

## **TOPIC 2: ENVIRONMENTAL CRISIS**

*Objectives:*

The learner should be able to:

- a. Explain the major causes Environmental Crisis
- b. Identify impacts of environmental crisis on natural and social systems
- c. Give specific examples of environmental issues in Kenya

### **2.1 Causes of Environmental Crisis**

An environmental issue is a known process (e.g. consumption of resource) that has negative effects on the sustainability of the environmental quality necessary for the well being of the organisms living in it. (Ahuja,1998)

Environmental crisis refers to an ecological crisis that occurs when the environment of a species or a population changes in a way that destabilizes its continued survival. Environmental degradation occurs when the earth's resources are depleted; especially water, air and soil. Degradation impacts on wildlife, plants, animals and micro-organisms. The major causes of environmental degradation include; urbanization, population growth, poverty, economic growth, intensification of agriculture increase in energy use, increase in transportation, among others.

#### *1. Explosive growth of the world's human population.*

A growing population places increasing demands on scarce resources, hence degrading the global ecosystem. Population growth is likely to outstrip the limited resources (carrying capacity). Hunger and malnutrition are common in developing countries as a result of high population growth. Rapidly growing populations have led to land, water and fuel wood shortages in the rural areas. In urban centers, crises stem from lack of sanitation and clean water. In most of the poorest areas of the globe, increasing population density has contributes to severe and accelerating degradation of the very resources that these growing populations depend on for their survival.

#### *2. Poverty and the environment*

Poverty is usually defined as one's inability to meet their basic economic need for clean air, water, food, shelter and health services. It exists everywhere but most cruel in developing

countries, where more than one person in every five lives on less than one dollar a day. It is mainly the result of low capital accumulation resulting from low incomes, leading to low savings, low investment, and low productivity and back to low income and capital accumulation (vicious circle of poverty).

Over the years, poverty has become one of the most difficult problems to eradicate. Sadly to note is the fact that poverty is endemic (persistent) in Africa, south of the Sahara and this is reflected in the low standards of health and general welfare as well as poor diet and housing. Poverty stricken people are critically environment dependant. They often depend on the environment for their livelihood (fish, timber, wild fruits, charcoal, food, medicine). Some of these products are costumed directly and meet subsistence needs at household level or are sold for cash creating the so called environmental income, which is increasingly becoming recognized as an important source of income.

However due to poverty, land users use the available resources unsustainably, a problem that has led to land degradation. Our cultivation and over grazing has made the land vulnerable to soil erosion. Overuse of water resources has led to water degradation. Deforestation has led to destruction of vegetation. Poverty reduces the options available for rolling out some conservation practices because they require too much investment of land, capital and labor. Similarly, poverty tends to encourage resource users to concentrate on immediate needs rather than on those whose benefits materializes in the long term.

Alleviating poverty is both a moral obligation and a prerequisite of environmental sustainability. The poor are both victims and agents of environmental destruction, about half of the world's poor live in rural areas that are environmentally fragile and they rely on natural resources over which they have little control.

Land hungry farmers encroach on marginal areas that are completely unsustainable for agricultural purposes such as steeply sloped, erosion prone, semi arid land where soil degradation is rapid and tropical forest where crop yields on clear fields decline sharply after a few years of cultivation.

Poor people in crowded squatters settlements frequently endure inadequate access to safe water and sanitation, as well as flooding and landslides, industrial accidents and emissions, and transport related pollution. The poor are always exposed to the greatest environmental health risk and they tend to be the most vulnerable to this risk because of their poverty.

Poor families often lack the reasons to avoid degrading the environment. The very poor struggling at the edge of subsistence are occupied by daily survival. It's not that the poor have short horizon; poor communities often have strong epic of stewardship in managing

their resources. Their often poorly defined rights, their limited access to credit and insurance markets prevents them from investing as much as they should in environmental protection. When they do make investments, they do need and expect quick results.

The poor are usually the main victims of environmental degradation. They live on degraded lands that are less expensive; and living in less productive and polluted lands gives the poor less opportunity to work their way out of poverty. For environmental policies to succeed in developing countries, they must first address the issue of landlessness, poverty and lack of access to institutional resources.

Insecure land tenure rights, lack of credit and inputs, and absence of information often prevent the poor from making resource-augmenting investments that would help preserve the environment. Deforestation for wood, timber and other products leaves such impact as uncontrolled flooding, drought, soil erosion, loss of river and underground water resources, declining agricultural production and accelerating desertification.

### *3. Growth versus the Environment*

The poor cause considerable environmental destruction as a direct result of their poverty. However, as the income and consumption levels of everyone else in the economy also rise, there's a net increase in environmental destruction. As per-capita incomes rise, pollution and other forms of Kuznets's hypothesis (Environmental Kuznets curve), societies will have the means and the willingness to pay for environmental protection as their incomes rise. However, in the long-term, the damage, such as loss of biodiversity, may well prove to be irreversible.

### *4. Urban Development and Environment*

Due to rural-urban migration, there's unprecedented rate of urban population growth; and an increasing strain on existing urban water supplies and sanitation facilities. About 50% of the people in third world cities do not have adequate supply of drinking water. Congestion, vehicular and industrial emissions and household stores inflate the environmental costs of urban crowding. The resulting environmental ills pose extreme health hazards for the growing numbers of people exposed to them.

From the above factors, it is evident that as the total world population grows and incomes rise, net global environmental degradation is likely to worsen. Most cumulative environmental destruction to date has been caused by the developed world. With high fertility

rates, rising average incomes and increasing greenhouse gas emissions in the developing world, this pattern is likely to persist in coming years. E.g. China is now the world's largest greenhouse gas emitter, although lower on a per capita basis than most rich countries.

## **2.2 Effects of Environmental Crisis**

### *i) Effects of Environmental Crisis on Social Systems*

*Social systems:* The people in a society considered as a system organized by a characteristic pattern of relationships. There is interaction of at least 2 personal systems or 2 persons acting in their roles. It is the organizational form of a given society which is constituted by processes involving the mutual orientation of actions toward one another.

Human activities e.g. deforestation and industrialization are taking place so rapidly and have led to non-equilibrium in the environment. Environmental crisis, brought about by pollution of the environment, has affected our well-being in terms of damage to our health, buildings and structures etc

a) *Damage to health-* Environmental challenges in developing countries include health hazards created by lack of access to clean water and sanitation, indoor air pollution from biomass stoves, deforestation and severe soil degradation. The principal health consequences of environmental damage include water pollution and scarcity, air pollution, solid and hazardous wastes, soil degradation, deforestation, loss of biodiversity and global warming-caused climate change.

Pollution can cause problems to both our mental and physical health. E.g. mentally, carbon dioxide in car exhaust fumes and smoke from factories causes headache and nausea. Physically, smoke causes irritation of the eyes, nose, throat and skin, and is associated with serious diseases like asthma, lung cancer, sudden heart attacks etc. Polluted water in rivers, lakes and other water bodies are causes of diseases such as diarrhea, cholera and typhoid fever. Harmful substances in waste disposed improperly (e.g. in garbage dumps) cause environmental pollution.

Prevalence of unhealthy conditions is shared by both the urban and rural poor; especially lack of clean water and sanitation. This in turn contributes greatly to the spread of infectious diseases, such as typhoid, cholera, amoebic infection etc. Dependence on biomass fuels (e.g. wood, straw and manure) for cooking and boiling water create dangerously high levels of indoor pollution; resulting to respiratory diseases. About 400 million to 700 million people,

especially women and children are exposed to indoor pollution; and about 4 million children die of respiratory diseases each year. (W.H.O)

*b) Damage to buildings and structures*

Air pollution causes damage to buildings. They get corroded, lose color and may peel. Acid rain which contains harmful quantities of sulphuric and nitric acids plays a part in destroying the beauty of buildings.

*c) Increasing costs on people and government-* when people are sick because of pollutants, the government spends more money on healthcare.

The ever-growing number of landless workers cultivate ecologically sensitive soils; leading to soil degradation and loss of productivity. As a result of rapid population increase and the failure of agricultural production to keep pace, per capita food production continues to decline especially in sub-Saharan Africa. High fish prices have been associated with over-fishing in restricted areas and environmentally destructive fishing practices.

*ii) Effects on the natural systems*

*Natural Systems:* This is a complex functioning system that includes the various spheres;

- The solid earth-lithosphere
- The atmosphere (gases enveloping the earth)
- `Biosphere-living organisms
- Hydrosphere-water bodies

**Note:**

Economic growth and population expansion have created an unprecedented impact on the natural systems.

- 1) Humans clear land and divert waters, hence destroy habitats where a major component of the ecology is depleted or eliminated, and then all of its dependant species are also affected.
- 2) Humans are introducing organisms, e.g. foreign plants, which propagate rapidly. In other instances, native species are driven into extinction.
- 3) Emission of waste products directly damage natural ecologies. The outpouring of pollutants has grown rapidly, and the range of pollutants also has increased greatly e.g. the effects of chlorinated hydrocarbons in the atmosphere will take many decades

to purge, and longer to degrade through the natural process. (E.g. the residues of the use of DDT between 1945-1975 are still present in living organisms today).

- 4) Humans are emitting waste products which impact primarily upon physical processes, e.g. climatic stability, atmospheric functionality and the behavior of ocean currents.

## **2.4 Environmental issues in Kenya**

In the recent decades, there has been a global awakening on the environmental issues. Several conferences have been prepared to address these concerns in different cities in the world. This has been prompted by realization that due to environmental degradation, there have been serious consequences such as drought, hunger and global warming that have threatened the existence of mankind and unless some drastic steps are taken urgently there is a blink future for the coming generations. This has prompted many countries to adopt measures that would reverse the detrimental effects of environmental degradation. In Kenya, the effect of environmental degradation has been felt. Due to corruption and lack of political goodwill, much environmental destruction has been witnessed since independence in 1963 and the consequences has been long spells of drought, hunger, sicknesses that have led to death not only on domestic and wild animals but also human beings. Different regimes have come up with different approaches on strategies to tackle environmental issues but the war seems far from being over.

Serious environmental issues in Kenya include:

- Pollution
- Extensive Deforestation
- Land and soil degradation
- Climate change
- Pests and diseases/invasive species
- Extinction of plant and animal species
- Deposition of hazardous wastes
- Increased CO<sub>2</sub> in the atmosphere
- Depletion of the ozone layer
- Loss of high potential agricultural land to settlements

## **Example: Pollution**

This is the contamination of a healthy environment by man-made waste. Industries which specialize in the science, technology and processing of metals, these plants produce highly concentrated and toxic waste which can contribute to pollution of ground water and air when not properly disposed.

**Point source pollution** is a stationary location or fixed facility from which pollutants are discharged or emitted or any single identifiable discharge point of pollution. Such pollutant load discharge at a specific location such as pipes, outfalls, smokestacks, conveyance channel from waste water treatment plant or human waste treatment facilities.

Other point source which are easily identified and regulated activity include

- a) Operational waste from industries
- b) Combined sewer outfalls
- c) Noise pollution from a jet engine
- d) Light pollution from an intrusive street light

Factories and sewerage treatment are two common types of point source. Factories discharge their treatments into water bodies. Unregulated discharge from point source pollution can result into water pollution and unsafe drinking water and can restrict activities like fishing and swimming.

Large farms that raise livestock such as, cows, pigs and chicken are other source of point of source pollution. To control point source discharge there must be strict pollution discharge system using modern and latest technology by factories to treat efficient and reduce pollutant.

**Non point source pollution** does not come from a specific source, instead it originates from many different sources. Non point source pollution is caused when rainfall or snow melt is moving over and through the ground. The rainfall moves picking up, and carrying natural and human-made pollutant discharge, and finally depositing them into water bodies like rivers, wetland, coastal waters and to the underground source of drinking water.

The pollutant includes.

- Excess residue fertilizer herbicides and chemicals from agricultural lands and residential areas.
- Sediment from improperly managed construction sites, agricultural, forest lands and eroding stream banks.

- Oil, grease and other toxic chemical discharge from urban runoff
- Salt from irrigation activities.
- Acid drainage from abandoned mines.
- Bacterial and nutrients from livestock pet wastes.
- Discharge from facility septic systems.

Non point source pollution result from wide variety of human activities to the land and have harmful effects on quality of drinking water supplies, recreation facilities, fisheries and wildlife.

*Reflection Questions:*

1. Identify and explain major environmental issues in Kenya.
2. Discuss the effects of the environmental crises on the natural and social systems.
3. Discuss the implications of climate change on the realization of Kenya's Vision 2030.
4. Explain the relationship between poverty and the environment.