



THE MAIN CAUSES OF SOIL DEGRADATION IN KARAKALPAKSTAN

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<https://doi.org/10.5281/zenodo.7638688>

Abstract. This Article gives information about what soil degradation is and types of soil degradation like water erosion and wind erosion. In fact, soil degradation is a process under the influence of human activity and reduces the ability of soil which helps human life as well as plants to grow up. Furthermore, it defines the causes of soil degradation such as use of agrochemicals, industrial and household waste of the soil as a result of abandonment and sole governance in agriculture pollution and loss of productivity in the condition of Karakalpakstan.

Key words: soil degradation, land, erosion, agriculture, vegetation, irrigation of soil, deforestation, pollution.

Soil degradation is a global process, but affects arid and semi-arid zones in Karakalpakstan most due to the Aral Sea. Soil degradation is increasing worldwide, especially in the countries within the tropics. Depletion of nutrients and soil organic matter and erosion are the principal forms of soil degradation (see also nutrient requirements).

Among the land used for agriculture and forestry, soil is an important component. The intensive and increasing pressure on land leads to its degradation and pollution, which may result in a partial or complete loss of its productive capacity. Soil degradation can be defined as a process by which one or more of the potential ecological functions of the soil are harmed or destroyed [7, p.45-52]. Soil degradation is a process that lowers the current and/or future capacity of the soil to produce goods and services.

Soil degradation can be either a result of natural hazards or due to unsuitable land use and inappropriate land management practices. Mismanagement of arable areas by farmers, cultivation practices that are not adapted to local environments and overgrazing by livestock are seen as the major causes of soil degradation.

Natural hazards which can lead to soil degradation include land topography and climatic factors such as steep slopes, frequent floods and tornadoes, blowing of high velocity wind, rains of high intensity and drought conditions in dry regions. The most prominent degradation feature worldwide is erosion by water.

Cultivating and managing soils in a more sustainable way would reduce environmental pressures all over the world: When crops are harvested, organic material and nutrients are removed from the fields (see also the nutrient cycle). While artificial fertilizers replace - to some extent - the loss of nutrients, they do not replace the loss of organic material. Over time, this seriously reduces soil quality, leading to soils with a lower water holding capacity, less air, and soils that are more susceptible to erosion and hence also degradation [1, p.72].

Types of soil degradation

Soil degradation can be classified into four main types of degradation: water erosion, wind erosion, chemical deterioration and physical deterioration.

Water erosion

Water erosion means that soil particles are detached either by splash erosion (caused by raindrops), or by the effect of running water. Water erosion is influenced by four factors: rainfall, soil type, slope gradient, and soil use/vegetation cover

Wind erosion

The rate and magnitude of soil erosion by wind is influenced by the following factors: Erodibility of soil, Soil surface roughness, Climate, Vegetative cover

Chemical deterioration

Chemical deterioration as a type of soil degradation involves loss of nutrients or organic matter, salinization, acidification, soil pollution, and fertility decline. The removal of nutrients reduces the capacity of soils to support plant growth and crop production and causes acidification.

Physical deterioration

Physical deterioration involves soil crusting, sealing and compaction and can be caused by several factors like compaction through heavy machines or animals. This problem occurs in all continents, under nearly all climates and soil physical conditions, but has increased with the use of heavy machinery [4, p.4-5].

Human causes of erosion

The following list gives an overview of human actions which can cause erosion and therefore lead to soil degradation:

Poor agricultural practices such as ploughing soil to support cultivated plants or ploughing soil in areas where rainfall is insufficient to support continuous plant growth.

Exposing soil on slopes.

Removal of forest vegetation.

Overgrazing.

Altering the characteristics of streams which cause bank erosion.

The main reason for soil degradation is natural and climatic desertification of lands as a result of factors and human activities and leads to decline. These include:

- desertification, deforestation, etc.;
- secondary salinization of the land in the conditions of irrigated agriculture and flooding;
- water vs. irrigation of soils in mountain and sub-mountain areas erosion;
- pastures in areas of intensive mobile cattle breeding degression and soil deflation
- land development in agriculture and industry man-made desertification;
- use of agrochemicals, industrial and household waste of the soil as a result of abandonment and sole governance in agriculture pollution and loss of productivity;
- drying of the Aral Sea and salt-dust, aerosol and of soils at the expense of others sitting on the soil surface salinity.

In addition, soil and land degradation the following processes and activities play a key role:

1. Incorrect use of mineral and organic fertilizers and pesticides application. A high amount of mineral fertilizers and pesticides to the soil its use has a negative effect on the soil structure and some properties making it prone to erosion.

2. Ameliorative works. Carrying out ameliorative works on the basis of wrong technologies leads to reduce the humus layer of the soil and mixture of it with the parent rock products that form the soil in the fertile layer
3. Preparation of forest construction materials. During preparation of forest construction materials, the movement of heavy equipment has a negative effect to the edge of the forest and on the cover of vegetation, and a lot of humus also comes out with it when moving tree roots. As a result, the top humus layer of the soil disappears.
4. Forest fire. When there is a fire in the forest, it negatively affects the forest floor and the forest plant cover and, as a result, the humus layer of the soil disappears.
5. Burning of peat and peat soils. when there is a fire in peat and peat soils, the entire organic part of the soil burns.

Conclusion

To sum up, the mechanical breakdown of the soil is caused by the following. Soils mechanical breakdown is a fine colloid from the upper genetic layers of the soil determined by the exit of particles. Colloidal particles of soil coming out of the upper layers can be under the influence of wind or surface water flow. In addition, mechanical damage to the soil occurs during the extraction of surface mineral resources, transporting wood and burning forests, when laying pipelines, during agricultural activities, feeding livestock and during the plowing of the land. We may be able to prevent and even stop the degradation process by irrigation and protection of soil degradation processes through measures to properly regulate processes in the case of Karakalpakstan.

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