

ASSIGNMENT 2

13/2/23

Unit - 2 Natural Resources: Renewable & Non-renewable Resources.

Q.1 Discuss in detail: land Degradation.

→ The reduction or loss of the biological or economic productivity and complexity of rainfed cropland, irrigated cropland, pasture, forest or woodlands resulting from natural processes, land uses or other human activities is called land Degradation.

~ Causes of land Degradation :~

i) Deforestation.

The large scale removal of trees from forests (or other lands) for the facilitation (like fuel, wood, timber, etc.) of human activities.

ii) Soil erosion by wind or water.

The process occurring when the impact of water or wind detaches and removes soil particles, causing the soil to deteriorate.

iii) Industrialization.

The transformation of a society from agrarian to a manufacturing or industrial economy.

iv) Mining.

The process of extracting useful minerals from the surface of earth, including the seas.

v) Urban Expansion.

The rapid expansion of the geographic extent of cities and town.

vi) Unsustainable Agricultural Practices.

The farming methods, such as repeatedly growing the same crop and overusing chemicals, that eventually result in the depletion of natural resources.

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~ Conservation Measures for land Degradation:-

- i) Strip farming : Cultivated crops are sown in alternative strips to prevent water movement.
- ii) Crop Rotation : Different crops are grown in same area following a rotation system which helps in replenishment of the soil.
- iii) Ridge and Furrow : Ploughing with non-reversible ploughs on the same strips of land each year.
- iv) Construction of ^{water} bunds : Reduces the velocity of run off so that soil support vegetation.
- v) Contour farming : Practiced across the hill side and is useful in collecting and diverting the run off water to avoid erosion.

~ Effects of land Degradation:-

- i) Biodiversity loss.
- ii) Water and food insecurity.
- iii) Decline in productivity.
- iv) lessened volumes of surface water.
- v) Reduced availability of potable water.
- vi) Decline in the chemical physical and/or biological properties of soil.
- vii) Impacts on livestock and agriculture (example: loss of animals due to dehydration, reduced yields.)

Q.2 Enlist and describe causes of Deforestation. are:

Ans There are mainly three ^{causes} types of Deforestation, which,

i) Shifting Cultivation.

An agricultural system in which plots of land are cultivated ~~system~~ temporarily, then abandoned while post-disturbance fallow vegetation is allowed to freely grow while the cultivator moves on to another plot.

It is principal cause of deforestation in some countries like America (35%), Asia (50%), Africa (70%).

ii) Commercial Logging.

It involves cutting trees for sale as timber or pulp. Logging roads enable people to access the interiors of the forest, which in results in deforestation.

In Africa, 75% of land being cleared by poor farmers is land that has been previously logged.

iii) Mining and Dams.

~~Mining~~ Dams open the previously inaccessible forest and damage ecosystems. It also affect 23 tribal groups and also cause the high soil, water and air pollution.

Expansion of agribusiness that grows oil palm, rubber, fruit trees and ornamental plants has also resulted in deforestation.

→ Deforestation also occurs due to overgrazing and conversion of forest to pasture for domestic animals. It also includes fire, pest, etc.

Q.3 Enlist actions for natural resources conservation.

→ Actions for natural resources conservations are listed below:-

- Plant trees to prevent soil erosion.
- Use pipelines to transport oil
- Treatment of industrial wastes and sewages before they are released in the water bodies.
- Rain harvesting.
- Adopt renewable energy.
- Practice Crop rotation.
- Practice Recycling.
- Protect Biodiversity.
- Organise Community Activities for tree planting, clean-up drive, recycling campaign, etc.
- Reduce carbon foot print

Q.4 Discuss on water resources and causes of ground water depletion.

→ Water Resources

Water is an essential renewable natural resource for life on earth. World Ocean water covers ^{about} 75% of the surface of the earth. But ocean water is saline and not fit for the human consumption. Out of this, fresh water ^{is} only about 3%. About 2% of fresh water is frozen in glaciers and polar ice-caps. So remaining 1% is available in the form of ground and surface water for the usage and consumption.

~ Causes of Ground Water Depletion :-

- i) Historical Reasons : The advent of the Green revolution during the 1960s and the use of high yielding variety seeds and fertilizers led to the overuse of ground water resources.
- * Cheap Electricity was also one of the main reasons.
- ii) Excessive Pumping of water from the ground : Pumping ground water more frequently is a cause of ground water shortage. Pumping it at a rapid rate and not allowing it to replenish its levels is a serious cause of concern.
- iii) Increasing Population : Increase in population, there is an increase in demand for food, ~~area~~, there is an expansion in the area of land under irrigation.

- iv) Natural Causes : Uneven Rainfall and climate change that are slowing down the process of groundwater recharge. India mainly relies on the summer monsoon rainfall and weaker summer monsoon causes droughts, so in that situation water is extracted from the ground.
- v) Deforestation : Plants and trees play an important role in maintaining the water table. The reckless cutting of plants and trees is adding to the problem of ground water depletion.

Q.5 Define Drought. Enlist causes and remedies to take.

→ Drought is the unusual dryness of soil due to the levels of rainfall.
Drought occurs when rainfall is significantly below average over a prolonged period.

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Causes of Droughts :-

- i) Climate Change : It can make places drier by increasing evaporation. When land becomes so dry an impermeable crust forms, so when it does rain, water runs off the surface, meaning sometimes flash flooding occurs.
- ii) Deforestation : Bad agricultural practices like intense farming not only contribute to deforestation in the first instance but also affect the absorbency of the soil, meaning it dries out much quicker.

iii) High water demand: There are several reasons water demand might outweigh the supply, including intensive agriculture and population spikes. Also, high demand upstream in rivers can cause drought in lower, downstream areas.

~ Remedies of Droughts :-

- i) Harvesting rainwater
- ii) Planting more trees and combating deforestation
- iii) Switching to renewable energies
- iv) Solar pumps.
- v) ~~Stop~~ Becoming environmentally conscious.

Q.6 Differentiate : Renewable and Non-Renewable Energy.

Criteria	Renewable Resources	Non-Renewable Resources
Availability	Unlimited	limited
Depletion	None / Minimal	Extensive
Sustainability	Sustainable in long term	Not sustainable in long term.
Cost	Relatively low upfront costs	High upfront costs
Environmental Impact	Low environmental impact	High environmental impact
Area Required	large areas for wind and solar energy.	Smaller areas for fossil fuels.
Infrastructure	Requires specialized infrastructure	Existing infrastructure in place.
Efficiency	Varies depending on the technology used	High Efficiency.

> Maintenance	Regular maintenance required	Minimal maintenance required.
> Storage	Storage technology is constantly improving.	Relatively easy to store.
> Examples	Solar, wind, hydroelectricity, biomass.	Coal, oil, natural gas, uranium.

Q.7 Short note : ~~Hydro~~

i) Hydro Power

- > The conversion of the mechanical energy in flowing water into electricity. It is generated when the force of falling water from dams, rivers or waterfall is used to turn turbines, which then drives generators that produce electricity.
- > The hydro power potential of India is around 1,45,000 MW and at 60% load factor.

ii) Nuclear Energy

- > Nuclear Energy is the energy in the core of an atom, made up of protons and neutrons. This source of energy can be produced in two ways:

- > Fission : When nuclei of atoms split into several parts.
- > Fusion : When nuclei fuse together.
- > About 3.2% of the domestic production of electricity in India was derived from nuclear energy.

iii) Geo-thermal Energy.

- The thermal energy in the earth's crust which originates from the formation of the planet and from radioactive decay of materials. The high temperature and pressure in earth's interior cause some rock to melt and solid mantle to behave plastically. This results in parts of the mantle convection upward since it is lighter than the surrounding rock.
- By 2022, the Ministry of Renewable Energy plans to generate up to 1000 MW of geothermal energy.

Q.8 Define Solar Energy. What is Active and Passive Solar System?

- It is one of the most renewable and readily available sources of energy on earth produced by the sun in the form of heat and light.

Active Solar System:

~~Special solar heating equipment is used to convert solar energy to heat energy. whereas in active solar include the use of mechanical equipment like photovoltaic cells, solar thermal collectors or pumps and fans to trap solar energy.~~

Passive Solar System:

~~Special solar heating equipment is used to convert solar energy to heat energy without the use of active mechanical systems. It is mainly the practice of using windows, wall, trees, building~~

placement and other simple techniques to capture or deflect the sun for use. This is a great way to conserve energy and maximizing utilization. An example of passive solar heating is what happens to your car on a hot summer day.

