

Land Use Change Implications on Forest and Agro-Ecosystems: Indian Perspective

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1. Background

India has about 18 % of the world's population and 15 % of livestock population to be supported from only 2 % of geographical area and 1.5 % of forest and pasture lands. The increasing human and animal population has reduced the availability of land over the decades. The per capita availability of land has declined from 0.89 ha in 1951 to 0.37 ha in 1991 and is projected to slide down to 0.20 ha in 2035. As far as agricultural land is concerned, the per capita availability of land has declined from 0.48 ha in 1951 to 0.16 ha in 1991 and is likely to decline further to 0.08 ha in 2035. Forest and agro-ecosystems are very important in conserving the biodiversity, food security of the poor, climate balance and securing livelihood of rural poor and marginal farmers. The recent unprecedented price increase of food commodities and fall in agricultural productivity are threatening to undo the poverty reduction achievements and biodiversity conservation programmes in India.

2. Land use change in forest land

Although India is the seventh largest country in the world, only 1.8 % of the world's forests are found here. Based on recent Indian Remote Sensing Satellite data, forests in India cover approximately 21 % of the area. However, a more realistic estimate shows that forests cover only 11 % of the land base. Out of India's population of one billion, 360 million live in or around forest areas, exerting tremendous pressure on limited forest resources. This is in addition to the need to fulfill the requirements of urban population and wood-based industries (FAO, 2000).

India's Forest Policy in 1988 prescribed that 33 % of country land area should be brought under forest cover, but still it is around 21 % from last decade. Significant forest lands have been encroached upon by forest fringe communities, for growing crops, mining lease in forest area, leasing of forest lands to industries for meeting raw material needs, repeated forest fires, large scale monoculture energy plantations, pending land tenure rights, large scale conversion of forest for river valley projects, absence of integrated watershed policy etc., all of which have fragmented the forest landscapes and seriously threatened the biodiversity (Faizi and Ravichandran, 2008).

Efforts have been made in India to integrate social policies into the forest policies like social forestry and joint forest management programs in the last few decades, which raises questions like who is owning and conserving the forest. In view of this, Government of India enacted Recognition of Forest Rights Act – 2006 (RFRA – 2006) to provide property rights to scheduled tribes and forest dwellers (GOI, 2006). Social scientists opined that it is unworthy to exclude rural people to access the resources from their immediate parks and sanctuaries without providing them the alternative (Madhu, 2005). Contouring to this co-management initiative, many wildlife conservationists and environmentalists have strongly argued that if the rights on land and other forest resources were handed over to the community, no more

wildlife conservation would be possible. Experts are also of the view that it will not only create fragmentation in protected areas, but also adversely affect the environmental services of forest of Himalayan and Western Ghats mountain ecosystems. These two biodiversity hotspots are already fragile and will further fragment if provided with property rights under RFRA. A progressive shift from traditional exclusive approach to community-driven, rights-based approach is thus underway to protect social and human rights of local population in relation to biodiversity conservation in other developing countries also (Lockwood et al. 2006).

3. Land use change in agriculture land

Out of 328.7 million ha of geographical area of India, about 141 million ha is Net Cultivated area and of this, about 57 million ha (40 %) are irrigated and the remaining 85 million ha (60%) are rainfed. This area is generally subject to wind and water erosion and is in different stages of degradation. Therefore it needs improvement in terms of its productivity per unit of land and per unit of water for optimum production. According to the 2005 report of National Bureau of Soil Survey and Land Use Planning, an area of 146.82 million ha is suffering from various kinds of land degradation in India.

The recent Bio-fuel policy of Government of India aims at introducing a 5 % blend of bio-fuel by 2012, 10 % by 2017 and 20 % 2022. The natural question arising from the diversion of arable land from food production to bio-energy crops is likely impact on India's food production and food security. Bio-fuel proponents, and there is already a vocal "biological lobby", argue that bio-energy crops would only be grown on degraded or wasteland, not on fertile land. In this regard the proposed bio-fuel policy will change the land use dynamics of agriculture lands in India, with grim prospects for the future.

The Special Export Zones Act (2005) allows industries to set up export economic zones in India. According to Ministry of Commerce and Industry, Government of India, totally about 41,700 ha of land is to be acquired for the formally approved and notified SEZ in India. The majority of these are going to come up in fertile agriculture lands. The diversion of agriculture land to industries will seriously affect not only agriculture productivity, but also leads to water scarcity around these SEZ. The agriculture areas around these SEZ are likely to be affected by pollutants discharged by these industries, and besides urbanization will change land use system of the region.

4. Conclusion

Natural resource decline, social unrest and poverty, exacerbated by climate change, among others will shape the land governance agenda in large parts of the developing world. India is experiencing rapid growth of population, consequent industrialization and urbanization, particularly in the post-independence era. However, not enough is known about the magnitude of these land use changes, state and non-state actors responsible for land use change and the relationship of these changes on forest and agriculture land use systems of India. The issues discussed above highlight the increasing importance of land use governance and reforms needed in the national and global agenda from the view point of national food and energy security, economic growth, climate regulation, biodiversity conservation, and social perspectives. The complex and multidimensional nature of land requires a long term, well organized and coordinated research and action involving all the stakeholders.

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