

CLIMATE TRANSFORMATION AND THEIR IMPACT ON LAND DEGRADATION IN ARID AND SEMI ARID AREA

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ABSTRACT

Intensity and duration of rainfall, the erodibility of the soil, topography, vegetative cover and farmer's management practices, Except for Farmers management practices and vegetative cover, these are large naturally determined factors, although human activities do influence soil texture and organic matter content to an important extent.

Key Words: - : Climate, Transformation, Impact, Degradation, Determined,

Introduction

“Overview of land degradation in arid and semi arid area”

Land degradation is a serious environmental problem in the Arid and Semi Arid region. Land degradation the deterioration or loss of the productive capacity of land for present and future use occurs mainly because of various forms of soil erosion (by water and wind) and of chemical and physical deterioration.

Land degradation/soil erosion results from various factors, including climatic factors and management practices, such as overgrazing or unsuitable cultivation practices, which leave the land vulnerable during rains of erosive rainfall or wind storms. Climatic factors include frequent floods, rain of high intensity, blowing of high velocity winds and drought conditions in dry region.

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Wind erosion is determined largely by wind velocity. It is a serious problem in the arid and semiarid regions of the study area. The arid and semi arid regions cover 28,600 sq. kilometers, of the sand dunes and sandy plains of the study area.

CLIMATE VARIABILITY AND CHANGE AND THEIR IMPACT ON LAND DEGRADATION

The limited precipitation and rapid evaporation, characteristic of arid regions limit the depth of penetration of rain and as a result soluble substances accumulate at relatively shallow depths soil erosion/land. degradation occurs

as a result of many small rain fall. Erosion can produce large gullies and create flooding Land degradation is enhanced during periods of drought consequent upon the drying out of top soil and effective of soil structure and aggregation. In this condition, top soil is easily blow away as a result of erodibility of the soil and erosive nature of wind and rainfall.

CLIMATIC VARIABILITY

The study area are highly prove to climate variability as in these regions drought is a regular part of natural cycles affecting productivity and leading to land degradation and desertification. Drought disasters are more frequent low rainfall in arid and semi-arid regions dictates the formation of shallow soils, which are poor in organic matter and nutrients, the aggravation desertification through erosion of lands and Aeolian shifting of soil particles. In some locations there has been a rise of water table with simultaneous increase of salinity and deterioration of soil region variability in rainfall pattern leads to decreased vegetation growth and consequent overgrazing and trampling by livestock exposing and loosened top soil for wind erosion.

CLIMATE CHANGE

In addition to the natural climatic variability, human-induced climatic change also affect the climatic conditions of dry lands, and hence their degradation. Global warming under the increased atmosphere CO₂ is likely to affect the global hydrological cycle and hence land use. Globally a temperature rise is already discernible and climate model experiments suggest that this trend will continue with increased green house gas concentrations climatic change, higher average temperature and changing precipitation patterns, can have three direct impact on soil conditions. The higher temperatures cause higher decomposition rates of

soil organic matter is important for eco-system functioning. It is a source of nutrients, it improves aggregate stability moisture storage capacity, and microbial activities. Generally chemical, physical and biological states of the soil increase with higher organic matter percentages. (Somebrock et al, 1993) Especially the decrease in aggregate stability may enhance water erosion more floods will cause more water erosion, will more droughts will cause more wind erosion. All changes will require adaptation to the new conditions.

CONCLUSION

There is a significant association between soil degradation, water management and climate variability/change. Whole frequent floods and high intensity rainfall events causes more water erosion, frequent and prolonged droughts cause wind erosion. Higher rainfall will probably intensely degradation, particularly in the dry land regions; frequent droughts enhance soil erosion/land degradation because of the drying out of topsoil and effective loss of soil structure and aggregation.

Climate change resulting in higher average temperature and changing precipitation patterns, will further enhance the risk of land degradation the risk of soil erosion/land degradation can be reduced through proper land management, particularly during the periods of climate extremes, this requires advance information on climate variability such as the occurrence of floods/droughts and the magnitude and period of rainfall deficiency etc.

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