

# Land Degradation And Integrated Watershed Management System

**Rayees Afzal Mir And Syed Aasif Hussain Andrabi**

Associate Professor Glocal School of agricultural sciences Glocal University, Saharanpur (UP).  
India 247121 raies.afzal@gmail.com

## **Abstract**

Our research “Land Degradation and Integrated Watershed Management System” is a Considering the deteriorating usefulness levels of inundated farming, the commitment from rainfed agribusiness ought to be expanded to meet the necessities from the consistently Bowing human and animal populace of India. Land degradation is a significant danger to our food and climate security and the degree of corruption issues are more articulated in rainfed locales. Huge capability of rainfed farming is undiscovered generally because of absence of empowering strategy backing and ventures. In dry spell inclined downpour took care of regions, watershed the board has shown the capability of multiplying the agrarian efficiency, expansion in water accessibility, rebuilding of natural equilibrium in the debased rainfed environments by greening these regions and broadening of editing cultivating frameworks. Effect of different watershed programmes can be significantly improved by growing new methodologies and empowering strategies new worldview dependent on learnings over most recent 30 years for individuals driven all-encompassing watershed the executives including assembly, aggregate activity, consortium approach, limit advancement to address value, productivity, climate and monetary concerns is direly required. Anyway, this can be utilized as section point action for further developing business for provincial local area. It has been understood that for reasonable advancements of corrupted grounds, contribution of individuals (land less and recipients) is a lot of fundamental. For the last decade endeavors have been made standardize the associations of the local area and recipients and guaranteeing their inclusion in arranging project detailing, execution and upkeep.

**KeyWords:** Land degradation, Soil and water conservation, Rainfed agriculture, Land productivity, Watershed, People's involvement, Reclamation, Monitoring & evaluation.

## **Introduction**

Among the significant assets accessible in India, the most significant is land containing soil, water, related verdure including the absolute eco-framework. The interest for food, energy and other human necessities relies on the protection and improvement of the usefulness of land. Land assets

are limited. Over the most recent couple of many years, there has been endless tension. Expanding human and creature populace, redirection of land in delicate environments for dams and streets, aimless felling of trees, extension of water system without sufficient worry for the Research treatment of catchment and arrangement of waste and inappropriate agrarian practices on peripheral terrains have caused a genuine degree of corruption.

Land-cover/land-use changes happen both as an of regular powers wind and water disintegration, changes in waste, floods and batters just as because of human incited changes. Enormous lots of land have been cleared for horticulture, assortment of fuelwood and for metropolitan and modern development. Eco-frameworks have been transformed both because of land-cover changes just because of plants and creatures brought from outside their local living spaces, subsequently presenting new irritations, infections and cutthroat species. Land takes advantage of leverage the progression of water, supplements and dregs in seaside regions. Of the complete topographical area of 329 million ha, the developed real estate, is around 156 million ha (49% ). This incorporates 143 million ha of net planted region and 14 million ha of current decrepit. Of the developed land, around 53 million ha (35% ) is watered. The leftover 90 million ha is downpour taken care of. The woods region is around 68 million ha (22% ) and region not accessible for development is around 41 million ha which incorporates metropolitan land.

The per capita accessibility of land declined from 0.89 ha in 1951 to 0.37 ha during the 1990s and is assessed to diminish further to 0.19 ha by 2035. Taking everything into account, the per capita accessibility of land is 0.48 ha. Land corruption has disintegrated the nature of land and it is presently assessed that around 175 million ha (53%) of the absolute region experiences degradation in some structure, for example, water disintegration (107.12 million ha), wind disintegration (17.79 million ha), gorges (3.97 million ha) salt-impacted regions (7.61 million ha), water logging (8.52 million ha), moving development (4.91 million ha), corrupted woods (19.49 million ha) and uncommon problems (2.73 million ha). Today, almost 66% of the space requires uncommon treatment to re-establish such terrains to useful and beneficial use. It is additionally assessed that around 6,000 million tonnes of top soil are lost every year alongside important plant supplements like Nitrogen, Phosphorus and Potassium and micron supplements. As a result of the deficiency of top soil alongside supplements, there is low farming creation of around 2.7 million tons yearly.

At the public and state levels different plans (focal area, state area and unfamiliar helped) have been dispatched for avoidance of land corruption, declaration of unique trouble spots for expanding usefulness of the land, conservation of land resources and improvement of biology and climate. These plans being executed on watershed premise, i.e. taking little free hydrological units of around 500-2,000 ha regions. The dirt protection measures and recovery of the corrupted grounds are chosen thinking about the land capacity and land employments. The improvements of corrupted terrains have brought about incising the usefulness of this land, decrease of joblessness, working on the climate of the spaces, social and monetary upliftment of then individuals, and so on. The assessment studies led by different organizations have affirmed these positive reactions and have suggested the dynamic association of nearby individuals and recipients under the programmes.

### **Agricultural Lands: Thrust on rainfed farming**

Perceive that the Green Revolution was to a great extent restricted to the watered regions which represent around 35% of the absolute developed region. Rainfed regions represent 66% of the all-out developed place where there is 142 million ha truth be told, the rainfed area at around 90 million ha is double that of the inundated parcel. However, the flooded region, around 52 million ha (34%) represents 55% of all out food-grain creation though the rainfed area, almost 90 million ha (66% ) contributes just 45% .

Rainfed horticulture is portrayed by low degrees of usefulness and low information utilization. Being reliant upon precipitation, crop creation is exposed to extensive flimsiness from one year to another. In excess of 200 million of the provincial poor live in the rainfed districts. These dangers inclined regions show a wide variety and insecurity in yields. The holes between yield potential and genuine yields are extremely high contrasted with the flooded India's farming has now entered a Post Green Revolution phase of improvement that requires new techniques to upgrade rural development and diminish rustic destitution. Be that as it may, the speed and stretch out of such a change and its effects on rustic advancement through multiplier impacts would rely upon the accessibility and reception of further developed innovations, re-organizing of public organizations, supporting and creating suitable approach climate.

### **Watershed approaching to rainfed farming**

Watershed appmach is integral to the advancement of rainfed regions, comprehensive of different extraordinary pain points, specifically, saline and waterlogged grounds, gorges, slope regions, waterfront and desert eco-frameworks. A portion of the expansive based advancement targets under these undertakings are: 1. Attainment of designated level of foodgrain creation in a given time span in an economical manner. 2. Restoring environmental equilibrium in the degraded and delicate rainfed biological systems by greening these regions thugh appmximate blend of trees, bushes and grasses. 3. Reducing territorial dissimilarity among flooded and immense rainfed. 4. Creation of supported work openings for the rustic poor.

### **Types and degree of land corruption**

The fundamental sorts of land degradation in the nation are: ( I ) gullied and ranvious land; ( i.i ) upland with or without clean; ( i. ii ) water logging; ( iv ) saltiness and alkalinity; ( V ) moving development; ( Vi) soil disintegration bite the dust to water and wind; ( vii) degaded field and eating land; ( m) sands, deserts ( inland and seaside) ; ( ix) infertile/mcky/stony regions; and ( X ) snow cover and ice sheets. The degree of regions impacted under these classes is as per the following:

### **Gullied and ravinous land**

Cullies are shaped as an of limited surface overflow influencing the unconsolidated material bringing about the development of pert: eatable channels causing undulated territory. Cullies are the main phase of extreme land analyzation followed by their systems administration which lead to the

advancement of ravinous land. The word gorge is normally connected with an organization of chasms shaped commonly in profound alluvium and entering close by waterway, streaming a lot of lower than the encompassing table terrains. Around 4. 0 million ha are impacted in this class generally in the province of Gujarat, Madhya Pradesh, Rajasthan and Uttar Pradesh.

### **Upland with or without scrub**

The grounds, which are for the most part inclined to disintegration because of disintegration could possibly have scour cover have a place with this class. Such grounds involve somewhat high geographical areas. Around 13. 57 million ha(6. 67% ) of geoyaphical region comes in this class.

### **Water logging**

Water-logged lands are those where the water is at/or close to the surface and water represents a large portion of the year. Almost 8. 53 million ha of grounds is exposed to genuine water logging issue. Water logging sults in limitation of the typical dissemination of air inside the dirt. At the point when the water table ascents up to 2 m or more underneath to ground surface, issues of water logging are felt. Following the storm downpours, tremendous parcels of land are exposed to surface flooding. In inundated spaces of 37 significant irrigation projects arranged in 15-states, water logging is felt in O. 74 million ha.

### **Saltiness and alkalinity**

Saline ground water, high water table, entrance of ocean and water system without the arrangement of waste outcome in salinization in parched, semiarid and seaside regions. According to 1986-1985 insights, 5. 50 million ha of land is exposed to soil saltiness. The antacid soils, happen in Indo-Cangetic fields and portions of Madhya Pradesh covering almost 3. 58 million ha.

### **Areas with shifting cultivation**

The with moving development are created because of recurrent land use comprising of felling of trees and consuming of backwoods regions for developing yields with practically no administration. After a couple of harvest seasons as yields decline, new timberland regions are cleared for the reason , passing on the prior region to the ideas of nature causing genuine soil emission. The distribution of terrains for moving development relies upon the clan in the area. Around 4. 91 million ha of land has been exposed to degradation because of moving development rehearsed predominantly in the bumpy spaces of the northeaster provinces of India.

### **Soil disintegration by water and wind**

The reasons for soil disintegration are deforestation, over-touching expanding horticultural practices in undulated lands, inappropriate editing patten and different sorts of poor and informal terrains management rehearses. Because of soil disintegration by water, re-energize of ground water gets IMIuced, marshes are overflowed and sedimentation of water gathering tanks and happens. It has been assessed that around 124 million ha of land is debased because of water (107. 12 million ha) and wind (17. 79 million ha). At numerous areas different types of degaded lands additionally cross-over this space.

### **Degraded pasture and grazing land**

Because of a huge creature populace, the customary pastu and looking area have been corrupted as they are over taken advantage of. The investigation of 241 locales has demonstrated that around 1. 34 million ha identical to O. 66% of the geological region is covered under this class. One locale, I. e. Bhilwara in Rajasthan accounts the greatest region under this class. Over 10% of the geological space of the area is impacted.

### **Sands, deserts (inland and beach front)**

Sandy regions those regions which have created because of gathering of sands, in waterfront, riverine or inland regions. The Indian desert arranged in the northwest possesses around 28. 6 million ha region falling in Rajasthan, Gujarat and Punjab. Almost 70% of the desert area is covered by wind disintegrated sandy soils, sands, loamy sand and sand rises. India has likewise a long shoreline of 5, 600 km. Sand ridges involve huge regions, and during typhoon periods, there is blowing and moving of sands making harm standing yields in the adjoining regions.

### **Desolate rough/stony region**

Significant land actually stays as infertile (un-used) and stony/rough in the country. The vast majority of these spaces are found in the rocky of the country. The primary issues in such locales are not kidding soil emission, mining exercises in stony/mcky regions, avalanches, looking, and so on As per a gauge, around 2. 58 million ha (1. 26% of geoyaphical comes in this class.

### **Snow coyer and ice sheets**

A huge space of the Great Himalayas stays covered with snow and impacted by icy masses. This class represents O. 46 million ha comparable to O. 23% of the geoyaphical region. The states viz. Jammu and Kashmir, Himachal Pradesh and Uttar Pradesh have lands which has a place with this class.

### **Soil conservaüon and watershed management programmes**

Various programmes have been dispatched under the state and central areas since the First long term plan after freedom. Under the state area, the major programmes are pointed toward voiding medicines to rural terrains for control of disintegration and preservation of dampness, so that impede crop farming could be rehearsed. Explicit measures have likewise been planned to re-establish a portion of the corrupt terrains. Recovery of soluble base soils through use of corrections and better editing design have additionally been in progress in the provinces of Punjab, Haryana and Uttar Pradesh. Under the area, the major programmes are as per the following:

### **Soil protection in the catchment' of stream valley activities and flood inclined waterways**

The Sponsored Scheme of River Valley Projects (RVP) is being executed in 31 catchments spread north of 18 states and flood inclined (FPR) spread over in ten catchments in 9 states. The plan targets controlling the mature siltation of repositories, improving efficiency of catchment regions through incorporated preparation of watersheds by fitting estimates such vegetative fences, shape/reviewed bonding, atm-ranger service, cultivation ranch, Selvi-field improvements, field advancement, waste line treatments, water collecting structures pert:olation tanks, dregs detainment dams, and so forth, covering all land utilizes, I. e. agrarian land, grounds and Badlands dependent on logical lines. As it were "Exceptionally High" and "High" classifications of watersheds recognized by Soil and Land Use Survey of India (SLUSI) once known as All India Soil and Land Use Survey (AISLUS) are taken for treatment under the plan. Till 2011-2012, around 7.76 million ha have been covered under RVP and FPR.

### **Reclamation and development of alkali & acid soils**

The Centrally Sponsored Scheme of Reclamation and Development of Alkaline and Acid soil was dispatched during the 7th Five-year-plan and is proceeding in the provinces of Haryana, Punjab and Uttar Pradesh. It expects to work on states of being and productivity status of basic soils for re-establishing crop creation. The significant parts incorporate guaranteed water system water on ranch advancement works like land evening out, bunding and profound furrowing, local area seepage frameworks, use of soil correction, natural compost, and so forth. So far with regards to 0.50 million ha has been covered. Till 2011-2012, about 0.89 million ha region under this plan has been covered.

### **Watershed Development Project in moving development regions**

The plan for watershed improvement in moving development regions was dispatched during 1987-1988 covering each of the seven conditions of the north esteem locale and in the territories of Andhra Pradesh and Orissa with 100% focal help. The plan pointed of 25,000 Jhumia families by proper measures of soil preservation and watershed the executives in impacted regions. These actions have helped in settling the impacted. The region covered under this plan till 2011-2012 is 0.59 million ha.

### **Public Watershed Development Project for Rainfed Areas (NWDPR)**

The plan of National Watershed Development Project for Rainfed (NWDPR) was dispatched in 1990-1991 of every 25 states and 2 association domains dependent on twin ideas of coordinated watershed the board and reasonable cultivating frameworks. The plan of NWDPR has been subsumed under the Scheme for Macm Management of Agriculture (MMA) from 2000-2001. As of now, this plan is being carried out in 28 states and 2 association regions. Till 2011-2012, a space of 10.86 million ha has been created.

### **Drought Prone Area Programme (DPAP) and Desert Development Programme (DDP)**

Drought Prone Area Program (DPAP), Desert Development Program (DDP) and nourishment for work programmes were started in 1972-1973. These programmes embraced the watershed approach in 1987. An area of 15.2 million ha under DPAP and 9.0 million ha under DDP were covered since commencement to 2011-2012.

### **Coordinated Wasteland Development Project**

The Integrated Wasteland Development Projects Scheme (IWDP) taken up by the National Wasteland Development Board in 1989 likewise pointed toward creating Badlands on a watershed premise. A space of 10.2 million ha was covered under IWDP since initiation to 2011-2012.

### **Remotely subsidized**

Fortifying individuals' support in watershed advancement. Individuals' investment and recipient contribution is commanded in practically all Projects plans however it has not been paved exceptionally critical by and by. Most intercessions as a rule center around the actual climate and upon measures to tackle specialized issues.

### **Zero in on proper advances for watersheds**

Experience propose that ranchers' own developments with minimal expense innovations add to expanding input proficiency and is an important asset. This nearby information, rested with ranch families and networks in rainfed atlas incorporates native or conventional information.

### **Exploration part of watershed techno low and the board**

In the field of rural exploration, the most breathtaking victories have been in advancing high yielding assortments of wheat and rice. There is need for more noteworthy exploration in rainfed areas just as in watershed innovation. The cultivating frameworks approach should be followed both for innovation age and dispersal for rainfed areas.

### **Resource mobilization for watershed development**

There is need for a lot bigger and extended programme in Watershed Development. The 65 million ha of rainfed regions which should be treated as assessed in the long term Perspective Plan has an extremely long incubation period and will require substantial speculations. Resumes for such an extended program will be prepared to a great extent through open assets.

### **Limit building and human asset advancement**

There is a far more prominent requirement for limit building and human asset advancement in rainfed regions than visualized up until recently. Local area of watershed clients ought to be voided with and taken on openness visits to effective watershed projects.

### **Monetary manageability of activities**

Once the Projects has finished, the maintenance of community resources turns into the obligation of the watershed local area. A corpus store is voided into the watershed local area financial balance as a rotating reserve. This asset should be intermittently renewed by the recipients. The self-improvement organized as a feature of the Projects exercises can likewise play a crucial role in supporting the exercises. Recuperating expenses of the establishing material created in the composite nurseries is likewise a method for making the task monetarily feasible.

### **Observing assessment and effect appraisal**

A simultaneous observing and assessment framework through autonomous offices in the field will work on the nature of input with respect to program.

### **Strengthening linkages between conservation and production systems**

There is a need for dovetailing of existing production programmes of both the National and State levels in agriculture, horticulture and marketing with the watershed programme.

### **Reclamation of other problem soils**

There is a need to address the problem soils and to prevent further degradation for enhancing productivity.

### **Monitoring and evaluation studies**

For checking the adequacy of soil preservation estimates a couple of studies have been completed by the external organizations which are not occupied with execution like the Administrative Staff College of India, Hyderabad, Agricultural Finance Corporation, Bombay and Indian Institute of Management, Ahmadabad in the catchments of Machkund, Pochampad, Nizamsagar, Ukai, Matatilla and Sahibi. Comparable investigations have additionally been finished for the catchments of Sutlej, Beas, Ramganga, Kundah, Hirakud and Chambal through the Administrative Staff College of India, Hyderabad and the Gam-Economic Research Centers at Jabalpur, Madras and Waltair. A portion of the significant advantages recognized and measured under assessment concentrates on as follows:

### **Contractions**

NWDPR National Watershed Development Project for Rainfed Area

RVP-FPR River Valley Projects and Flood Prone River

WDPSA Watershed Development Project in Shifting Cultivation Areas

RADAS Reclamation and Development of Alkali and Acid Soils

WDF Watershed Development Fund

EAPs External\_ly Aided Projects

DPAP Drought Prone Area Program

DDP Desert Development Program

IWDP Inteyated Wasteland Development Project

IWMP Integrated Watershed Management Pmgrammes

Source: Ministry of Agriculture (MOA) and Ministry of Rural Development (MoRD)

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