Subject code:EC801

Subject: Basic Environmental Engineering

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Natural resources: Renewable and Non-Renewable Resources

Natural resources are the components of the atmosphere, hydrosphere and lithosphere which are useful and necessary for life. These include energy, air, water, minerals, plants, soils. These are directly from the environment for the survival, comfort and prosperity of human beings. Various natural resources are listed as following: (i) Forest, (ii) Minerals, (iii) Water, (iv) Food, (v) Energy, (vi) Land

Forest natural Resources

A forest is a natural self-sustaining community characterized by vertical structure created by presence of tress. Because a forest is natural community, hence no forest is static in time. In India 23 % area is forest area. In the recent forest has been adding to our GDP.

i. Direct benefits from forest:

ii. In direct benefits from forest:

iii. Deforestation

iv. Dam forest conflict

Forest Natural Resources

Benefit of forest

Water quality standards laid as per ISI are shown

S.No.	Constituents	Recommended Permissible limits
14	Copper	Less than 3.0 ppm
15	Chlorine	0.10 to 0.20 ppm
16	Fluorine	Less than 1.5 ppm
17	E. Coli	No. E.coli in 100 ppm
18	Radiological	1 MMC/litre
19	B-emitters	10 MMC/litre

Water quality and Standards

Different types of water use require different levels of water purity . Drinking water requires the highest standards of purity , where as water relatively lower quality

Agencies playing an important role in specifying the norms for various effluents are

i) Indian Standard Institution (ISI)

ii) World Health Organization (WHO)

iii) Indian Council of Medical Research (ICMR)

iv) United States Public Health Services (USPHS)

Water quality standards laid as per ISI are shown

S.No.	Constituents	Recommended Permissible limits
1	Total Solids	Less than 500 ppm
2	Hardness	Less than 100 ppm
3	Taste	No objectionable taste
4	Color	10 to 20 (on platinum cobalt scale)
5	Odour	0 to 4 Po value
6	Temperature	10^0C to 15^0C
7	pH value	6.5 to 8.0 pp
8	Dissolved oxygen(DO)	
9	Chlorides	Less than 250 ppm
10	Nitrites	Nil
11	Iron and Manganese	Less than 0.30 ppm
12	Lead	Less than 0.10 ppm
13	Arsenic	Less than 0.05 ppm

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Conflicts over Water

- Of equal concern are the water conflicts between states in India that share river basins, such as Karnataka and Tamil Nadu, Cauvery river in between Haryana and Punjab etc.

Dam benefits and Problems

As per the world commission on Dam report-2000, there are 45,000 large dams in 140 countries. Of these 22,000 dams are in China, USA-6,390, India-4291, Span-1,000 and Japan-1,200.

Dam benefits and Problems

According to an estimate, 160-320 new dams are built every year world-wise to trap run off with dams and storage reservoirs so as to impound huge amount of rain water. Dams have the various benefits:

(i) Hydroelectric generation, (ii) Irrigation during dry period, (iii) Flood controls and soil protection, (iv) Ensuring year-round water supply, (v) Multipurpose river value projects also provide for inland water navigation

Dam and its Problems

(i) A dam is hazardous during earthquake, (ii) Resettlement and rehabilitation problem of displaced people, (iii) Water logging, which results into diseases, (iv) Loss of free flowing river, (v) Salt left behind by evaporation increases the salinity of the river, (vi) Deforestation due to water logging in the vicinity of dam area, (vii) During war, a dam failure may create a high level of disaster in the catchment are the dam.

Thank You