

Land Degradation in India: A Quest for Legal Remedy

KiranKumari Singh*[@] and Ramakant Singh**

**Asst. Professor, Centre for South and Central Asian Studies, Central University of Punjab
Bathinda, ** Ph.D. Scholar, CMJ University, Shillong*

Abstract

Sustenance of life on earth necessitates vital and productive quality of the land. The rapidly growing population, economic development and governmental policies are generating pressure over the land resource for the growing and competing demand of land for agriculture, forestry, pastures, settlements, and industries leading to deterioration in the quality of land. In the country like India, socio- political structure also plays an important role to drive land degradation and the land management processes are eclipsed by economic growth motive and need to produce food for expanding population level. It is widely recognized that land degradation management policies and strategies are essential to ensure sustainable land management. The present exercise attempts to highlight the dimension of land degradation problem and evaluate government programmes, policies and laws formulated and enacted to control such problem. Land and Soil conservation policies and programmes in other countries are also examined in context of their efficacy to address land degradation. In order to manage and conserve land the paper calls for the regular monitoring of degraded land using multidimensional approach and firm legal actions and plans to combat land degradation.

Key words: Land degradation, conservation, policies, laws and regulation.

INTRODUCTION

Land degradation as a problem was diagnosed much earlier in the world history but became a global issue when its negative impact was assessed in the form of food insecurity. Land degradation continues to expand worldwide suggesting that the existing environmental laws and policies have not been effective to prevent land degradation. Land is a broad term covering landform, soils and vegetation, including grassland resources, forests and water resources (FAO, 1976), is one of the elements of basic life supporting system without which human survival is not possible. To meet the demand of growing population land must be environmentally strong and sustainable otherwise survival of human well being will be on stake in the future. Land is considered "degraded" when its production capability is diminished as a result of degradation of land quality and also its loss for effective use. It thus covers the various forms of soil degradation, adverse human impacts on water resources and deforestation. A general definition of land degradation is presented by Wasson (1987), as "*Land degradation is a change to land that makes it less useful for human being.*" Any talk on land degradation starts with the assessment of availability of the land, its carrying capacity and its quality. The availability emphasizes or more significantly look forward the capability of land of a nation means how much land is able to provide food. Carrying capacity, determined and modified by several complex processes, examines the pressure that can be endured by the land in terms of its resiliency. The quality of the land is an important asset for any country which is required to be appraised and monitored time to time. According to Eswaran et al. (2001) we have, globally, only 3.1% (4.09 million km²) Class I land and together with Class II and III lands, the 12.6% (16.51 million km²) of total land is generally free of constraints for most agricultural uses and rest are inferior.

Tremendous literatures are available on the causes of land and soil degradation (Lowdermilk, 1953; Aubreville, 1949; Barrow, 1991; McTainsh and Boughton, 1993; Johnson and Lewis, 1995; Eswaran, Lal and Reich, 2001; Kiran, 2011) and hence there is no need to talk about it again and again. But since it is the lands under cultivation which faces the biggest challenge of land degradation in India, the direct land users must know the causes and consequences of it and that, the knowledge incentives, must come at the top priority in any land degradation policy and legislation. It is now essential to formulate and strictly follow soil and land management and

conservation policies, programmes and laws otherwise human survival will be on stake without productive land. Today many countries have implemented conservation programs to reduce the adverse environmental consequences of land and soil degradation. The purpose of this paper is to examine laws and regulations that have been used particularly in India and few other countries like China, United States of America and Germany. The countries were chosen because two are developed and two are developing and they have embraced different legal methods to address land and soil degradation problem.

DIMENSIONS OF LAND DEGRADATION

India is blessed with vast expanse of land resource but the growing population and the way the people are using the land will not let the situation remain same. India supports approximately 18% of the world's human and 20% of livestock population on a mere 2.5% of the world's geographical area (DoAC, 2000). At the time of independence country's population was 342 million. The country's population size had grown from 361 million in 1951 to around 846 million in 1991 and almost tripled to 1027 million in 2001. The pressure on the country's land resources is intelligible and is going to be mounted by the competing uses of land for forestry, agriculture, pastures, human settlements, and industries. The per capita availability of land in the country has declined from 0.89 hectare in 1951 to 0.33 hectare in 2000 and is projected to slide down to 0.20 hectare in 2035. As far as agricultural land is concerned the per capita availability of land has declined from 0.48 hectare in 1951 to 0.16 hectare in 1991 and is likely to decline further to 0.08 hectare in 2035(DoAC,2000). This decline in per capita land availability in the country is mostly on account of rising population. The symptoms of the problem of pressure on land resources are manifested both in terms of impacts on people, and in terms of deterioration in the condition of land or impacts on other natural resources. The agricultural land of ours is in different stages of degradation for subjecting to intensive agricultural production and its mismanagement (Sehgal and Abrol, 1994). The information on the extent of land degradation in the country has been assessed by various agencies using different approaches in defining degraded land and adopting various criteria for delineation (Table 1).

Table 1 Major Surveys/ Estimates of Degraded Lands

Agency/Organization	Year	Extent (in m ha)	Criteria for delineation
National Commission on Agriculture (NCA)	1976	175.00	Based on secondary data only
Society for Promotion of Wastelands Development	1984	129.58	Based on secondary collected data
Ministry of Agriculture, GOI	1985	173.64	Based on the land degradation statistics for the States
National Remote Sensing Agency	1985	53.3	Mapping on 1:1 million scale based on remote sensing techniques
National Bureau of Soil Survey and Land use Planning (NBSSLUP)	1994	187.70	Mapping on 1:4.4 million scale based on Global Assessment of Soil Degradation (GLASOD) guidelines
Ministry of Agriculture, Deptt. of Agriculture & Cooperation	1994	107.43	Based on the land degradation statistics for the States
Department of Land Resources	2000	63.84	Mapping on 1: 50, 000 scale. Thirteen categories of Wastelands delineated
Department of Land Resources	2005	55.27	Mapping on 1:50,000 scale

Source: Ministry of Agriculture

According to National Commission on Agriculture (1976), about 175 million ha of land constituting 53.3 percent of the total geographical area of 329 M ha is subject to various kind of degradation like salinity, alkalinity, water logging, ravinous and gullied lands, areas under ravages of shifting cultivation, desertification, etc. About 800 ha of arable land are being lost annually due to ingress of ravines (MoA, 2000). All India Soil and Land Use Survey under the Department of Agriculture and Co- operation (1994) in its survey reported that 107 M ha of area was found under various types of degraded land.

LAND MANAGEMENT: POLICIES AND LEGISLATION IN INDIA

For management and conservation of land resource, one of the pre-requisites is information on the existing status of available lands at local, regional and global scales and a wide range of programs, policies, educational initiatives and national and local laws are necessary to successfully achieve ecologically sustainable land management (Kiran, K. S., 2011). For this purpose, first, methods must be evolved for assessment and monitoring of land degradation to provide accurate and unbiased information. There is also an urgent need to assemble experts in this field and develop appropriate guidelines to control this problem. Shanthakumar, S. (2004) writes that all the activities of persons which have impact on "environment" needs to be regulated and hence, 'Environmental Law' has emerged as one of the most important tool for protection, conservation and management of environment and its resources, while promoting development without destruction. In recognition of the felt need for environmental protection, various regulatory and promotional measures have been taken in our country over the past twenty years. These include the following:

- The 42nd amendment to the Constitution (Article 48 A) in 1976 makes it the responsibility of the State Government to protect and improve the environment and to safeguard the forests and wildlife of the country (42nd Amendment Act, 1976). It the fundamental duty (Article 51 A {g}) of every citizen to protect and improve the natural environment including forests, lakes, rivers and wildlife and to have compassion for living creatures.
- In the same amendment (42nd) 'Forest' was placed in concurrent list and parliament acquired power to make law related to forest. By virtue of this power Parliament enacted, the central legislation i.e. Forest Conservation Act, 1980 which was amended in 1988. The government also adopted the new National Forest Policy in 1988 with a twin object. One to protect the forests and another to consider the needs of the forest dwellers.
- The Eleventh Schedule, added to the Constitution by the constitution 73rd Amendment Act, 1992, assign the functions of soil conservation, water management, social and form forestry, drinking water, fuel and fodder, etc. to the Panchayats with a view to environmental management (73rd Amendment Act, 1992).

- The 12th Schedule of the Constitution added by 74th Amendment Act, 1992 commands the urban local bodies such as municipalities to perform the functions of Protection of environment and promotion of ecological aspects (74th Amendment) Act,1992).
- Under Law of Torts, special damage can be claimed from nuisance maker/violator of environment.
- The Water (Prevention and Control of Pollution) Act'1974, with the objectives to Prevent and Control Water Pollution and the maintenance or restoration of the same.
- The Environment (Protection) Act, 1986 was introduced as an umbrella legislation that provides a holistic framework for the protection and improvement to the environment.
- The National Environment Tribunal Act'1995.
- the National Environment Appellate Authority Act, 1997,
- Hazardous Wastes (Management and Handling) Amendment Rules, 2002 (The Gazette of India, 2003).

Besides the legislative measures, several autonomous agencies, offices and institutions have also been set up by the government to implement environmental programmes and policies. In this context, in India, though land resources are taken as an integral part of government plans and policies, specifically speaking a land use policy started only in 1972. With the circulation of a paper entitled “A Charter for the Land” by Shri B.B.Vohra (1973) a senior official in Ministry of Agriculture, the accent towards land resource has increased the then Prime Minister in 1973 had given a challenge to the nation for working out a viable land use policy as follows:

.....” The stark question before us is whether our soil will be productive enough to sustain a population of one billion by the end of the century at a higher standard of living than now prevails. We must have long term plans to meet this contingency.” (as quoted in High Level Committee Report, Department of Land Resources, 1995)

The first Governmental effort in soil conservation started in 1962-63 with the River Valley Projects, which aimed at arresting siltation and thereby protecting the large dams. From the unidirectional River Valley Projects of the 1960s, the emphasis on soil conservation has radically shifted to a multidimensional and integrated approach in 1990s, largely in recognition of the linkages of poverty with land degradation.

In the same decade (1990s), land resource management and area development programmes were restructured to allow for greater flexibility in choice of technology, decentralization of procedures, and active participation of beneficiaries in planning and execution. Several steps have been taken overtime—many before 1992—towards institutional restructuring and better management of land resources. During the Sixth Plan (1980-85), a separate Department of Environment & Forest (DoEF) was constituted to focus on the environment and natural resources (including land). Subsequently, the DoEF was upgraded to a ministry--the Ministry of Environment and Forest. Further, land degradation issues received special attention with the setting up of the National Land Use and Conservation Board and National Wasteland Development Board (NWDB) in 1985. The objective was to formulate a National Policy and Perspective Plan for conservation and management of land resources, appropriate land use vis-a-vis the soil capability and to develop and increase the productivity of wastelands in India. In 1992, the National Wasteland Development Board was bifurcated to National Afforestation and Eco-development Board (NAEB) and NWDB. NAEB is responsible for development of degraded forestlands and NWDB is responsible for management and development of wastelands. Department of Land Resources (DoLR) was formed in April, 1999, under the Ministry of Rural Development. The mandate of the department includes land reforms and land administration, besides implementing all the land based programs (Drought Prone Area Programme, Desert Development Programme etc.). All the area development schemes are being implemented through the watershed development approach to increase agricultural production and to improve the quality of life of the poor while arresting degradation. To integrate watershed development programs of different departments, a single national initiative--a national movement of watershed development--was mooted through the budget speech of Union Finance Minister in 1999-2000. The 73rd and 74th Amendments Act (1992) of the Constitution ensured a definite role for local bodies in the management of natural resources including land, water and forests. Since 1995, area development programmes have been implemented with the people's participation. Now it has been realized that there is an urgent need to strengthen knowledge base and augment capacities in State soil and land use departments to develop information and monitoring systems.

LAND DEGRADATION POLICIES AND LEGISLATION: INTERNATIONAL PERSPECTIVES

The Stockholm Declaration on the Human Environment, 1972 and Nairobi declaration, 1982 pointed out that deforestation, soil and water degradation and desertification had reached alarming proportions (Hannam and Boer, 2002). In the same year the World Charter for Nature was adopted and its general principal requested that Nature be respected and conserved. In 1982 FAO adopted World Soil Charter and UNEP prepared World Soil Policy to encourage international cooperation for the optimum use and conservation of soil. After a decade in 1992, the Earth Summit in Rio de Janeiro addressed the problem with its Agenda 21, stating that our practice of consuming resources shall not compromise the ability of future generations to benefit from these resources, a principle that has become known as sustainable development (World Commission on Environment and Development (WOCAT,1987). In Chapter 10 of Agenda 21 the resource (land) is recognized as a finite resource that shall be managed in a sustainable way. Land degradation should be stopped and measures of prevention and remediation shall be introduced.

The early legislation focused on land utilization rather than land conservation (Hudson, 1995) and hence put little emphasis on ecological sustainability. But to make land sustainable wide range of judicially framed policies are required. The global environmental laws and policies seek to achieve ecologically sustainable development, combat desertification, forest management, control the effect of climate change and to manage biodiversity. According to Hannam (2001) these instruments are now used to re-assess and reinvigorate domestic and environmental laws and policies aimed at the management of land degradation and to provide for the future and sustainable use of the land. The following paragraphs outline the characteristics of land and soil conservation legislations of some countries so that recommendation can be made on the basis of their experiences in terms of success and failure.

China: China is one of the countries suffering from most serious soil and water loss. Meanwhile, it is also among the countries with a long history of soil and water conservation and rich experiences in this field. Since the beginning of the 20th century, China has begun to explore the law of soil and water loss, which has laid basis for erosion control. Since the founding of the People's Republic of China in 1949, the Chinese government has attached great importance to

soil and water conservation and accumulated experiences of control with a small watershed as a unit, overall planning and integrated management based on years of practice. In “*Environmental Protection Law 1989*” (Article 20) the governments at various levels provide better protection for the agricultural environment by preventing and controlling soil pollution, the desertification and alkalization of land, the impoverishment of soil, the deterioration of land into marshes, earth subsidence, the damage of vegetation, soil erosion, the drying up of sources of water. In 1991, the National People’s Congress issued the “*Soil and Water Conservation Law*” of the People’s Republic of China, which made soil and water conservation legally binding (Liu, Z. 2004). From 1998 to 2000, the Chinese State Council approved and implemented “*National Planning of Ecological Improvement*” and “*National Guidelines for Ecological and Environmental Protection*”, which outlined the master plan for soil and water conservation and ecological improvement for the early 21st century and incorporated soil and water conservation into the strategies of sustainable development and great development in the west. In 2011, China revised this law with certain resolutions that water authorities as well as other government agencies including the forestry, agriculture, land and resources departments will be responsible to work together on the country’s water and soil conservation project. Penalties for the loss of soil and water must be included in land-use contracts reached with local governments, according to the law, which provides for more severe punishments to violators. If individuals or companies fail to work on controlling water and soil losses within a prescribed time frame, they should pay the full expense of the government’s water and soil conservation work on the project.

United States of America: Soil erosion in USA captured national attention in the late 1920s and early 1930s when drought, combined with poor agricultural practices, produced the Dust Bowl. The dust storms were taken seriously by the nation and Soil and water conservation policies and programs began. Government action to protect future productive capacities of US farm land resulted in soil conservation policies and programs to aid land owners (Napier, 1990 b; Napier & Napier, 1999a). During 1930 the government used information-subsidy-technical assistance (ISTA) model wherein it was argued that the landowners needed information about erosion, technical assistance to implement complex conservation technologies and techniques, and economic subsidies to defer a portion of the implementation costs (Napier, 1999). In 1937, a *Standard Soil Conservation District Law* was developed for consideration by each of the states and this model enabling act was sent to each of the state governors, suggesting that farmers and

ranchers be granted the authority to establish districts specifically for conservation of soil and water resources (SSWCDL, 1991). This law basically argued that landowners needed information about erosion, technical assistance to implement complex conservation technologies and techniques, and economic subsidies to defer a portion of the implementation costs. In the 1950's, most States amended their state conservation district laws to put more emphasis on water conservation and to confer authority to carry out watershed projects. Recent amendments granted authorities to further district participation in state water quality management and erosion and sediment control programs, critical area land use management programs, and administration of special soil and water conservation funds, including funds which provide state financial assistance for installing soil and water conservation practices. These state laws provide a mechanism for creating soil conservation districts (SCD's) to conserve soil, water, and related resources.

Germany: In Germany soil and water conservation policies are dominated by command-and-control regulations. Economic instruments are only chosen in some cases, such as subsidies for environmentally sound farming methods (Weingarten, 1996). Under *Federal Soil Act* (FSA, 1998) the quality of the soil structure has to be preserved or improved. Soil compaction and erosion are to be prevented as much as possible. Germany established the *Federal Water Act* in 1956 and amended the act in 1986 to protect drinking water from contamination. *Federal Water Act 1956* assigns all surface and groundwater resources to public management. The most important items of the *Federal Water Act* for agriculture are the declaration of water protection areas (WPA), management restrictions and compensatory payments within these WPAs, as well as regulations concerning the storing of materials which are potentially dangerous to water bodies. In some of the States, water use is levied to different amounts depending on the type of body the water is taken from - surface- or groundwater - and the purpose the water is used for. *Fertilization Ordinance* limits the use of fertilizers in farmland. N, P and K fertilizer requirements have to be calculated for each plot taking into account factors such as the type of crop to be planted and soil nutrient availability. Since nutrient losses are to be minimized, it is prohibited to apply more inorganic or organic fertilizer than necessary. This implies that manure application is not only restricted by these upper limits in the ordinance mentioned above but also by the case-specific fertilizer requirements. According to Weingarten & Frohberg (1997) the German conservation policy approach appears to be well-organized and to work well, there are

many abuses by program participants. Many farmers participate in the sustainable farming program only to receive government compensation rather than to improve environmental quality. Often farm income is increased with no improvement in environmental quality.

CONCLUSION AND RECOMMENDATION

In India or any developing country land is prone to degradation due to widespread poverty and illiteracy which are also key constraints in land or soil conservation adoption among the people and farmers. Poverty and land degradation is an enormous topic and would require another set of research to explore the unfathomable relationship between them. It is pertinent to quote here that success of any law, policy or programmes depends on its compatibility with the geographical setting and those who are directly involved in the land management practices. For example, the Forest Rights Act is the first law to acknowledge that forest-dwelling populations in India have been unjustly treated by denying them rights to the lands and resources they use. Several hundred million people are dependent on forests for various direct uses in India residing in different states like Jharkhand, Chhattisgarh, North-Eastern states and others. Tribal's life is woven in forest; many live on forest lands, or are in settlements that are within or just adjacent to forests. Unfortunately, their customary rights to these forests have only partially been recorded, and indeed often denied without justification or without providing alternatives. It is the government responsibility to search and provide some alternative of livelihood to the large number of tribal people. Joint Forest management will and has helped to regenerate or protect millions of hectares of forests.

One important point is the synchronization between diagnosed problem and the according solution. What is land degradation in particular context, what is its root causes in particular locality, and what should be the specific strategy to overcome, need thorough revitalization. In Rajasthan the problem, dominantly, is in the form of desertification, in Uttar Pradesh, Punjab and Haryana in the form of salinization while in Jharkhand it is in the form of acidification, however, secondary forms of land degradation are also apparent with varying severity. The underlying causes are hidden in the types of land degradation and thus the programmes and policies should be formulated accordingly.

Several recommendations for making future conservation policies and programs more relevant to contemporary soil and water conservation issues are presented below. They are as follows.

- Remote sensing and Geographic Information Systems (GIS) are being widely used in the mapping process and erosion prediction. Large scale monitoring needs a considerable amount of data, human resources and time during image interpretation and field survey. Geographic attributes and socio- economic data must be combined to get reliable result. Further, soil is an integral component of land and any quality deterioration in soil can be examined through laboratory testing of the soil thus multi- dimensional approach is required to assess land degradation.
- Apart from the spatial distribution, temporal variation in the extent is a key component to inspect the effect of implemented programmes, policies and law. A scientific guideline covering broad range of land degradation types and processes tailored in local characteristics is required to be prepared and monitoring should be done at regular time interval to detect changes.
- Land capability classification helps to select various conservation measures and when compared with the land use/cover classification (of any area) it provides the idea of use and misuse of land. Therefore, zoning and apportionment of land for designated uses such as, agriculture, forestry, grassland, green areas, industrial activities, catchment areas and watersheds and human settlements based on assessment of their capabilities and environmental considerations should be given emphasis in identifying causes of land degradation and also in preparation of management and conservation plans.
- It is becoming evident that a wide range of programs, policies, educational initiatives, laws and local laws are necessary to successfully achieve ecologically sustainable land management. There should be legislation and policy material aimed at the control of soil and land degradation in the form of 'Land conservation law'. Laws cannot affect the natural processes that cause environmental changes but can and do regulate human behavior in response to natural disasters. Conservation ensures the sustainability of development for the present and in the future. Enactment of laws for appropriate land uses to protect the soil from erosion, pollution and degradation is essential. The primary

purpose of the strategy and the policy statement should be to include & strengthen our traditional culture and to build up a conservation society living in harmony with Nature and making frugal and efficient use of resources guided by the best available scientific knowledge. It is urgent to strictly implement Hazardous Wastes (Management and Handling) Amendment Rules, 2003 as the land degraded due to mining activities and the generated wastes, especially hazardous, are hard to recuperate.

- It is very essential for the government to critically examine the existing laws and programmes through the available experiences. How much these laws have been effective and in what manner they lack the effectiveness.
- Farmers should be given detailed knowledge of causes and consequences of land and soil degradation through orientation programs. This should include: the long term effect of chemical fertilizers and herbicides on the quality of land, effective way of irrigation, crop suitability of the farm field etc.
- They should be encouraged to bring their knowledge in practice and the government should monitor the attitude of the farmers and how they are behaving with the land.
- Penalties for violating environmental expectations of society should be established that cannot be arbitrarily removed by political edict and should be of sufficient magnitude that they act as effective disincentives to potential violators.

In India the environmental problem calls for the mass education, awareness and strict environmental laws. Government should make investment in mass environmental awareness in the first stage and later on the person or the organization getting involved in environmental degradation should be punished and the punishment should be severe for the educated one. The above recommendation should be brought into effect otherwise it will become difficult or somewhere impossible to manage soil and land.

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