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Issues and Strategies of Natural Resource Management and Land Use Planning in Semi-arid Regions of India

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Abstract: In Indian context, land use planning is usually centred on agricultural land use and livestock management with peripheral window for common property resources and non timber forest produce. National Bureau of Soil Survey and Land Use Planning (NBSS&LUP) has delineated the country into different agro-ecological regions (AER) based on four parameters soil, physiography, length of growing period (LGP) and bioclimate. This article dwells on the land use planning issues and strategies of semi-arid region that covers 101 Mha area of the country. It is home to more than 341 million human population spread in 175 administrative districts. The region has very little area under forest (10%). There are many intra-regional variations that entail different strategies for agricultural development or land use planning. In AER 4, 164 million people reside, which is almost 50% of the total population in semi-arid region. Because the per capita land availability is lowest in this part of India, it is pertinent that the land resources cannot be expected to provide sustenance unless land use changes substantially from agriculture to more rewarding, employment generating activity. In AERs 7 and 8 the net sown area is relatively low, therefore there appears to be land availabe that could be utilized for developments such as pasture lands, agro-forestry development etc. Current utilization status of four main resources namely land, water, forest and livestock is discussed to identify potential for development in each sector. We argue that land resource inventory needs to be developed for this purpose. Modern tools that could be employed for inventorization of soil resources are also discussed.

Key words: Land use planning, semi-arid region, land resource inventorization, agro-ecological region, soil survey.

Agriculture in India accounts for 14% of the GDP, 12% of country's exports, and generates employment to the 50% of the work force of the country. Its dependence on natural resources like soil and water is profound. Increasing concern of land degradation, dwindling water resources, increasing risk of environmental degradation and declining productivity calls for the research on land use planning in the developing countries including India. The natural resource management (NRM) programmes based on scientific land use planning offer a system-based approach of management for efficient utilization and conservation of natural resources for achieving food, nutritional, livelihood security and environmental sustainability.

Land use planning (LUP) finds its origin in the increasing scarcity of land, the competition for scarce land by a growing number of users, and to avoid the risk that might lead to conflicts. It is equally associated with the growing concern for protection of the environment and a more sustainable use of space. Issues related to land use and its planning are becoming increasingly complex and land resource planners/managers/officials often lack the right information which limits their capacity to suggest judicious land use options and appropriate land management decisions. Scientifically guided optimal utilization of land based on precise and quantified information of land resource inventory on 1:10000 scale using geo-spatial techniques for both agricultural and non-agricultural purposes is of utmost importance. The information on land resources certainly guide to the farmers/planners/executors to select proper land use, right technologies based on the potentiality and constraints of well defined land management unit. Thus the scientific land use plan will enable to meet various competing demands of the land on one hand and enhance the production potential of the land and minimize the land degradation on the other. The process of land use planning would facilitate better land care and management which, in turn, would go a long way in ensuring sustainable agricultural development.

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