

# **EARTH RESOURCES;TOWARDS SUSTAINABLE USE**

by

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### **MOTIVATION:**

I have been motivated to join the IYPE student contest because it is my desire to inform the world of the resources that the planet earth is offering human kind. I decided to write on this topic due to presence of many resources on the planet earth which are being unsustainably utilized thus putting future generations at risk of lacking them. I would therefore, like to contribute to the world the little information I know in order to safeguard the world resources available on our planet earth in order to make it wealthier safer and prosperous place for living.

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# **EARTH RESOURCES TOWARDS SUSTAINABLE USE**

## **INTRODUCTION**

Earth resources are materials supplied by nature that are useful and necessary for life, as can be renewable or non renewable; existing independent of mans efforts and part of mans environment which includes, minerals, water, air, vegetation, forests, and living organisms.

**Non-renewable resources** are the ones that are found in fixed amounts and their formation takes millions of years. They are limited to some parts of the earth's surface. Mostly non-renewable are indirectly reachable; like minerals, ground water, fossil fuels. They can be used completely or economically depleted to the point that we cannot get them at the time we need them in the near future. Examples are minerals like gold, silver, diamonds and copper in which after extracting them, we leave the holes that are another environmental destruction.

**Renewable resources** are those which they exist forever through the regeneration process done naturally. Examples are forests, animals, grass, fresh surface water, rivers, lakes, and fertile land. The renewable resources form potential diversified forms of life.

## **SUSTAINABLE UTILIZATION OF RESOURCES**

Sustainability is the proper use of resources by the present generation without compromising the ability of the future generation to meet their needs. Some non-renewable resources can sustainably be used by recycling them (renewing) so that the remaining can be conserved for the future, examples are iron tools, tin, gold, aluminum which one utensil can be changed into another one by smelting and the use of any available technology. This helps in serving the present use of a resource by the use of old fashioned or outdated instruments. Paper products can be recycled to save the cutting of trees: domestic refuse can also be used to generate power or manure. Fossil fuels can not be recycled, when utilized they change into forms that are not possible to be re-used. It is therefore the aim of the sustainability of resources to minimize the possibility of total depletion of resources. For renewable resources such as forests, animals, grass, fresh water and fertile lands, rational consideration should be taken into account.

*NOTE: It is also very imperative to know that, there is no way that human beings can avoid the utilization of resources as they are vital for human life and developmental programmers, the only way to consider and strategize ways in which resource utilization will not deplete totally the environment which will mean ending our life.*

## **MINERALS**

A mineral, by definition, is any naturally occurring, inorganic substance, often additionally characterized by a crystal structure. Minerals in resources because they are economic commodity, they are mined because of the need for valuable element they contain or intrinsic property they may have. These include diamond, Tanzanite, gold, copper to name a few. Minerals however are nonrenewable unlike other resources.

## **AIR**

Air is a mixture of gases surrounding any celestial object that has a gravitational field strong enough to prevent the gases from escaping. The principal constituents are nitrogen 78 percent, oxygen 21 percent, argon 0.9 percent, carbon dioxide 0.03 percent and varying amounts of water vapour. The mixture of gases in the air has had 4.5 billion years in which to evolve. About 570 million years ago the oxygen content in air became high enough to permit respiration. Later 400 million years ago the air contained enough oxygen for the evolution of air-breathing land animals. The study of air samples show that up to at least 88 km above the sea level the composition is substantially the same as at ground level. The continuous stirring produced by air currents counteracts the tendency of the heavier gases to settle below the lighter ones.

The contamination of the atmosphere by gaseous, liquid, or solid wastes or any by-product can endanger human health and the welfare of plants and animals. Among air pollutants emitted by natural resources only the radioactive gas such as radon is recognized as a wide spread major threat although gases and particles from volcanic eruption can cause serious problems too.

A by-product of radioactive materials of uranium minerals passes a risk of lung cancer to human beings.

## **WATER**

Water is a common name applied to the liquid state of the hydrogen-oxygen compound  $H_2O$ . Water is a colourless, odorless and tasteless liquid. Water is a well known ionizing agent because most substances are somewhat soluble in

water it is frequently called the universal solvent. It is the major constituent of living matter. Water is a continuous circulation between the oceans, atmosphere, biosphere, and the soils and rocks of the geosphere. It begins when water evaporates from the ocean into the atmosphere. This causes condensation of water vapor into clouds when it cools from its dew point forming precipitation. Not all precipitation reaches the ground as some is intercepted by plants especially trees. The loss of vegetation (deforestation) may significantly increase the speed that reaches the ground, leading to locally increased soil erosion and flood risks.

## **FORESTS**

Forests are collection of trees in a particular area. Forests may be divided into various types depending on the leaf characteristics and climate:

Evergreen and deciduous trees are types of forests that are grouped into leaf characteristics: Evergreens are those that bear a full canopy of foliage throughout each year, only shading a small proportion of the older leaves and replacing them with new ones. While deciduous are those species that lose all their leaves, and have bare branches for a part of the year.

Tropical rainforests and temperate rainforests are types of forests under climate; Tropical rainforests are northern coniferous forests from a worldwide belt in subarctic and alpine regions of the northern hemisphere. Plant growth is profuse, tree species are highly diverse but usually have smooth, straight trunks and large simple leaves. While temperate rainforest are restricted to regions where rainfall is high.

Forests are important to all living organisms they help much in respiration, timber shades, and most important of all forests are a very high source of rain formation.

## **SOIL**

Is a thin surface covering that overlies the bedrock of most of the land area of the earth. It is a resource that, along with water and air, provides the basis of human existence. Soil develops when rock is broken down by weathering and material is exchanged through interaction with the environment. Organic matter becomes incorporated into the soil as the result of the activity of living organisms. Soil also contains water, minerals and gases. The soil system is dynamic and it develops a distinct structure, often with recognizable layers or soil horizons arranged vertically through the soil profile.

Soil is essential for the development of most plants, providing physical support and nutrients. Plants are anchored in the soil by their roots. Nutrients, dissolved in soil water, are necessary for the plants' growth. Soil contains various organic matter, including dead material from plants and animals as well as animals that choose to live in the soil. The soil is therefore a store of major nutrients such as carbon and nitrogen and plays an important role in global nutrient cycles and in regulating hydrological cycles and atmospheric systems.

The influx of organic matter or humus to the soil is one of the most important aspects of soil formation. Organic material comes mainly from fallen leaves and other dead materials from plants as well as from animal remains. This is then decomposed by the activities of many organisms of the soil fauna. Bacteria and fungi along with decomposed organisms such as earthworms break down the dead material and mix it through the soil. Humus is ready when the decay process is complete and no remains can be identified. Humus is very important in the soil: It is a major store of nutrients, helps to bind the soil, holds water, and affects the texture of the soil. These are important factors for agriculture because humus makes the soil more fertile and easier to work.

Soils can vary from place to place because some vegetation types decay more easily than others. Environmental conditions influence the speed at which decomposition of organisms and other biological activities take place, which is more rapid in warmer, moist climates. Therefore, regions such as the boreal forests have low humus production because the vegetation itself is slow to decompose and, because of low temperatures, biological activity is low. By contrast, in the deciduous forests of temperate zones the vegetation decomposes easily and rapidly as climatic conditions favour decomposition. Therefore humus levels are higher in these soils, which tend to have a good texture and fertility. After clearing they are suitable for agriculture.

## **CONCLUSION**

Environmental management is a very essential skill and education to all people. This is to save resources so that they will equally serve the same purpose at the same degree for the succeeding generations. This can only be achieved through the following:

- Maintaining the basic ecological process upon which all productivity and regeneration rely.
- Promoting of sustainability and careful consumption of renewable and non-renewable resources through such processes as recycling.

- Preservation of biological diversity through considering effects before the use of chemicals.
- Preservation of catchments to ensure continuous supply of fresh water hence stable hydrological cycle.
- Enhance afforestation programmes.
- Establishment and efforts on research and inventory programmes that aims at natural resource management schemes such as mineral deposits, water, wildlife, and forestry.
- Establishment of laws and regulations on prohibition of acts and practices related to environmental pollution specifically land, air and water which are essential ecological elements that supply ecosystem with life.

- **RECOMMENDATION**

The subject of resources should be taught at all levels of schools for earlier understanding of the available resources by the society.

**BIBLIOGRAPHY**

1. Avenll M. Law: "Water and Wastewater" Mc Graw – Hill College, 1991
3. Charles W. Chesterman and Alfred A. Knopf: The Audubon Society Field Guide to North American Rocks and Minerals, Inc, New York 1978.
3. Chris Pellant: Rocks and Minerals by Eyewitness Handbooks Dorling Kindersley Inc. New York 1992
4. Microsoft Encarta encyclopedia standard , 2004
5. Walter Schumann: "Mineral of the World" Sterling Publishing Co. Inc, Inc, New York 1992.