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Bachelor of Computer Applications
(For Students with Speech and Hearing Impairment)

course: Environmental Studies
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Natural Resources

Natural resources are the naturally occurring raw materials that are useful for human society.

The functioning of ecosystems including man's survival depends upon the such as land, water, forest, energy resources etc.

Renewable resources & non renewable resources

Renewable resources: From a small stock it could be multiplied. These are naturally replenished after being used by man. Eg., Clean air, wild life, agriculture, forest, water etc.

Non- Renewable: These resources are being depleted after the use and cannot be replaced. When exhausted we have to look for an alternative. Eg., Minerals, metals, fossil fuels(Coal, oil, and natural gas) and soil.

Natural Resources and associated problems

- Modern civilization entails the risk of irreversible deterioration of environment accompanied by over population, over production, wastage, and exploitation of available resources.
- The rapid decline in the quantity and quality of these resources has led to the concern for their management and conservation.

Forest Resources

Forest constitutes the largest complex and most important natural resource, mostly dominated by varieties of plant diversity. This gives, a better environment for rich animal biodiversity.

India is one of the most diverse countries with rich biodiversity. Indian forestland was about 75 million hectares(22.7% of the total land area)according to Central Forestry Commission in 1980.Among 16 different forest types of the country, the most common is the tropical dry deciduous (38.7%) and tropical moist deciduous(30.9%) type.

Uses and Over-exploitation

1. It supplies wood as fuel.
2. it provides food- Almond, Cashewnut, Coconut, honey etc.
3. Forest provides timber.
4. It provides raw material for various kinds of wood based industries like pulp and paper industry, match factory, timber for furniture components, sports goods, rayon and other man made fibers and so on.
5. Products such as essential oil, latex, lac, shellac, tassar silk, and turpentine are obtained from forest.
6. Forest provides resins, which find ever growing use in manufacture of plastics, synthetic rubbers, explosives, adhesives, printing inks, pharmaceuticals, (quinine, honey) perfumes, liquors, thinner for painting, varnishes etc.

Deforestation

The forest has been cleared off for many purposes.

1. Increasing human population
2. Shifting cultivation or Farming
3. Over grazing
4. Construction of dams
5. Construction of high ways and rail ways
6. Illegal activities
7. Industrial demand of timber
8. Faculty resin trapping
9. Forest fires
10. Acid rain
11. Heavy snowfalls

Timber extraction

As industries have been encouraged and expanded, demand for raw materials is very high. Forest provides wood for furniture, plywood, packing cages, pencils, paper etc. To meet these needs, a large number of trees are being cut. To meet these needs, a large number of trees are being cut. Most important factor is the commercial exploitation'- says Sunderlal Bahuguna, an environmental activist.

Dams

India has large number of dams. Construction of dams, reservoir, hydroelectric projects or multipurpose projects has extensively destroyed the forest cover. For example Sardar Sarovar Project in Gujarat has destroyed 39,134 hectares crop lands. Much before the construction of a dam, a lot of land is cleared for residence of the construction of a dam, a lot of land is cleared for residence of workers for which wood and other forest products are used up.



WATER RESOURCES

Water is one of the renewable and inexhaustible natural resources available for human. Water is the essential component of all living things. It is used for drinking, irrigation, live stock, fisheries, industries, transport, electricity production etc.

USES OF WATER

- Sustaining life: water is the basic component of every living cell.
- Hydroelectric power generation: it uses nearly 13.7% of water. The water falling from an elevated level turns the turbines to produce electricity.
- Large quantity of water is used for fisheries, navigation and recreation.
- Medium of transport: Boats, ships and sailboats carry humans and materials from one place to another across bodies of water.
- Domestic consumption: water is used for all domestic purposes like cooking, washing, cleaning, bathing, sanitation etc.,
- Agricultural uses: A large amount of water is used for irrigation and raising livestock. Water is critical for all crops. They require massive amounts during growing season.
- Industrial uses: The industries also use large amount of water. For example 36 liters of water is needed to produce 1kg of cement, 113kg of water is used to produce 1kg of paper.

Ground Water

It is the part of surface water. The ground water is found in the pore spaces of soil and rocks. Water derived from precipitation can continue to flow downward beyond the soil water belt percolation. At present about 25% of the ground water is used by man.

Agriculture uses the maximum amount of water in the world. This amount is about 73% and leads to a lot of pressure on ground water.

BENEFITS OF DAMS AND PROBLEMS

Dam is essential for flood control, navigation and fish farming. Certain proportion of the water from the dams is used for industrial and domestic purposes. 20% of the dams generate electricity. It also gives place for recreation.

PROBLEMS WITH DAMS

- Some of the problems associated with dams are as follows
- Loss of aquatic biodiversity
- Large number of people are displaced.
- Water logging and salination problems.
- The cost of large dams on ecosystem is more negative than positive.
- The cost of large dam construction is very high, but the benefit is comparatively less.
- Loss of agricultural lands due to submergence.

MINERALS RESOURCES

Minerals are the most important non-renewable resource. They are often referred as stock, because their new material can only be extracted from earth crust. Man requires great variety of inorganic materials. Few among them are ores used in large scales to yield metals such as iron, aluminium, copper, silver, gold, platinum etc.

USES & EXPLOITATION

Aluminium : in all industries, automobiles, aeroplanes, bottling, canning, kitchen cookwares, building material, electrical goods, etc.

Coal, petroleum, Natural gas, Uranium salts- used as energy sources

Cement, stones, sands, asbestos and gravels are used as building materials.

Graphite- used as boundries, lubricants, batteries and pencil lead.

Diamond, gold, silver, - Jewellery.

ENVIRONMENTAL EFFECTS OF EXTRACTING

Dust formed during mining causes air pollution leading to respiratory illness to people and asphyxia to plants.

Noise pollution is another problem of mining.

Deafening sound of machinery and blasting create unbearable condition for people as well for wild life.

FOOD RESOURCES

Global food supply has been improved since the early 1970s after the food crisis due to drought and sharp rise in the price during 1960s and 1970s. Agricultural production after green revolution has increased and world food supplies are 18% higher than 30 years ago. But the Food and Agriculture Organisation in 1996, has reported about 60% of extra food is required in future which must come from irrigated agriculture. The International Commission on Irrigation and Drainage (ICID) have explained that food production should be doubled within next 25 years.

Water logging

Generally water logging will occur in clay soils where water cannot move efficiently through the soil and cannot be drained properly. Similarly in any field over irrigation leads to water logging. At this condition the roots of plants cannot absorb adequate amount of oxygen. So the plant stops growing and die soon.

Fertilizer- pesticide problems

Farming is one potential source of water contamination.

Through surface run off water, the pesticide and the fertilizer enters the stream, lakes and reservoir. High nutrient content leads to eutrophication and dead zone in many rivers, lakes and ocean.

Effects of modern agriculture

With the invention of advanced technologies agricultural practices are followed to increase the food production. 1. Organic farming, 2. Alternative methods of pest Control.

1. Organic Farming: it is the agricultural farming without the use of synthetic fertilizers and pesticides.
2. Alternate method of pest control: Here pests are controlled adopting appropriate farming methods such as crop rotation, trap cropping, mixed farming etc.

Energy Resources

Sun, moon and earth are ultimate source of all energy formation. Energy may be defined as any property, which can be produced from or converted to do work. Due to population explosion, the demand for various forms of energy has increased many fold. Indian population is largely dependent on traditional fuels such as firewood, animal wastes and agricultural residues. However, the share of commercial energy on the total demand has steadily increasing.

Renewable resources & Non-renewable resources

Energy sources can be classified into two major categories:

Renewable Energy Resources: The sources of energy, which are continuously produced in nature. Eg., wood, vegetable refuse, solar energy, wind power, tidal energy, gobar gas, biomass, etc.

Non Renewable Resources: The energy resources which are being accumulated in nature for a very long time and cannot be replaced if they are exhausted Eg., fossil fuels(coal, natural gas , oil and its derivatives-diesel, petroleum) etc.



Uses of alternate energy sources

1. Tidal(ocean) energy
2. Geothermal energy
3. Biomass- based energy

Land Resources

Land Degradation

land is a complex physio-biological system containing soil, water, mineral salts and nutrients and provides anchorage for plants. Dumping of industrial and municipal wastes causes addition of toxic substances to the soil.

Some of the important aspects of land degradation are presented below.

1. Solid waste accumulation
2. Water logging
3. Disposal of toxic wastes
4. Agricultural activities
5. Salinity problems
6. Soil erosion etc.

Soil erosion

It is a natural process. It becomes a problem when human activity causes it to occur much faster than under natural conditions.

Causes for soil erosion

1. Heavy rain fall and run off usually carry away greater quantity of soil.
2. Speed- the faster the wind and water movement, the greater the soil erosion.
3. Mining activity also causes soil erosion.

Measures undertaken to prevent soil Erosion

1. Land should be always utilized.
2. Conservation of water shed.
3. Farmers must be encouraged to maintain a sustainable land
4. Over grazing and over use of crop lands must must be avoided.

Desertification

Desertification is a form of land degradation. It is occurring particularly, but not exclusively in semi arid regions where arrival of rains, and excessive withdrawal of ground water.

Causes of desertification

1. Overgrazing
2. Deforestation
3. Surface mining without land reclamation
4. Over-cultivation
5. Global warming also play an important role in desertification.

Role of an individual in conservation of natural resources

- By means of preventing air pollution, global warming may be reduced, thereby increasing the rainfall.
- Some measures to be undertaken to create awareness among people living in desert, to prevent the process of desertification.
- The underground water has to be properly regulated, so that the moisture in the sand may be retained.



Thank you