as the national land policy formulation, land reform, security of tenure of land, natural resource management, land administration, land disputes and conflicts, international cooperation in agricultural development. In view of this, the main objectives of the present study are mentioned as follows:

- i. to outline historical background of land governance;
- ii. to analyse agricultural development since independence;
- iii. to analyse trends and patterns of land governance; and
- iv. to suggest suitable lessons learned from land governance.

So, the present research take into account the details of the issues and features of the land governance practiced over the periods since the beginning of the ancient time to the present in context to the national land development strategies while dealing with the latest plans and policies of the country, India. In addition to this, there are many land governance key features as the outcomes of land governance, lessons learned from land governance, and present reforms being debated, at the national level, in India. However, the present research take into account the details of the land governance key issues and features in detail over the periods as since ancient era to present time for the country, India.

METHODOLOGY

Database and Methodological Approaches :

The present study is based on the secondary data available from the different sources as the Agricultural Census, Agricultural Statistics, and Annual Reports etc. which are annually published by the Department of Agricultural and Cooperation, Ministry of agriculture, Government of India, Krishi Bhavan, New Delhi. In addition to this, the present study is also supported by the data available from the Annual Reports published by the Ministry of Rural Development, Government of India, New Delhi. Besides this, the number of volumes have also been taken into consideration of the Five Year Plans published by the Planning Commission, Government of India, Yojana Bhavan, New Delhi. However, the large database have been compiled and development indices have been computed for the country, India. For instance, the Gini's Coefficient is a tool to measure the extent of concentration. This method measure of inequalities which is commonly used to gain an over-all

view of the prevailing spatial inequalities. In spite of the limitations of this measuring method, it has been used in the number of studies to compute the spatial concentration of inequalities of various variables. So, in the present study, in order to eliminate the bias arises due to the changes in the number of each states, the Gini's co-efficient for the different periods have been computed. The statistical presentation of the equation used for calculation of the Gini's Co-efficient is described as follows:

$$G = \frac{1}{100 \times 100} \left[\sum_{i=1}^n X_i Y_i + 1 - \left(\sum_{i=1}^n (X_i + 1 Y_i) \right) \right]$$

Where:

X_i and Y_i are the cumulative percentage distribution of the two attributes.

In other words, the X_i and Y_i are respectively the cumulative proportions of number of operational holdings and area operated up to the j^{th} size class of holdings.

So, the concentration of land holdings in terms of Gini's coefficient among different states have been worked out for the periods 1960-61, 1970-71, 1980-81, 1990-91, 2000-01, and 2010-11 for the country, India, as a whole.

On the contrary, the other measures adopted and used for land utilisation at the spatio-temporal level for country, India, is the Earth Observations (EO) from space platforms. The EO satellites play an essential role in generation and dissemination of information on Land Use Land Cover (LULC) patterns in a timely and dependable manner providing vital inputs required for optimum land use planning (NRSC, 2006b). With the evolution of Indian remote sensing program over the periods, a variety of remote sensing-based solutions have been provided for the national development. So, the National Remote Sensing Centre (NRSC) is providing suitable and timely national initiative for LULC mapping along with the assistance of the Indian Space Research Organisation (ISRO), Department of Space (DOS), Government of India (NNRMS, 2009). In this context, a number of research project have been completed on the "National Land Use Land Cover Mapping on 1:50,000 scale using temporal Resourcesat-1 data of the Linear Imaging Self scanning Sensor (LISS) -III" which were taken up by DOS, under Natural Resources Census (NRC) Project of National Natural Resources Repository (NRR) Programme, Government of India. Such research project have been successfully completed with the involvement of various States and Central government agencies as well as the universities and others partner institutions (NRSC, 2006a).

In addition to this, the National-level Land Use and Land Cover (LULC) mapping at 1:2,50,000 scale using multi-temporal Resourcesat-1 AWiFS data have also been taken up by the Department of Space. The Multi-temporal AWiFS data acquired have been analysed using hierarchical decision tree and maximum likelihood algorithm, and interactive classification techniques. Additionally, surface water bodies and snow and glaciers layers for entire country have also been generated for LULC classification and mapping (NRSC, 2006b). While keeping in view for the wider applicability of remote sensing for the land use land cover, a classification scheme has been devised using of 1:50,000 scale map which consists of Level-I: 9 classes, Level-II: 29 classes and Level-III: 79 classes (NRSC, 2006c and NRSC, 2007). This classification was finalized after elaborate discussions within the DOS set-up as well as with various Central and State government departments concerned with the land use land cover for wider usability.

Likewise, the LULC research project had been completed and LULC Atlases were prepared and released for the use of various departments, central, state and others organisations (NRSC,

2011). In this context, the LULC data are regrouped for web users with an emphasis on land cover classes. Such tasks have been undertaken keeping in view that the Land Cover is defined as observed physical features on the Earth's Surface. As soon as an economic function is added into this, it becomes Land Use (FAO, 2005). Similarly, the multi-temporal Resourcesat-1, LISS-III data for the period of 2005-06 acquired particularly the *Kharif* (Aug –Nov), *Rabi* (Jan- Mar) and *zaid* (April- May) seasons in order to derive information on the spatial and temporal variability of different land use land cover categories. In case where there was persistent cloud cover, the LISS-III data for the period of 2004-05 and the AWiFS data for the period of 2005-06 have been used as alternative data. Such kinds of the multi-temporal data sets were georeferenced with Land Cover Classification (LCC) using the Traverse Mercator (TM) Projection and WGS 84 datum (NRSC, 2007). Whereas, the ancillary data consisted of base maps details namely: the administrative boundaries as international, state, district, tehsil, village and forest boundary, as well as the major roads, railway, drainage, settlements, etc. were taken from available sources of map library. Correspondingly, available ancillary information on wastelands and forests generated earlier was also quantified during mapping. So, the methodology adopted consists of satellite data preparation, on-screen visual interpretation, ground truth data collection, map finalization, quality checking of final maps and databases organization as per the National Natural Resource Management System (NNRMS) standards (NNRMS, 2009).

RESULTS AND DISCUSSION

Trends of Land Utilisation :

The Natural resource in terms of the land use and land cover statistics for the periods beginning from 1950-51 to 2010-11 and 2011-12 is presented in the Table 1. It is evident that there is about 328.7 million hectares of geographical area or the land cover found exist since 1950-51 till to 2010-11, in the country, India. The net sown area is accounted for about 46.00 per cent of the total reporting area of the country in the year 2010-11 which has increased from 41.80 per cent in 1950-51. Whereas, the world average is about 32.00 per cent in the same period of 2010-11. The forest cover was increased from 14.20 per cent in 1950-51 to about 22.90 per cent in 2010-11. On the other hand, the barren and unculturable land was decreased from 13.40 to 5.60 per cent during 1950-51 to 2010-11, respectively.

It is also evidenced from the Table 1 that during 1950-51, the gross cropped area was about 131.89 million hectares, out of which 13.15 million hectares or 9.97 per cent, was as sown more than once and the cropping intensity was 111.10. Thereafter, over the period of about 30 years, in 1970-71 period the gross cropped area was increased to about 165.79 million hectares out of which 25.52 million hectares or 15.39 per cent was sown more than once and the cropping intensity value recorded of 118.2. Furthermore, over another 30 years period, during 2010-11 the gross cropped area was increased to about 197.32 million hectares, out of which 55.76 million hectares or 28.26 per cent was as sown more than once and the cropping intensity further increased to about 139.0 as is evidenced by the Table 1. Besides this, it is inferred from the results presented in the Table 1, that there is found changing patterns of land use land cover over the periods beginning from 1950-51 till to 2010-11 in the country, as a whole which is also evidenced by the Figures 1 and 2.

Agricultural Development: Progress and Growth :

The Agricultural progress of any region is generally influenced by the number of factors such

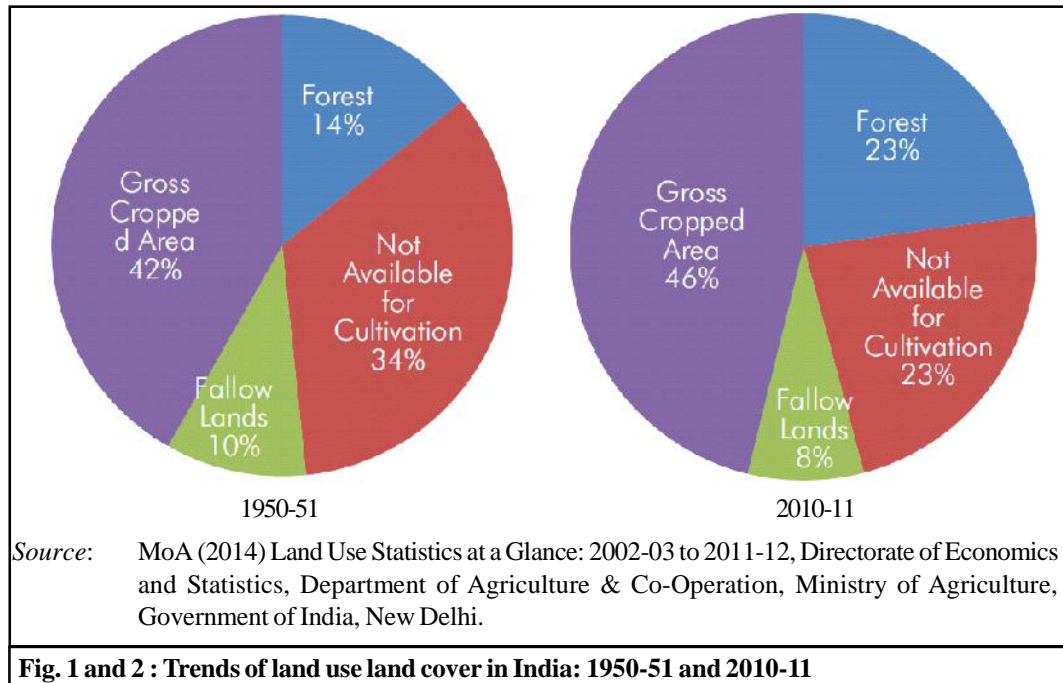
Table 1 : Trends of Land Utilisation in India: 1950-51 to 2010-11 and 2011-12									
Sr. No.	Classification	1950-51	1960-61	1970-71	1980-81	1990-91	2000-01	2010-11	2011-12
1.	Geographical Area	328.7	328.7	328.7	328.7	328.7	328.7	328.7	328.7
2.	Reporting Area for Land Utilisation Statistics (1 to 5)	284.3	298.5	303.8	304.2	304.9	305.1	305.90	305.81
	1. Forests	40.48 (14.2)	54.05 (18.1)	63.92 (21.0)	67.47 (22.2)	67.81 (22.2)	69.62 (22.8)	70.01 (22.9)	70.02 (22.9)
	2. Not Available for Cultivation (A+B)	47.52	50.75	44.64	39.62	40.48	41.55	43.58	43.52
	(A) Area Under Non-Agricultural Uses	9.36 (3.3)	14.84 (5.0)	16.48 (5.4)	19.66 (6.5)	21.09 (6.9)	23.81 (7.8)	26.40 (8.6)	26.29 (8.6)
	(B) Barren and un-culturable Land	38.16 (13.4)	35.91 (12.0)	28.16 (9.3)	19.96 (6.6)	19.39 (6.4)	17.74 (5.8)	17.18 (5.6)	17.23 (5.6)
	3. Other Uncultivated Land Excluding Fallow Land (A+B+C)	49.45	37.64	35.06	32.32	30.22	27.71	26.16	26.10
	(A) Permanent Pastures and other Grazing Lands	6.68 (2.3)	13.97 (4.7)	13.26 (4.4)	11.97 (3.9)	11.4 (3.7)	10.83 (3.6)	10.30 (3.4)	10.30 (3.4)
	(B) Land Under Miscellaneous Tree Crops and Groves Notincluded in Net Area Sown	19.83 (7.0)	4.46 (1.5)	4.3 (1.4)	3.61 (1.2)	3.82 (1.3)	3.32 (1.1)	3.21 (1.0)	3.16 (1.0)
	(C) Culturable Waste Land	22.94 (8.1)	19.21 (6.4)	17.5 (5.8)	16.74 (5.5)	15 (4.9)	13.56 (4.4)	12.65 (4.1)	12.64 (4.1)
	4. Fallow Lands (A+B)	28.13	22.82	19.88	24.75	23.36	25.03	24.60	25.38
	(A) Fallow Land Other than Current Fallows	17.45 (6.1)	11.18 (3.7)	8.76 (2.9)	9.92 (3.3)	9.66 (3.2)	10.19 (3.3)	10.32 (3.5)	10.67 (3.5)
	(B) Current Fallows	10.68 (3.8)	11.64 (3.9)	11.12 (3.7)	14.83 (4.9)	13.7 (4.5)	14.84 (4.9)	14.28 (4.8)	14.72 (4.8)
	5. Net Area Sown (6-7)	118.8 (41.8)	133.2 (44.6)	140.3 (46.2)	140.00 (46.0)	143.00 (46.9)	141.2 (46.3)	141.56 (46.0)	140.80 (46.0)
	6. Total Cropped Area (Gross Cropped Area)	131.89	152.77	165.79	172.63	185.74	185.7	197.32	195.25
	7. Area Sown More Than Once	13.15	19.57	25.52	32.63	42.74	44.54	55.76	54.44
	8. Cropping Intensity *	111.1	114.7	118.2	123.3	129.9	131.6	139.0	138.7
3.	Net Irrigated Area	20.85	24.66	31.1	38.72	48.02	54.84	63.598	65.26
4.	Gross Irrigated Area	22.56	27.98	38.2	49.78	63.2	75.82	88.630	91.53

Notes:

* Cropping intensity is percentage of the gross cropped area to the net area sown.

- Figures given in above table are in million hectares.
- Figures given in parentheses indicate percentage to Reported Area.
- In 2002-03 there is significant decline in Total Cropped Area and Net Area Sown due to decline in net area sown in the States of Andhra Pradesh, Karnataka, Kerala, Madhya Pradesh Maharashtra, Orissa, Rajasthan, Tamil Nadu, West Bengal and Haryana. This was mainly due to deficient rainfall on agricultural operations.
- In 2009-10 there is significant decline in Total Cropped Area and Net Area Sown due to decline in net area sown in the States of Andhra Pradesh, Bihar, Jharkhand, Rajasthan, Tamil Nadu, Uttar Pradesh and West Bengal. This was mainly due to deficient rainfall on agricultural operations.

Source: Above table computed and compiled from the data collected from the MoA (2014) Agriculture Census Division, Department of Agriculture & Co-Operation, Ministry of Agriculture, Government of India.



as the physical, institutional, infrastructural and technological factors. All these factors are individually or collectively are responsible for the cropping patterns, level of agricultural development and agricultural productivity in an area or region. The institutional factors includes the land tenancy, land tenure and land ownership. These factors have their performance on field size, field patterns, farming type, crop land use, crop association and productivity of the crops, particularly in the country, India. In addition to this, there is found an increasing agricultural production due to the introduction of new technological inputs at large in different parts over the periods in the country, India. The details of the agricultural productivity since 1950-51 to 2010-11 is presented in the Table 2. For instance, during initial period 1950-51, the yield per hectare was about 522 kgs. per hectare which was continuously increased over the periods as evidenced by the Table 2. Whereas, there was about 124.75 million hectares of area under cultivation in 1981-82 and the total output in that period was of 1,032 kgs. per hectare. It was resulted due to the green revolution during 1960's in the country, India. In continuation to this, there was recorded an increasing output, as it was about 2,079 kgs. per hectare achieved in during the period of 2010-11. Whereas, the trends of land use for the major crops for the periods 1950-51 to 2011-13 were presented in the Fig. 3.

Subsequently, the green revolution effected to an increasing trend in the output from 1980-81 onwards. It may also be remembered that the average holding in India is 1.33 hectares in 2000-01. So, the small farms ensure to have a direct impact on poverty. It is important to see on whose field the production takes place rather than how much the production has increased. The agricultural production by poor farmers will contribute the most towards decreasing hunger and malnutrition (Raj, 1975). So, it is evidenced that more equal distribution of land to small farmers is viable. And, the broad support base of redistribution should significantly raise productivity and improve the livelihood of the poorest peasant in the country, India.

Table 2 : Trends of Agriculture Production in India: 1950-51 to 2010-11 and 2011 to 13						
Five Year Plans	Duration	Year	Area	Production	Yield	% Area Irrigated
First Five Year Plan	1951-56	1950-51	97.32	50.82	522	18.1
		1951-52	96.96	51.99	536	18.4
		1952-53	102.09	59.20	580	18.1
		1953-54	109.07	69.82	640	18.1
		1954-55	107.86	68.03	631	18.4
Second Five Year Plan	1956-61	1955-56	110.56	66.85	605	18.5
		1956-57	111.14	69.86	629	18.2
		1957-58	109.48	64.31	587	19.3
		1958-59	114.76	77.14	672	18.7
		1959-60	115.82	76.67	662	18.8
Third Five Year Plan	1961-66	1960-61	115.58	82.02	710	19.1
		1961-62	117.23	82.71	706	19.1
		1962-63	117.84	80.15	680	19.8
		1963-64	117.42	80.64	687	19.8
		1964-65	118.11	89.36	757	20.2
Fourth Five Year Plan	1969-74	1965-66	115.10	72.35	629	20.9
		1966-67	115.30	74.23	644	22.2
		1967-68	121.42	95.05	783	21.6
		1968-69	120.43	94.01	781	23.6
		1969-70	123.57	99.50	805	23.7
Fifth Five Year Plan	1974-79	1970-71	124.32	108.42	872	24.1
		1971-72	122.62	105.17	858	24.5
		1972-73	119.28	97.03	813	25.4
		1973-74	126.54	104.67	827	24.5
		1974-75	121.08	99.83	824	26.5
Sixth Five Year Plan	1980-85	1975-76	128.18	121.03	944	26.5
		1976-77	124.36	111.17	894	27.4
		1977-78	127.52	126.41	991	27.7
		1978-79	129.01	131.90	1022	28.8
		1979-80	125.21	109.70	876	30.3
Seventh Five Year Plan	1985-90	1980-81	126.67	129.59	1023	29.7
		1981-82	129.14	133.30	1032	29.6
		1982-83	125.10	129.52	1035	30.8
		1983-84	131.16	152.37	1162	30.9
		1984-85	126.67	145.54	1149	31.9
Seventh Five Year Plan	1985-90	1985-86	128.02	150.44	1175	31.4
		1986-87	127.20	143.42	1128	32.6
		1987-88	119.69	140.35	1173	33.5
		1988-89	127.67	169.92	1331	34.4
		1989-90	126.77	171.04	1349	35.0
		1990-91	127.84	176.39	1380	35.1
		1991-92	121.87	168.38	1382	37.4

Contd... Table 2

Table 2 contd...

Eighth Five Year Plan	1992-97	1992-93	123.15	179.48	1457	37.4
		1993-94	122.75	184.26	1501	38.7
		1994-95	123.86	191.50	1546	39.6
		1995-96	121.01	180.42	1491	40.1
		1996-97	123.58	199.34	1614	40.0
Ninth Five Year Plan	1997-02	1997-98	124.07	192.26	1552	40.8
		1998-99	125.17	203.61	1627	42.4
		1999-00	123.10	209.80	1704	43.9
		2000-01	121.05	196.81	1626	43.4
		2001-02	122.78	212.85	1734	43.0
Tenth Five Year Plan	2002-07	2002-03	113.86	174.77	1535	42.8
		2003-04	123.45	213.19	1727	42.2
		2004-05	120.08	198.36	1652	44.2
		2005-06	121.60	208.60	1715	45.5
		2006-07	123.71	217.28	1756	46.3
Eleventh Five Year Plan	2007-12	2007-08	124.07	230.78	1860	46.8
		2008-09	122.83	234.47	1909	48.3
		2009-10	121.33	218.11	1798	47.8
		2010-11	126.67	244.49	1930	47.8
		2011-12	124.75	259.29	2078	48.2
Twelfth Five Year Plan	2012-17	2012-13	120.16	255.36	2125	49.0

Note: Area in Million Hectares; Production in Million Tonnes; Yield in Kg./Hectare.

Source: Above table computed and compiled from the data collected from the Agricultural Census (2000-01, 2005-06 & 2010-11), Agricultural Census Division, Directorate of Economics and Statistics, Department of Agriculture and Cooperation, Ministry of Agriculture, Government of India, Krishi Bhawan, New Delhi.

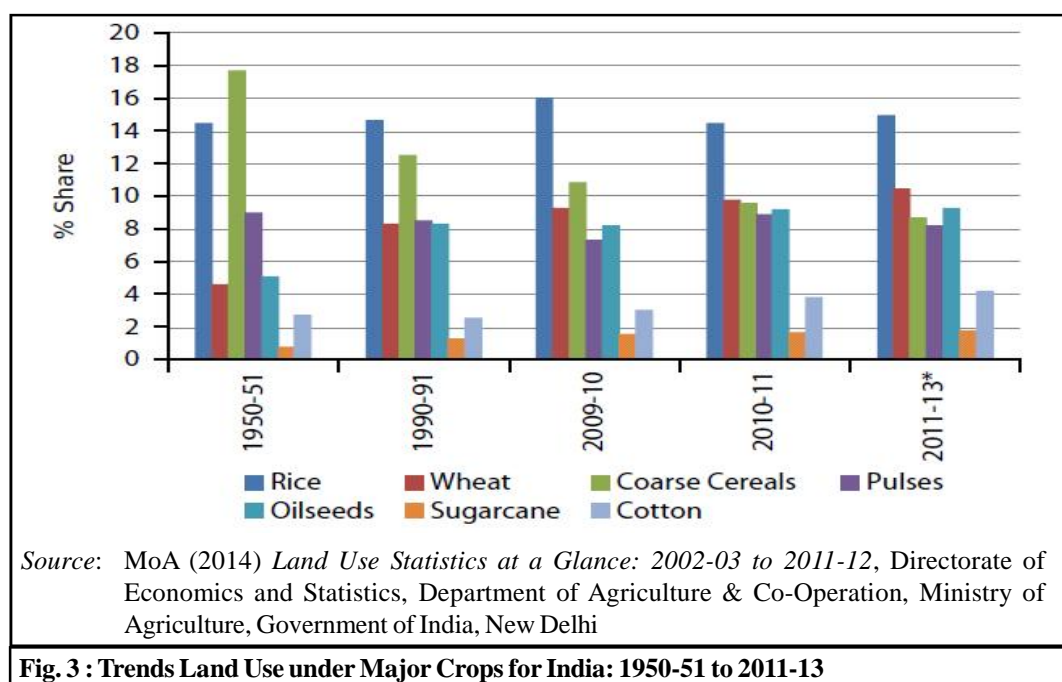


Fig. 3 : Trends Land Use under Major Crops for India: 1950-51 to 2011-13

Key Features of Land Management and Governance :

Operational Land Holdings :

An operational holding is well-defined as a unit of land used solely or partly for agricultural production and operated or managed by one person alone, or with the assistance of others without regard to the title, size or location (Sanyal, 1988). Area under operational holdings is called operated area. The number of operational holdings improved speedily from 51 million in 1960-61 to 101 million in 2002-03, which is reasonable considering the growth of population. On the other hand, the rate of growth of operational holdings, which enhanced over the three decades from 1960-61 to 1991-92, seems to have reduced miserably in the decade preceding to 2002-03. Whereas, there was total operated area of 133 million hectares in 1960-61 which dropped to 126 million hectares in 1970-71 which was a net fall of about 5.8 per cent. It plunged by around 5.6 per cent once more during 1970-71 and 1981-82. Whereas, there was an area of 108 million hectares which extent decreased to about 8.0 per cent since 1981-82, that was, in the last 21 years, which remained consistent with the declining trend as observed up to 1981-82.

Marginalisation of Holdings :

Customarily, a common feature of the size distribution of operational holdings is that the percentage of holdings decreases as the holding size increases. The percentage distribution of operational holdings expose that the decline is getting progressively sharper with every decade over the periods. The percentages of large, medium and semi-medium holdings have been declining steadily since 1960-61 to 2000-01. The decline is sharpest for large holdings which decreased from 4.50 per cent to 0.80 per cent. On the contrary, it was witnessed that a larger gathering of holdings found into the "marginal" category. The percentage of land holdings in this category was increased from 39.00 per cent in 1960-61 to 70.03 per cent in 1991-92 in the country, India.

Division of Operational Holdings :

Due to the pressure of growing population on the limited land base and the subsequent division of holdings is obviously reflected in the variations in the absolute numbers of operational holdings in different size classes in the country, India. As it is evidenced that the trends in the number of operational holdings in different categories from the period 1960-61 to 2002-03 that the numbers of operational holdings in different categories are not changing at the same rate, or even in the same direction, over periods. In the beginning, over the three decades the number of marginal holdings has increased from 19.8 million in 1960-61 to over 71.0 million in 1991-92 which shows an increase of over three and a half times over the periods. Similarly, the number of small holdings, too, has been found growing, though at a much slower rate, since 1970-71. On the other hand, the absolute numbers of large and medium holdings have declined gradually during this period. In addition to this, the number of semi-medium holdings, which had persisted unchanging at 10 million from 1960-61 to 1981-82 and even showed signs of an increase, was prompted to decrease.

Distribution of Operated Area by Holdings:

The percentage distributions of operated area by category of operational holdings demonstrate that the portions of marginal holdings in total operated area, which was about 7.02 per cent in 1960-61, intensified rapidly over the last four decades and again increased by about 6 to 7 percentage since 1991-92 to equalise with the portions of the semi-medium and medium holdings around 22.50 per cent. Likewise, the proportion of small holdings, as well, has been continuously increased and is

currently over 20.03 per cent. While the proportion of large holdings has been gradually declined as from 29.04 per cent in 1960-61 to around 12 to 13 per cent in 1991-92. The proportion of area operated by medium holdings has decreased gradually but more moderately, and the proportion of semi-medium holdings appears to have reached its highest level in 1991-92 and thereafter started to increase over the periods.

Contemporary Trends of Operational Holdings :

The agricultural land is bifurcated among the peoples according to the existing law of inheritance, due to the population explosion over the periods in the country, India. The average size of operational holdings was about 1.16 hectares in 2010-11 in India. Such figure is much below the world average size of about 5.50 hectares. The trends of agricultural output since the independence for over the periods 1950-51 to 2010-11 and for the latest periods 2011 to 2013 for the country, India is presented by the Table 2. The details of number and area of operational holdings in the country, India, based on the results of latest Agriculture Censuses 2000-01 to 2010-11 are presented in the Table 3. Whereas, the large proportion of about 67.04 per cent of land holdings are having less than 1 hectare in 2010-11 in India. In addition to this, the small land holding is accounted for about 17.93 per cent and possessed land ranges between 1 to 2 hectares. These holdings together accounted for about 84.97 per cent of the land holdings in the country, India as evidenced by the Table 3. So, such marginal and small land holding are not seems to be viable economically. The fact is that all these land holders cannot produce enough to meet out the cost of cultivation like irrigation, High Yielding Variety (HYV) seeds, chemical fertilisers, insecticides, pesticides and agricultural machinery.

During the period 2010-11, there was about 44.32 per cent of the land area which was held by marginal and small holdings ranges less than 1 hectare and 1.0 to 2.0 hectares, respectively as evidenced by the Table 3. Whereas, the semi-medium holdings ranges 2.0 to 4.0 hectares accounted for about 23.59 per cent of the land area. On the other hand, the medium holdings accounted for about 21.18 per cent of the land area. So, there is majority of the marginal and small holdings as well as the semi-medium and medium holdings accounted large proportion of land area in the country, India. On the other hand, the small and marginal holdings while taken together *i.e.* the below 2.00 hectares is constituted about 84.97 per cent in 2010-11 against 81.80 per cent in 2000-01 and the operated area was about 44.32 per cent in the current census 2010-11, as against the corresponding figure of 38.86 per cent in 2000-01. The semi-medium and medium operational holdings which are ranging between 2.00 to 10.00 hectares in 2010-11 were accounted for about 14.30 per cent with the operated area of 44.77 per cent. The corresponding figures for 2000-01 and 2010-11 censuses accounted for about 17.17 per cent and 47.93 per cent, respectively. The large holdings ranging between 10.00 hectares and above accounted for about 0.73 per cent of total number of holdings in 2010-11 with a share of 10.92 per cent in the operated area as against 1.03 per cent and 13.22 per cent, respectively in 2000-01 as evidenced by the Table 3. So, whichever momentous change occurs in agrarian structure would have some impact on the size distribution of land holdings in the country, India.

However, the average size of operational land holdings by all social groups for the different States for the periods 2000-01, 2005-06 and 2010-11 are presented in the Table 4, 5 and 6, respectively. As per the Agriculture Census 2010-11, the total number of operational holdings in the country was increased from 119.93 million in 2000-01 to 137.76 million 2010-11 *i.e.* an increase of 17.83 million holdings over a decade period. Whereas, there was marginal decrease in the operated area from 159.44 million hectares in 2000-01 to 159.18 million hectares in 2010-11 showing a decrease of 0.26

per cent. The operated area was primarily increased because the State of Jharkhand participated for the first time in Agriculture Census operation in 2010-11 after the state came into existence in the year 2000. The average size of operational holding was of 1.15 hectares during 2010-11 in the country, India.

Category of Holdings	Number of Holdings			Area			Average Size of Holdings		
	2000-01	2005-06	2010-11	2000-01	2005-06	2010-11	2000-01	2005-06	2010-11
Marginal (Less than 1 hectare)	75408 (62.88)	83694 (64.77)	92356 (67.04)	29814 (18.70)	32026 (20.23)	35410 (22.25)	0.40	0.38	0.38
Small (1.0 to 2.0 hectares)	22695 (18.92)	23930 (18.52)	24705 (17.93)	32139 (20.16)	33101 (20.91)	35136 (22.07)	1.42	1.38	1.42
Semi-Medium (2.0 to 4.0 hectares)	14021 (11.69)	14127 (10.93)	13840 (10.05)	38193 (23.96)	37898 (23.94)	37546 (23.59)	2.72	2.68	2.71
Medium (4.0 to 10.0 hectares)	6577 (5.48)	6375 (4.93)	5856 (4.25)	38217 (23.97)	36583 (23.11)	33709 (21.18)	5.81	5.74	5.76
Large (10.0 hectares and above)	1230 (1.03)	1096 (0.85)	1000 (0.73)	21073 (13.22)	18715 (11.82)	17379 (10.92)	17.13	17.08	17.38
All Holdings	119931 (100.0)	129222 (100.0)	137757 (100.0)	159436 (100.0)	158323 (100.0)	159180 (100.0)	1.33	1.23	1.16

Note: Figures in parentheses indicate the percentage to total.
No. of Holdings: ('000 Number); Area Operated: ('000 Hectares); Average size: (Hectares).

Source: Above table computed and compiled from the data collected from the MoA (2000-01 & 2010-11) Agricultural Census (2000-01, 2005-06 & 2010-11), Agricultural Census Division, Directorate of Economics and Statistics, Department of Agriculture and Cooperation, Ministry of Agriculture, Government of India, KrishiBhawan, New Delhi.

State-wise Average Size Operational Holdings :

In the country as a whole, out of 35 States and Union Territories (UTs), there was found that 13 States namely the Andhra Pradesh, Bihar, Chhattisgarh, Gujarat, Karnataka, Kerala, Madhya Pradesh, Maharashtra, Odisha, Rajasthan, Tamil Nadu, Uttar Pradesh and West Bengal altogether accounted for about 91.00 per cent of the number of operational holdings with a share of about 88 per cent operated area during the period 2010-11. Whereas, there was about 138.35 million operational holdings in the country, in which the highest one belonged to Uttar Pradesh State which accounted for 23.33 million and followed by Bihar 16.19 million, Maharashtra 13.70 million, Andhra Pradesh 13.18 million, Madhya Pradesh 8.87 million, Tamil Nadu 8.12 million, Karnataka 7.83 million, West Bengal 7.12 million, Rajasthan 6.89 million, Kerala 6.83 million etc. with the lowest of only 714 operational holdings in Union Territory of Chandigarh. Besides this, out of a total of 159.59 million hectares operated area in the country in 2010-11, the highest contribution was made by Rajasthan State with an area of 21.14 million hectares followed by Maharashtra 19.77 million hectares, Uttar Pradesh 17.62 million hectares, Madhya Pradesh 15.84 million hectares, Andhra Pradesh 14.29 million hectares, Karnataka 12.16 million hectares, Gujarat 9.90 million hectares etc. with the lowest operated area of 923 hectares in the Union Territory of operational holdings as well as the operated area in the country in 2010-11.

As compared to 2005-06, percentage increase in number of operational holdings in 2010-11 was the highest in case of Goa which is 47.71 per cent followed by Madhya Pradesh 12.19 per cent, Rajasthan 11.35 per cent, Bihar 10.47 per cent, Daman and Diu 9.60 per cent, Andhra Pradesh 9.39 per cent, Chhattisgarh 8.26 per cent, Odisha 7.14 per cent, Pondicherry 5.56 per cent, Nagaland 5.41 per cent, and Jammu and Kashmir 5.20 per cent, and so on. Nevertheless, the operated area

Sr. No.	State/UT	Marginal	Small	Semi-Medium	Medium	Large	All holdings
1.	Andhra Pradesh	0.44	1.42	2.67	5.70	16.34	1.25
2.	Arunachal Pradesh	0.50	1.32	2.66	5.77	16.13	3.69
3.	Assam	0.39	1.30	2.73	5.22	53.02	1.15
4.	Bihar	0.30	1.21	2.62	5.24	15.50	0.58
5.	Chhattisgarh	0.44	1.42	2.70	5.76	16.49	1.60
6.	Goa	0.32	1.26	2.56	5.64	23.77	0.84
7.	Gujarat	0.53	1.46	2.78	5.80	16.91	2.33
8.	Haryana	0.45	1.43	2.81	5.99	16.48	2.32
9.	Himachal Pradesh	0.41	1.40	2.71	5.69	15.91	1.07
10.	Jammu & Kashmir	0.37	1.40	2.66	5.39	21.13	0.67
11.	Jharkhand ##	0.00	0.00	0.00	0.00	0.00	0.00
12.	Karnataka	0.46	1.44	2.72	5.83	14.83	1.74
13.	Kerala	0.14	1.32	2.52	5.29	40.93	0.24
14.	Madhya Pradesh	0.49	1.45	2.77	5.94	15.50	2.22
15.	Maharashtra	0.50	1.42	2.69	5.64	15.38	1.66
16.	Manipur	0.53	1.29	2.47	4.86	11.38	1.15
17.	Meghalaya	0.55	1.45	2.58	5.41	13.12	1.30
18.	Mizoram	0.64	1.28	2.33	4.78	13.14	1.24
19.	Nagaland	0.52	1.19	2.55	6.20	15.83	7.28
20.	Orissa	0.50	1.39	2.69	5.63	16.48	1.25
21.	Punjab	0.63	1.40	2.67	5.75	15.14	4.03
22.	Rajasthan	0.48	1.44	2.85	6.19	18.21	3.65
23.	Sikkim	0.42	1.40	2.74	5.79	20.67	1.57
24.	Tamil Nadu	0.37	1.40	2.72	5.68	19.48	0.89
25.	Tripura	0.31	1.37	2.55	5.16	78.77	0.56
26.	Uttarakhand	0.39	1.39	2.71	5.47	25.07	0.95
27.	Uttar Pradesh	0.40	1.41	2.74	5.57	15.07	0.83
28.	West Bengal	0.51	1.59	2.77	5.12	278.95	0.82
29.	A & N Islands	0.39	1.38	2.53	4.31	46.79	2.00
30.	Chandigarh	0.39	1.42	2.79	5.92	12.00	1.44
31.	Dadar & Nagar Haveli	0.52	1.32	2.75	5.78	15.95	1.48
32.	Daman & Diu	0.29	1.37	2.63	5.86	20.25	0.59
33.	Delhi	0.42	1.38	2.86	5.77	15.27	1.52
34.	Lakshadweep	0.19	1.27	2.56	5.47	22.33	0.27
35.	Pondicherry	0.29	1.42	2.74	5.68	19.50	0.70
	Total	0.24	1.42	2.39	4.42	13.16	1.33

Note: The average size of operational land holdings in hectares.
The sum of States/ UTs may not exactly tally with all-India total due to rounding off.
Data Not Available.

Source: Above table computed and compiled from the data collected from the MoA (2000-01) Agricultural Census (2000-01), Agricultural Census Division, Directorate of Economics and Statistics, Department of Agriculture and Cooperation, Ministry of Agriculture, Government of India, Krishi Bhawan, New Delhi.

showed declining trend in most of the States. In addition to this, a number of Tables as 4, 5 and 6 are giving the State-wise average size of operational land holdings for all the social groups for the periods of 2000-01, 2005-06 and 2010-11 for country, India. All these table helps in comparison of the State-wise average size of operational land holdings among the social groups as well as over the periods for the country, India.

Table 5: State-wise Average Size of Operational Holdings by Major Size-Groups, 2005-06							
Sr. No.	State/UT	Marginal	Small	Semi- medium	Medium	Large	All Holdings
1.	Andhra Pradesh	0.44	1.41	2.66	5.66	15.66	1.20
2.	Arunachal Pradesh	0.51	1.31	2.79	6.31	15.01	3.33
3.	Assam	0.43	1.21	2.66	5.13	60.92	1.11
4.	Bihar	0.25	1.25	2.59	5.16	20.56	0.43
5.	Chhattisgarh	0.44	1.42	2.70	5.74	16.63	1.51
6.	Goa	0.29	1.24	2.51	5.70	66.99	1.15
7.	Gujarat	0.50	1.46	2.78	5.81	16.72	2.20
8.	Haryana	0.45	1.44	2.83	6.05	16.47	2.23
9.	Himachal Pradesh	0.41	1.39	2.72	5.66	17.00	1.04
10.	Jammu & Kashmir	0.36	1.40	2.70	5.43	18.89	0.67
11.	Jharkhand ##	0	0	0	0	0	0
12.	Karnataka	0.45	1.43	2.71	5.78	14.90	1.63
13.	Kerala	0.14	1.33	2.56	5.30	47.73	0.23
14.	Madhya Pradesh	0.50	1.43	2.75	5.86	15.29	2.02
15.	Maharashtra	0.46	1.26	2.50	5.28	13.39	1.46
16.	Manipur	0.52	1.29	2.48	4.86	11.12	1.14
17.	Meghalaya	0.49	1.33	2.54	5.22	23.21	1.18
18.	Mizoram	0.62	1.31	2.32	4.80	43.83	1.22
19.	Nagaland	0.47	1.17	2.52	6.11	19.46	6.93
20.	Orissa	0.52	1.37	2.65	5.51	15.89	1.15
21.	Punjab	0.62	1.41	2.67	5.75	15.03	3.95
22.	Rajasthan	0.49	1.43	2.83	6.16	17.88	3.38
23.	Sikkim	0.38	1.26	2.55	5.47	18.40	1.48
24.	Tamil Nadu	0.37	1.39	2.71	5.65	19.99	0.83
25.	Tripura	0.28	1.37	2.51	5.30	63.43	0.50
26.	Uttrakhand	0.40	1.39	2.70	5.48	25.13	0.94
27.	Uttar Pradesh	0.40	1.40	2.73	5.55	15.20	0.80
28.	West Bengal	0.49	1.59	2.73	4.94	339.42	0.79
29.	A & N Islands	0.44	1.51	2.64	4.35	37.78	1.88
30.	Chandigarh	0.41	1.40	2.86	5.80	12.75	1.09
31.	Dadar & Nagar Haveli	0.51	1.32	2.73	5.85	15.60	1.43
32.	Daman & Diu	0.27	1.38	2.67	5.97	18.15	0.50
33.	Delhi	0.43	1.38	2.85	5.83	14.60	1.49
34.	Lakshadweep	0.18	1.36	2.51	6.12	24.00	0.27
35.	Pondicherry	0.30	1.41	2.73	5.80	18.19	0.78
	Total	0.23	1.38	2.36	4.38	12.99	1.23

Note: The average size of operational land holdings in hectares.
The sum of States/ UTs may not exactly tally with all-India total due to rounding off.
Data Not Available.

Source: Above table computed and compiled from the data collected from the MoA (2005-06) Agricultural Census (2005-06), Agricultural Census Division, Directorate of Economics and Statistics, Department of Agriculture and Cooperation, Ministry of Agriculture, Government of India, Krishi Bhawan, New Delhi.

Concentration Trends of Operational Holdings

In order to comprehend the trends of operational land holdings, the Gini's coefficient of concentration is used to obtain an overall measure of concentration in the size distribution of operational holdings for the country, India. The values of coefficients are computed for the periods 1960-61, 1970-71, 1981-82, 1990-91, 2000-01 and 2010-11 as presented in Table 7. In general, there is found an increasing trends of the concentration of operational land holdings over the periods

Table 6 : State-wise Average Size of Operational Holdings by All Social Groups, 2010-11							
Sr. No.	State/UT	Marginal	Small	Semi- Medium	Medium	Large	All Holdings
1.	Andhra Pradesh	0.44	1.41	2.63	5.56	15.33	1.08
2.	Arunachal Pradesh	0.57	1.37	2.76	5.54	13.86	3.52
3.	Assam	0.42	1.38	2.69	5.14	70.50	1.10
4.	Bihar	0.25	1.25	2.59	5.12	15.00	0.39
5.	Chhattisgarh	0.44	1.42	2.68	5.71	16.11	1.36
6.	Goa	0.47	1.80	2.83	6.00	14.00	1.13
7.	Gujarat	0.49	1.45	2.68	5.71	20.82	2.03
8.	Haryana	0.46	1.47	2.87	6.08	17.89	2.25
9.	Himachal Pradesh	0.41	1.39	2.71	5.57	17.00	0.99
10.	Jammu & Kashmir	0.34	1.41	2.67	5.64	12.00	0.62
11.	Jharkhand	0.41	1.38	2.74	5.62	15.55	1.17
12.	Karnataka	0.48	1.41	2.68	5.68	14.62	1.55
13.	Kerala	0.13	1.57	2.79	5.33	60.00	0.22
14.	Madhya Pradesh	0.49	1.42	2.73	5.76	15.73	1.78
15.	Maharashtra	0.47	1.42	2.67	5.62	15.94	1.44
16.	Manipur	0.52	1.29	2.50	4.33	0.00	1.13
17.	Meghalaya	0.45	1.33	2.76	5.88	0.00	1.37
18.	Mizoram	0.60	1.27	2.40	4.50	0.00	1.14
19.	Nagaland	0.50	1.15	2.60	6.17	17.68	6.07
20.	Orissa	0.59	1.63	2.95	5.95	22.00	1.06
21.	Punjab	0.62	1.38	2.63	5.75	14.70	3.77
22.	Rajasthan	0.49	1.43	2.83	6.14	17.44	3.07
23.	Sikkim	0.38	1.18	2.45	5.33	12.00	1.41
24.	Tamil Nadu	0.37	1.39	2.70	5.62	20.59	0.80
25.	Tripura	0.28	1.38	2.45	4.67	0.00	0.49
26.	Uttarakhand	0.44	1.43	2.69	5.53	25.00	0.89
27.	Uttar Pradesh	0.39	1.40	2.72	5.53	15.20	0.76
28.	West Bengal	0.49	1.59	2.74	4.78	22.00	0.77
29.	A & N Islands	0.40	1.50	2.67	3.50	0.00	1.75
30.	Chandigarh	0.00	0.00	0.00	0.00	0.00	1.00
31.	Dadar & Nagar Haveli	0.50	1.25	2.50	4.00	0.00	1.33
32.	Daman & Diu	0.25	0.00	0.00	0.00	0.00	0.38
33.	Delhi	0.45	1.20	2.67	4.50	0.00	1.50
34.	Lakshadweep	0.20	0.00	0.00	0.00	0.00	0.30
35.	Pondicherry	0.36	1.33	4.00	0.00	0.00	0.69
	Total	0.39	1.42	2.71	5.76	17.34	1.15

Note : The average size of operational land holdings in hectares.

The sum of States/ UTs may not exactly tally with all-India total due to rounding off.

Source: Above table computed and compiled from the data collected from the MoA (2010-11) Agricultural Census (2010-11), Agricultural Census Division, Directorate of Economics and Statistics, Department of Agriculture and Cooperation, Ministry of Agriculture, Government of India, Krishi Bhawan, New Delhi.

in the country as also evidenced by the Table 7. In lieu of this, there is found an increasing trends of concentration at the states level in the country as is evidenced by the Gini's coefficient values which shows the degree of concentration in operational holdings which increased since 1960-61. Later on, such increase has been slowed down since 1980-01 and further continued to decrease over the periods up to 2010-11 as evidenced by the Table 7.

Table 7 : Trends in Gini's coefficient of concentration of operational holdings in India						
Periods	1960-61	1970-71	1980-81	1990-91	2000-01	2010-11
Gini's coefficients	0.583	0.586	0.629	0.641	0.624	0.602

Source: The Gini's Coefficients for the above table computed and compiled from the data collected from the MoA (2010-11) Agricultural Census (2010-11), Agricultural Census Division, Directorate of Economics and Statistics, Department of Agriculture and Cooperation, Ministry of Agriculture, Government of India, Krishi Bhawan, New Delhi.

Concentration patterns of operational holdings

The Gini's coefficient values presented in the Table 8 showed the deviations in the degree of concentration in the size distribution of operational holdings in all the 15 major States over the periods 1970-71, 1980-81, 1990-91, 2000-01 and 2010-11 for the country, India. To ensure proper comparability, it has been necessary to use, for computation of the coefficient, the distribution of land holdings by category at the state level for all the periods. Extraordinarily, there is a slowing down in the increase in concentration since 1980-81. In fact, the coefficient value for period of 1990-91 is slightly lower than that for period of 1980-81. It is also discernable from the Table 8 that there is a varying trends in the Gini's coefficient across the states in the country, India.

Table 8: Gini's coefficient of concentration of the size distribution of operational holdings by States					
States	1970-71	1980-81	1990-91	2000-01	2010-11
Andhra Pradesh	0.582	0.573	0.529	0.543	0.567
Assam	0.388	0.465	0.412	0.366	0.413
Bihar & Jharkhand	0.511	0.534	0.525	0.421	0.456
Gujarat	0.518	0.544	0.573	0.605	0.621
Haryana	0.436	0.571	0.645	0.675	0.698
Karnataka	0.509	0.562	0.577	0.543	0.556
Kerala	0.483	0.449	0.392	0.348	0.392
Madhya Pradesh & Chhattisgarh	0.508	0.520	0.533	0.527	0.565
Maharashtra	0.514	0.570	0.570	0.526	0.587
Orissa	0.466	0.504	0.462	0.381	0.432
Punjab	0.398	0.685	0.694	0.706	0.784
Rajasthan	0.599	0.551	0.590	0.610	0.589
Tamil Nadu	0.480	0.555	0.527	0.508	0.539
Uttar Pradesh & Uttaranchal	0.471	0.520	0.498	0.450	0.478
West Bengal	0.433	0.494	0.430	0.313	0.392

Source: The Gini's Coefficients for the above table computed and compiled from the data collected from the MoA (2010-11) Agricultural Census (2010-11), Agricultural Census Division, Directorate of Economics and Statistics, Department of Agriculture and Cooperation, Ministry of Agriculture, Government of India, Krishi Bhawan, New Delhi

Whereas, in case of the States like the West Bengal, Bihar (including Jharkhand), and Orissa, the index of concentration was decreased sharply since 1990-91. Similarly, in case of the Assam, Uttar Pradesh (including Uttaranchal), and Tamil Nadu, the index was decreased in both the periods 1980-81 and 1990-91. Similarly, in Kerala State, there was steady decrease in the index since 1970-71. Whereas, in case of the State Karnataka, Madhya Pradesh (including Chhattisgarh), Maharashtra and Rajasthan, there was no clear trend discernible in terms of the degree of concentration in the size distribution of operational holdings over the periods. However, it is noteworthy to mention that the two most agriculturally developed States of Punjab and Haryana were displayed the most pronounced increase in the concentration ratio since 1970-71. In case of the Haryana State, the ratio increased substantially over the periods since 1970-71. Whereas in case of the Punjab State, the ratio increased sharply from 0.398 in 1970-71 to 0.685 in 1981-82. This was followed by a smaller increase in the next two periods and so on up to 2010-11. In addition to this, in case of the Gujarat State, there was steady, though more gradual, increase in the index of concentration over the periods since 1970-71 to 2010-11 as evidenced by the Table 8.

Conclusions and suggestions

Ancient records show that, among the Indo-Aryans, arable land was held by family ownership. Later on, during the periods 1200 BC–1200 AD and AD 1540–1750, the principal unit of land settlement was the village. The British governed the land from 1750 to 1947. During this period, the Permanent Settlement Regulation was introduced to record all rights in respect of land in order to maintain an up-to-date record of land rights, but this remained unsuccessful. Since the country's independence, there has been an emphasis on the implementation of consecutive Five Year Plans addressing agriculture and related economic activities. Moreover, in India, about 58.40 per cent of the labour force is employed in agriculture and allied activities for their livelihood in 2001. Land accounts for more than 50.12 per cent of the total assets of rural households. India is one of the world's rapidly developing and emerging economies. There has been a continuous decline in the share of agriculture and allied sectors in its gross domestic product (GDP), from 14.60 per cent in 2009–2010 to 13.90 per cent in 2013–2014 (at 2004–2005 prices), which is an expected outcome for a fast-growing and structurally changing economy.

The land governance is a noteworthy matter of concern in the economically emerging and developing country, India. The land governance is dealing with the various issues as the land, agrarian reform, land tenure and administration. There were adopted a number of strategic issues in land governance and development under different plans and policies. The main objective of land reform is to provide social justice for the people, particularly the cultivators, land owners, landless labourers, and rural populations. The main directives of land reforms are the abolition of intermediaries; land tenancy reforms; rent control reforms; ceilings on land holdings; consolidation of land holdings; security of land holdings tenure; reversal of forced evictions and relocations; women's land and property rights; and computerisation of land records. In lieu of this, with the implementation of the land reform programme, a certain specified limit of land belonging to landlords was set, and the rest would be taken over by the state. The ceiling on land holdings is an effective measure for land redistribution. In view of the prevailing social and political contexts, the ceiling law was neither politically expeditious nor administratively easy to implement. Kerala and West Bengal States, where rigorous implementation of tenancy legislation took place, have been successful role models of tenancy reforms.

Land reforms are connected with the right to life and livelihood of a huge rural population. The

government is obliged to protect farmers' land rights. The real threat to India's well-being and security is the displacement of its rural population from its roots. As long as the population is tied to the soil, there will be an increase in agricultural production and economic growth. Farming by small holders continues to have a direct impact on poverty. More equal distribution of land to this group is viable, and the broad support base of redistribution should significantly raise productivity and improve the livelihoods of the poorest people. In this context, the chronological analysis of the past 11 Five Year Plans makes it clear that, since the inception of the Planning Commission, industrialisation has been equated with development. The agricultural sector has always been secondary priority in different plans. It must be noted that a majority of people living in rural areas have remained untouched by the trickle-down effect of industrialisation. Due to land reforms, a middle-level peasantry sharing the characteristics of capitalist farmers emerged, who were largely responsible for the green revolution of the 1970s and the 1980s. Today, decreasing sizes of farm holdings are a major challenge to their economic viability.

Consequently, the land reform has been focal point of the country's political and economic agenda. This also lays a sound foundation for growth, to enable India to compete in the global market. Land reform policy is fundamentally a politico-economic issue, and in most cases it is the result of a people's movement. Land reform means the distribution of surplus land to small farmers and landless cultivators. It has been a major instrument of social transformation, especially in an economy based on feudal and semi-feudal production relationships. The long-term solution is to reduce the dependence of the rural population on land through the expansion of non-agricultural activities. So, the future growth must be based on higher efficiency and will require to invest in science and new technologies to harness natural land resources, optimise their economic structures for allocative efficiency, and reform their fiscal, financial, banking, and insurance systems. Thus, the lessons learned from the experiences of India will also help other developing countries and in the global fight against hunger and poverty. So, the long-term solution is to lessen the dependence of rural population on land by the expansion of non-agricultural activities. Nevertheless, the grass root level change in rural society is primarily possible through the sustainable agricultural development in which the agrarian reforms have a greater role in fundamental development of the country, India.

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