

Natural Resources

Natural resources are the abundant resources available on the earth that are used to support life and meet people's needs.

Natural resources refer to any natural substance that is available naturally in the environment and that is used by human beings.

- They include oil, coal, natural gas, metals, stone, air, sunlight, water, animals (birds, fish etc) and plants.

Natural resources are used to make food, fuel, clothes, cars, televisions, computers and refrigerators.

* Natural resources can be classified into two groups

1. Renewable (inexhaustible) and

2. Non-renewable (exhaustible)

1) Renewable natural resources

Resources that can be replaced after utilization.

Example: Sunlight, air, trees, water, wind, tidal energy, solar and wind energy, biomass energy and hydro power.

- They are available continuously and their quantity is not noticeably affected by human consumption.

They do not have a rapid recovery rate and are susceptible to depletion

(over-reduced)

if they are overused

They can also be depleted if not properly managed or conserved.

2) Non-Renewable natural resources

Found in the environment but do not naturally replenish at the same speed

at which they are used up to meet the growing demands

Take millions of years to form and replenish

Its rate of consumption exceeds its rate of recovery

brompie minereis, posili fuels, coals and natureigas Conservation of natural resources in Coniapro.

Most of natural resources are limited bic not found anywhere.

There is aneed to use cassting resources wisely so that they usti be oval love for the next generation. Therefore, Conservation of natural resource is crucial.

Conservation is the care, protection and wise we l natural resources so that the resources can be used for future generation.

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Conservation Walso preservation management environment and ecological Communities habituated to human beings. or restoration notural

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Conservation public benetit and sustainable social and economical utilization.

Ethiopia has qwide range of natural resources such as plants, animals, water and Soll

Its topography and diverse climatic Conditions have Contributed to the existe nce of such natural resources.

How ever, natural resources are facing problems unless appropriate Conserva Hoa mechanisms are designed and implemented to keep them and pols them on the next generations.

Natural resources (wind lite, plants, seji and waيع)

A. Wild lite in Ethiopia - Ethiopia has huge wildlite resource that has national Importance & wild life and globes importance.

mainten natural and ecological process

Store genetic material for the future

Secure wildlife tourism

Contribute to the national economy and manufacture goods.

ea hien, walla Ibex, Ethiopian mountain Chameleon etc

Causes loss and decline

Different natural and Human activities in Ethiopia.

Natural disasters (earthquakes, floods, drought, wild fire).

→ Conservation mechanism

protecting their habitats.

Practiced wildlife Conservation area (Matiopark, wild Sanctuaries, wildlife reserves, Community Conservation area, controlled hunting area)

B plants in Ethiopia.

-plant species in Ethiopia are diverse and have rich endemic element.

2.9 Mekneno (*Rumex abyssinicus*), African Juniper (*Juniperus procera*), cabbage tree (*Moringa stenopetala*) and kosso (*Hagenia abyssinica*).

Causes loss and decline of plant species

Natural disasters, Human activities (deforestation, Climate change, etc)

Conservation mechanism

Indigenous protecting plants by human It is cultural practice

- taboos-Forbidden practices for using or Consuming some plant species.

-Plants found around shrines (Church, mosques, monasteries) considered as reserved area.

graveyards

agent

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Modern practices

Establish botanical gardens.

-Control invasive species.

-recover, restore and preserve genes in bank

Preserving & seed in gene bank

Ethiopia has large soil and water resources

The wide range of Climate, topography, parent materials, land use in Ethiopia has resulted in the formation of various soil types in all parts of the country.

The Country's water resources provide the country with a large potential for hydro power generation, irrigation and fishing

The best Example Grand Ethiopian Renaissance Dam (GERD), which has been built on the Abay (Nile) River and can generate hydropower

Water resource potential in Ethiopia includes lakes, river basins and ground water

- However, soil erosion, decline in water quantity and quality have been major problems that have affected the agricultural production, the environment and health of human beings and other animals in Ethiopia

→ Causes soil erosion and decline in water quantity and quality

Human activities (deforestation, Poor and husbandry practices, wastes emitted from industries and homes

Conservation mechanism of soil and water

→

Involves both mechanical and biological measures,

Mechanical measures-include constructing bunds, terraces, division

ditches, Check dams, microbasins and hillside terraces.

Biological measures-tree seedling production, planting trees.

afforestation, tree plantation around homesteads

6.5 Impact of human activities on the environment

The major activities that affect the environment are: Burning of fossil fuels, natural gas,

using refrigerants and Coolants, applying pesticides, waste disposal, various chemical wastes, Agricultural activities, Industrial Waste, construction infrastructure, transportation urban development, mining activities.

→→→All these Human Activities Cause environmental pollution, Climate change, global warming, acid rain, ozone layer depletion, loss of biodiversity, toxic bioaccumulation and resource depletion.

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6.3.1 Environmental pollution

-Environmental pollution Contamination that affects the normal environmental processes

Causes of environmental pollution by natural disasters (

forest fires, volcanoes, and by human activities.

- Rapid human population in migration.

Types of environmental pollution!

They are air pollution, water pollution, land pollution, noise pollution, and light pollution. All kinds of pollution have negative effects on the environment, wild life and human beings

* Air pollution and its effects

-Air pollution is the contamination of the air by the release of harmful gases, dust and smoke that affect plants, animals and human beings.

Causes of air pollution - Caused by adding air pollutant in the air.

Air pollutants are - CO₂, nitrogen dioxide, ozone, lead, sulphur dioxide, smog and particles.

Effects of air pollution are depletion of ozone layer

respiratory and cardiovascular disorders

Change the pH level

Causes of acid rain

It affects plants and other forms of vegetation.

* water pollution and its effect - water pollution is the contamination of water bodies by the presence of excessive toxins

Cause water pollution - Human activities (factories, industries and agricultural wastes, sewage, transportation fuel, chemical fertilizers, insecticides, herbicides, pathogenic microorganisms, water hyacinth (Eichhornia))

Effect of water pollution - Reduction of fish population

destruction of biodiversity

-water borne diseases that lead to death

6.5.2 Climate Change

Climate Change is a change in the usual patterns weather. They could be a change in the amount of rain, temperature etc for month or season. Thus Climate Change can affect living organisms in the environment.

Causes of climate change by natural variation from internal

fluctuations such as exchange of energy, water and carbon between the atmosphere, oceans, land and from external influences. Such as variations in the energy received from the sun and the effects of volcanic eruptions.

Caused by Human activities (Combustion

fossil fuels, motor vehicles, methane, nitrous oxide and fluorinated gases.

Effects!

Greenhouse gases have far-ranging environmental and health effects

- They have a greenhouse effect that causes global warming

6.5.3 Global warming - Global warming is an average rapid rise in

the earth's temperature. The major causes of global warming are greenhouse gases released from human activities such as burning of fossil fuels and industries.

Effects of global warming: flooding, melting of ice caps, rising oceanic

sea level, loss of species, health problems, drought, extinctions & species, heavy rainfall and flooding, high heat stress and health risks, poverty and displacement.

6.5.4 Ozone layer depletion

- It is caused by air pollution

Ozone (O_3) is made up of three oxygen atoms. It is a toxic gas.

The atmosphere has four layers. These are the troposphere, stratosphere, mesosphere and thermosphere. Ozone is found in the stratosphere of the atmosphere.

- The ozone layer protects the earth from harmful radiation (ultraviolet rays)

It absorbs the radiation from the sun.

Causes ozone depletion - release of CFCs (Chlorofluorocarbons), which are used in refrigerators and fire extinguishers, hydrofluorocarbons (HFCs) and halons. CFCs cause chemical reactions that break

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doun molecules, reducing the forest's ability to absorb capacity

- Chlorine reacts with ozone and forms phosgene (COCl₂) monoxide (CO)

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when the molecule phosgene (COCl₂) reacts with molecular oxygen (O₂), it breaks up releasing chlorine (Cl), which then reacts with another molecule of ozone (O₃), creating the catalytic cycle & phosgene.

ClO to ClO

so active chlorine atoms break down the greenhouse molecules, causing ozone layer depletion

Effects of ozone layer depletion

Ozone layer depletion exposed to UV rays that can lead to

- Skin cancer, respiratory disease such as chest pain, difficulty

in breathing, throat irritation -It also affects aquatic and terrestrial animals and plants

6.5.5 Acid rain

Acid rain is a rain with acidic content (lower pH value) than natural

Causes of acid rain

-By high Concentration of acid forming pollutants that dissolve in water vapour in the atmosphere.

The major sources of acid rain are-burning fossil fuels, electric power, generating facilities, industrial process, exhausts emitted from the Internal Combustion engines that serve as sources of Sulphur dioxide and nitrogen Oxides etc.

burning fossil (Coal and oil) contain Sulphur and Hydrogen, which with oxygen to form Sulphur dioxide (SO₂), and nitrogen dioxide (NO₂) combine

- Sulphur dioxide and nitrogen Oxide enter into the atmosphere and react with water to form solutions of sulfuric acid (H₂SO₄) and nitric acid (HNO₃)

2SO₂ (g) + O₂ (g) → 2SO₃ (g)

4 SO₂ (g) + O₂ (g) + 20 H₂O (l) → 4HNO₃ (aq)

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when dionice (cow in the atmospher maken vain sligatigoerare Ale Curbendtexide and water combine to form Carbones Gera Commonly known as Carbonated water,

Effects of acid rain

Demare plants. Selt and mater

affect other lloing things depend on these resourres

leaching of nutrients suchas Caicium, magnisium, and potostrum eut l leaf tissue and drying.

- Dissolve minerals in the soliquickly and ουσιώτης nutrients to be releases (leached away,

6.5.6 Loss Brodiversity

*Blodiversity reters to the variety of life on earon.

Causes floss of brodiversity

-Loss howitot and degradation

- Overexploitation (with outreplacering capturingandharversting) brodiversity

- Invasive species-The introduction new species/non-native species to the country that significantly modity or disrupt the ecosystem thay Colonize may out Complete native species for food and habitat, which trigger population declines in the native species.

Effect of biodiversity loss - Couses lock of food, water, fertile soil ere.

-decline ecosistem's productivity and lower the ecosystem's services.

- Affect economic system & human society

-decline pharmaceuticals with future disease

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6.5.7

Toxic bioaccumulation

Bioaccumulation is an increase in the Concentration or accumulation of Chemicals in huing organssis body tissues

- persistent brooccumulative toxic substances (PBTS) are chemicals that do not degrade easily in the environment

-PBTS are typically accumulated in fatty tissues and are slowly metabolized, often increasing in concentration within the food chain

Sources of bio-accumulation The major bio-accumulates are Organic Compounds and metals. They include Synthetic chemicals that contain halogen atoms (Fluorine, chlorine, bromine) and metals (lead, mercury).

Extremely toxic bio-accumulates - Health effects such as mutagenic damage to DNA, Cancer, neurological toxicity, reproductive toxicity, developmental toxicity and immune system damage

Example lead Contamination Air, soil and water result in significant exposure in fetuses, infants and children resulting in impaired brain development.

- If mercury Consumed by fish with plankton it passes through the food Chain and damages the nervous systems and reproductive System of mammals & humans

- DDT Effects the shell of the birds, because it makes the shells of their eggs very thin, causing them to break easily when the bird's try to incubate them

6.5.8 Resource depletion

→Resource depletion occurs when the Consumption of natural resources become faster than they can recover and become scarce.

Causes & resource depletion -

- over population

Poor farming practices.

Over consumption

- Industrial and technological development.

6.6. Indigenous Conservation practices in Ethiopia.

-Maing Terraces reduce soil erosion.

- Contour ploughing reduce runoff of water & soil erosion.

Crop rotation. planting different crops sequentially on the same plots of land to improve soil fertility.

- mixed cropping

mulching and agro forestry (integrates trees Surface mulch with crops)

