

Source: Environment Unit, Environment and Conservation Division, Ministry of Environment Climate Change Disaster Management & Meteorology, P.O. Box 21, Honiara, Vavaya ridge. Telephone: 26036

Topic: Environmental Degradation

What is Environmental Degradation?

According to Miller and Spoolman (2009:G5) defined Environmental Degradation as [d]epletion or destruction of a potentially renewable resource such as soil, grassland, forest, or wildlife that is used faster than it is naturally replenished. If such use continues, the resource becomes non-renewable or non-existent.

How are our Ecological Footprints Affecting the Earth?

From a human standpoint, a resource is anything obtained from the environment to meet our needs and wants. Conservation is the management of natural resources with the goal of minimizing resource waste and sustaining resource supplies for current and future generations.

Some resources such as solar energy, fresh air, wind, fresh surface water, fertile soil, and wild edible plants are directly available for use.

Other resources such as petroleum, iron, water found underground and cultivated crops are not directly available.

Solar energy is a perpetual resource because it is renewed continuously and is expected to last at least 6 billion years as the sun completes its life cycle.

On a human time scale, a renewable resource can be replenished fairly quickly through natural processes as long as it is not used up faster than it is renewed . Examples include forests, grasslands, fisheries, freshwater, fresh air and fertile soil.

The highest rate at which a renewable resource can be used indefinitely without reducing its available supply is called its Sustainable yield.

When we exceed a renewable resource's natural replacement rate, the available supply begins to shrink , a process known as environmental degradation.

One of the solutions is to use shared resources at rates well below their estimated sustainable yields by reducing use of the resources , regulating access to the resources or doing both. An example of most common approach by Governments is to establish laws and regulations to limit the annual harvest of various types of resources such as trees, wildlife and fisheries (Miller and Spoolman, 2009:12-13).

References:

Miller, G.T and Spoolman, S.E. 2009. Living in the Environment: Concepts, Connections and Solutions (16th ed). Brooks/Cole Cengage Learning, USA.

What is Degradation?

Whilst it is easy to find patterns in the environment that suggest change for the worse over time, it is important to retain a consideration for how what is valued as a resource and therefore what is considered degradation are socially constructed. For example, previous sections have highlighted how the environment provides a number of interrelated resource functions for the development of society; as inputs into the economic system; as a sink for the waste products of human activities, including economic production; and in terms of services such as the maintenance of the gaseous composition of the atmosphere or for aesthetic pleasure and recreation.

Subsequent sections confirmed that such functions are neither discrete nor time-bound; resources may serve multiple ends and the significance of particular functions may change with use, political interest or economic developments.

Resources rarely cease to exist in absolute terms as a result of development. Instead, they become 'degraded' in relation to the actual or possible future functions they can perform. For example, as land becomes reduced to a lower rank, agricultural productivity declines, requiring capital and labour inputs to rectify the situation and prevent further losses. Although absolute exhaustion of the resource may be avoided, in this case through the application of chemical fertilizers, the costs of resource degradation in terms of required remedial actions may be substantial.

Environmental impacts are not necessarily felt solely by a particular land user at the point in time. In the case of chemical fertilizers, for example, these may contribute to the nitrification of water courses and impact on downstream users over time.

Indeed, land degradation is referred to as 'quiet crisis' over longer periods of time, processes of degradation make land users more vulnerable to adverse conditions such as droughts. Critically, any discussion of environmental degradation needs to be not only in relation to particular resource functions at specific times and places but also in relation to identified interest groups; "to a hunter or herder, the replacement of forest by savannah with a greater capacity to carry ruminants would not be perceived as degradation. Nor would forest replacement by agricultural land be seen as degradation by a colonising farmer. Usually, there are a number of perceptions of physical changes of the biome on the part of actual or potential land-users. Usually too, there is conflict over the use of land (Potter et al, 2008: 249).

Soil Degradation may occur naturally as a result of the action of wind and water over time, but accelerated rates of erosion occur through the interaction of human activities with such biotic agents. The removal of tree cover exposes soil surfaces to the direct impacts of rainfall and also removes the effect of root binding on soil stability. Soil may subsequently be degraded quantitatively through its physical removal from one location to another or qualitatively referring to losses in fertility in moisture and nutrient content or changes in chemical composition in soil flora and fauna.

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Land degradation is the single most pressing current global problem. It is estimated that since 1945 an area roughly the size of China and India combined has been eroded at least to the point where the original biotic functions are impaired (Potter et al, 2008: 253).

Source: Potter, R.B; Binns, T; Elliot, J.A and Smith, D. 2008. Geographies of Development: An introduction to Development Studies (3rd Ed). Pearson Education Limited, England.

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Topic: Water Resources and Water Pollution

Many Countries in the world faces water shortages and rising tensions over water sources they must share. Most water sources comes from river basins and the tributaries. To many analysts, emerging water shortages in many parts of the world along with the related problems of biodiversity loss and climate change are the three most serious environmental problems the world faces during this century.

Planet earth contains mostly of 71% of saltwater in the earth's surface. When you look in the mirror, what you see is about 60% water most of it is inside your cells.

Water is an amazing substance with unique properties that affect life on earth. You could survive for several weeks without food but for only a few days without water. And it takes huge amounts of water to supply you with food , provide you with shelter and meet your other daily needs and wants.

Water also plays a key role in sculpting the earth's surface, moderating climate and removing and diluting wastes and pollutants.

Despite its importance, water is one of our most poorly managed resources. We waste it and pollute it. We also charge too little for making it available. This encourages still greater waste and pollution of this resource, for which we have no substitute.

Access to water is a global health issue because lack of water that is safe for drinking and sanitation is the world's single largest cause of illness. In 2007, the World Health Organization (WHO) estimated that each year more than 1.6 million people 90% of them children under the age of 5 die from largely preventable waterborne diseases such as diarrhea, typhoid fever and hepatitis.

Water is an economic issue because it is vital for reducing poverty and producing food and energy. It is a women's and children's issue in developing countries because poor women and girls often are responsible for finding and carrying daily supplies of water.

And water is a national and global security issue because of increasing tensions within and between nations over access to limited but shared water resources in the middle east for example.

Water is an environmental issue because excessive withdrawal of water from rivers and aquifers and pollution of water result in lower water tables, lower river flows, shrinking lakes, losses of wetlands, declining water quality, declining fish populations, species extinctions and degradation of ecosystem services provided by the aquatic systems.

The world's freshwater supply is continually collected, purified, recycled, and distributed in the earth's hydrological cycle- the movement of water in the seas, in the air, and on land, which is driven by solar energy and gravity.

We interfere with this cycle when we destroy wetlands and cut down forests that store and slowly release water or alter the cycle's rate and distribution patterns as a result of climate change cause by global warming. (Source: Miller and Spoolman, 2009: 313-341)

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Water Resources in Development: Where will new sources come from?

Water resource management is fundamental to human existence and economic development. Global water withdrawals accelerated sharply over the twentieth century and at rates in excess of population growth. Since 1970, total global water withdrawals have increased from a little over 2500 cubic square kilometres to almost 4000km³. In just 5 years between 1990 to 1995, global water consumption rose six folds and at more than doubled the rate of population growth.

Total and per capita water consumption are generally higher in the developed world and with economic development relatively more water is consumed in the industrial and domestic sectors.

At the global level, agriculture is currently the largest user of water accounting for 67 % of water withdrawals at the turn of the century and reflecting the importance of agricultural production in developing countries. In comparison, industry accounted for global 19 % of total water withdrawals much of it in chemical manufacturing industries and municipal and domestic usage for 9 %.

Evaporation losses from large reservoirs in dry climates are also estimated to be close to 5 % of total water withdrawals and therefore represent a significant consumptive use of water worldwide.

Shortages of water supplies and salinisation are also considered to be the principal factors in the slowing of the expansion of irrigated area worldwide from 2% annually between 1970 to 1980 to an average of 1.3% in 1990s with future growth rates expected to be around 0.6% per annum. (Potter et al, 2008: 235-236).

Source: Potter, R.B; Binns, T; Elliot, J.A and Smith, D. 2008. Geographies of Development: An introduction to Development Studies (3rd Ed). Pearson Education Limited, England.