

Agrarian crisis – over exploitation of natural resources

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Abstract

Over-exploitation is harvesting renewable resources to the point of diminishing returns. Sustained over-exploitation can lead to destruction of resources. Over-exploitation of land and water is today's biggest problem. Inappropriate use of land is major cause of decline of soil fertility, development of acidity, salinization, alkalization, deterioration of soil structure, soil erosion and loss of organic matter. Over utilization of water, excessive use of fertilizers and pesticides, release of industrial waste directly in water bodies and power generation from water causes exploitation of water. Misuse of an ecosystem leads to loss of valuable resources.

Keywords: Degradation of land, deforestation, overuse of water, soil and water management

Introduction

The Earth's natural resources are vital to the survival and development of the human population. These natural resources are air, water, soil, minerals, along with the climate and solar energy, which are known as non-living or abiotic part of nature. The biotic or living parts of nature consists of plants, animals and microbes. These all are closely linked to each in their own habitat, and require specific abiotic condition. Their products are required for food, medicines, shelter and fiber. Increasing population placed great demands on the earth's natural resources. Large stretches of land such as forests, grasslands and wetlands have been converted into intensive agriculture. Land has been taken for industry and the urban sectors. These changes have brought about dramatic alterations in land-use patterns and rapid disappearance of valuable natural ecosystems. As the world population rises and economic growth occurs, the depletion of natural resources influenced by the unsustainable extraction of raw materials becomes an increasing concern. (McNicol and Geoffrey, 2007) [4]. The need for more water, more food, more energy, more consumer goods, is not only the result of a greater population, but also the result of over-utilization of resources by people. Industrial development is aimed at meeting growing demands of population and for this industries also generate waste in ever larger quantities. It shifts of people from their traditional, sustainable, rural way of life to urban centers that developed around industry. The exploitation of natural resources is the use of natural resources for economic growth. (Cronin and Richard, 2009) [2].

Over-Exploitation of Land

Land is a major resource, needed for food production, animal husbandry, industry and for our growing human settlements. Land as a resource is now under serious pressure due to an increasing 'land hunger' - to produce sufficient quantities of food for an exploding human population. It is also affected by degradation due to misuse. Land and water resources are polluted by industrial waste and rural and urban sewage. They are increasingly being diverted for short-term economic

gains to agriculture and industry. Natural wetlands of great value are being drained for agriculture and other purposes. Forests provide us with a variety of services. These include processes such as maintaining oxygen levels in the atmosphere, removal of carbon dioxide, control over water regimes, and slowing down erosion and also produce products such as food, fuel, timber, fodder, medicinal plants, etc. Man needs land for building homes, cultivating food, maintaining pastures for domestic animals, developing industries to provide goods, and supporting the industry by creating towns and cities. Equally importantly, man needs to protect wilderness area in forests, grasslands, wetlands, Mountains, coasts, etc. to protect our vitally valuable biodiversity. Unsustainable land use drives land degradation through contamination and pollution, soil erosion and nutrient depletion. (Abdelgawad, G. 1997) [1]. In some areas there is an excess of nutrients causing eutrophication, and there can be water scarcity and salinity. The enormous increase in the production of farm and forest products has brought greater wealth and more secure livelihoods for billions, but often at the cost of land degradation, biodiversity loss and disruption of biophysical cycles, such as the water and nutrient cycles. These impacts create many challenges and opportunities. When soil is used more intensively by farming, it is eroded more rapidly by wind and rain. Over irrigating farmland leads to salinisation, as evaporation of water brings the salts to the surface of the soil on which crops cannot grow. As urban centers grow and industrial expansion occurs, the agricultural land and forests shrink. This is a serious loss and has long term ill effects on human civilization. Soil erosion is the natural process of removal of soil by water or wind. Soil erosion becomes a problem when the natural process is accelerated by inappropriate land management, such as clearance of forest and grasslands followed by cropping which results in inadequate ground cover, inappropriate tillage and overgrazing. It is also caused by activities such as mining, infrastructural and urban development without well-designed and well-maintained conservation measures. Loss of topsoil means loss of soil organic matter, nutrients, water holding capacity and

biodiversity, leading to reduced production on-site. The misuse of an ecosystem leads to loss of valuable soil through erosion by the monsoon rains and, to a smaller extent, by wind. The roots of the trees in the forest hold the soil. Deforestation thus leads to rapid soil erosion. Soil is washed into streams and is transported into rivers and finally lost to the sea. Nutrient depletion is a decline in the levels of plant nutrients, such as nitrogen, phosphorous and potassium, and in soil organic matter, resulting in declining soil fertility. Deforestation causes extinction, changes to climatic conditions, desertification, and displacement of populations as observed by current conditions and in the past through the fossil record. (Sahney *et al.* 2010) [5]. It is also accompanied by soil acidification, which increases the solubility of toxic elements, such as aluminium. The removal of the harvest and crop residues depletes the soil, unless the nutrients are replenished by manure or inorganic fertilizers. Nutrient mining refers to high levels of nutrient removal and no inputs. Deficiency of plant nutrients in the soil is the most significant biophysical factor limiting crop production across very large areas in the tropics, where soils are inherently poor. Soils, streams and groundwater in dry lands contain significant amounts of naturally-occurring salt, which inhibits the absorption of water by plants and animals, breaks up roads and buildings, and corrodes metal. Salinity is defined by the desired use of land and water; it is salt in the wrong place when found in farmland, drinking and irrigation water, and in freshwater habitats. It is caused by inappropriate forms of land use and management. The rising, saline groundwater drives more salt into streams, and, where the water table comes close to the surface, evaporation pulls salt to the surface.

Over-Exploitation of Water

Over two thirds of the Earth's surface is covered with water. But this water cannot be used for drinking purposes. This water is salty. Ground water is used for drinking and kitchen use. Groundwater is almost pure and is the main source for our drinking water. Putting unwanted materials in rivers and lakes creates water pollution. (Fowler *et al.*, 2004) [3]. When wastes are deposited in the water, the water is no longer good for use. Industries should reduce the dumping of wastes in water sources. It is a renewable resources, it should be used in a sustainable manner. Farmers should adopt water harvesting techniques. Overexploitation anywhere is often accompanied by detrimental environmental side effects, such as poor water-quality, and reduced ground-water flowing to springs, streams, and wetlands. Some causes and effects of ground-water depletion are not obvious. With the growth of human population there is an increasing need for larger amounts of water to fulfill a variety of basic needs. Today in many areas this requirement cannot be met. Overutilization of water occurs at various levels. Most people use more water than they really need. Most of us waste water during a bath by using a shower or during washing of clothes. Many agriculturists use more water than necessary to grow crops. There are many ways in which farmers can use less water without reducing yields such as the use of drip irrigation systems. Agriculture also pollutes surface water and underground water stores by the excessive use of chemical fertilizers and pesticides. Methods such as the use of biomass as fertilizer and non toxic pesticides such as neem products

and using integrated pest management systems reduces the agricultural pollution of surface and ground water. Industry tends to maximize short-term economic gains by not bothering about its liquid waste and releasing it into streams, rivers and the sea. In the longer term, as people become more conscious of using 'green products' made by ecosensitive industries, the polluter's products may not be used. The polluting industry that does not care for the environment and pays off bribes to get away from the cost needed to use effluent treatment plants may eventually be caught, punished and even closed down. Public awareness may increasingly put pressures on industry to produce only eco-friendly products which are already gaining in popularity. As people begin to learn about the serious health hazards caused by pesticides in their food, public awareness can begin putting pressures on farmers to reduce the use of chemicals that are injurious to health. Everywhere the 'greenhouse effect' due to atmospheric pollution is leading to increasingly erratic and unpredictable climatic effects. This has seriously affected regional hydrological conditions. Floods have been a serious environmental hazard for centuries. However, the havoc raised by rivers overflowing their banks has become progressively more damaging, as people have deforested catchments and intensified use of river flood plains that once acted as safety valves. Wetlands in flood plains are nature's flood control systems into which overfilled rivers could spill and act like a temporary sponge holding the water, and preventing fast flowing water from damaging surrounding land. In most arid regions of the world the rains are unpredictable. This leads to periods when there is a serious scarcity of water to drink, use in farms, or provide for urban and industrial use. Irrigation to support cash crops like sugarcane produces an unequal distribution of water. Large landholders on the canals get the lion's share of water, while poor, small farmers get less and are seriously affected.

Discussion

Management of natural resources involves identifying who has right to use resources and who does not for defining the boundaries of resources. The resources are managed by users according to rules governing of when and how resource is used depending on local condition. A number of measures need to be taken for the better management of the world's natural resources. Building several small reservoirs instead of few mega projects, develop small catchment dams and protect wetlands, Soil management, micro catchment development and afforestation permits recharging of underground aquifers thus reducing the need for large dams. Treating and recycling municipal waste water for agricultural use, preventing leakages from dams and canals, preventing loss in Municipal pipes, effective rain water harvesting in urban environments, water conservation measures in agriculture such as using drip irrigation. To prevent the haphazard development of land, land-use is restricted by public and private land-use controls. and by government ownership of land. For instance, parks and forest preserves are protected by government ownership. The primary public land-use control is zoning, where properties of the same type, such as residential or commercial, are designated for particular geographic zones. The primary private land-use control is deed restrictions, limiting what can be done on the property by the owner. The primary purpose of land-use

controls is to limit population density, noise, pollution, and to maintain the aesthetics of the neighborhood.

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