



Book Unit 1 - Desertification

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Site: UNITED NATIONS INFORMATION PORTAL ON MULTILATERAL ENVIRONMENTAL AGREEMENTS

Course: Introductory Course to the United Nations Convention to Combat Desertification in Countries experiencing Serious Drought and/or Desertification, particularly in Africa (UNCCD)

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1. Definitions

Desertification is defined as the reduction or loss of biological or economic productivity of land resulting from land use or from processes such as water or wind erosion. The United Nations General Assembly coined the term desertification when it decided to convene a conference on the subject in the wake of several years of harsh drought and famine in Africa, particularly in the Sahel region. Desertification does not refer to the expansion of existing deserts. The Convention defines desertification as, “land degradation in arid, semi-arid and dry sub-humid areas resulting from various factors, including climatic variations and human activities.” The Convention is also concerned with dryland areas, which are susceptible to desertification.

Dryland areas are conventionally defined in terms of water stress so that the *ratio* of mean annual precipitation (“P”) to the mean annual potential evapotranspiration (PET) is less than 1.0. The P/PET for arid, semi-arid and dry sub-humid drylands falls within the range of 0.05 to 0.65. (See also article 1(g) of the Convention). The hyperarid regions (true deserts) where P/PET is less than 0.05, as well as areas that lie within humid ecosystems with P/PET of more than 0.65, are excluded from the Convention areas of concern although they may also be affected by land degradation.

2. Drylands

The arid, semi-arid and dry sub-humid areas cover 6,150 million hectares, or about 47% of total land area in the world. Drylands are ecologically fragile areas; they are characterized by low rainfall that is also seasonal, high rates of evapotranspiration that exceed the rate of precipitation, highly variable rainfall and high potential for water logging and salinization, especially of irrigated lands.

Drylands are particularly vulnerable to desertification because they recover slowly from disturbance. With a limited supply of water, new soils form very slowly; salts once accumulated tend to remain where they are; and soils that are dry, poorly held together, and sparsely covered by vegetation are susceptible to erosion. Infrequent rains are particularly erosive, especially where vegetation cover is sparse. Despite the harsh environmental conditions prevailing in the drylands, they still provide much of the world's grain and livestock and constitute critical habitats that support much of the game animals including large mammals and migratory birds.

3. Desertification

Desertification is the result of complex interaction between physical, chemical, biological, socio- economic and political factors of local, national and global nature. The main causes of desertification include: deforestation, clearance of marginal lands for cultivation, poor management of arable land including over use of fertilizers and pesticides, poor irrigation practices, uncontrolled dumping of wastes, deposition of pollutants from the air, encroachment of desert sands onto croplands and poor land-use planning. Such human activities degrade soil fertility and other useful components, loosen soil structure and reduce vegetation cover, thereby exposing land to erosion by rain and wind. Landslides also occur easily.

Similarly, maintaining large numbers of livestock leads to overgrazing and to soil compaction due to constant trampling of the ground by animals. The impact loosens the soil structure, affects the health of plant communities, and exposes soil to erosion by wind and water. These ultimately render the land useless.

Causes

By 2025, up to 2.4 billion people worldwide may be living in areas subject to periods of intense water scarcity, which may displace as many as 700 million people by 2030. This situation is exacerbated by the impact of climate change, as water resources are linked to climate change. According to the World Meteorological Organization annual river runoff and water availability are projected to decrease over some dry regions and soils exposed to degradation as a result of poor land management could become infertile as a result of climate change. Climate change could also affect agriculture by causing long-term changes in agro-ecosystems through increased frequency and severity of extreme weather events, such as heat waves, droughts, flooding and cyclones, all of which could exacerbate soil erosion and affect patterns of plant diseases and pest infestation.

Another factor is chemical degradation of soils, which causes loss of nutrients and/or loss of organic matter, salinization, pollution and acidification. The physical processes involved include compaction, sealing and crusting, waterlogging, and subsidence of organic soils. The other agents of soil degradation include rising sea-level due to either subsidence or climate warming, flooding of valleys for hydroelectric purposes, tourism development of long beaches and in the mountains, and expansion of urban and industrial areas.

In addition, international trade patterns can lead to short-term exploitation of land resources for export purposes, leaving negligible profit at the community level for land rehabilitation. Similarly, the development of an economy based on cash crops results in the distortion of local markets and promotes overexploitation of land.

5. Addressing desertification

Desertification problems raise a number of environmental issues requiring effective laws at the international and national levels to provide basis for joint and individual actions to address them. These issues include:

- Recognizing that some lands are ecologically fragile and require proper management to avoid turning them into deserts;
- Controlling of human activities on ecologically fragile lands to prevent desertification;
- Creating regulatory control of deforestation and soil erosion, among others, to reduce and prevent land degradation;
- Controlling population growth to prevent and reduce negative population impacts on fragile lands;
- Rehabilitating desertified lands and lands experiencing impacts of drought that might eventually lead to desertification;
- Acting to address socio-economic impacts of desertification and drought in affected areas;
- Integrating the development of lands in environmentally sensitive areas to sustainable development of the areas; and
- Encouraging of diversification of cropping systems as well as the adoption of appropriate agricultural technologies, among others, to halt and reverse land degradation.