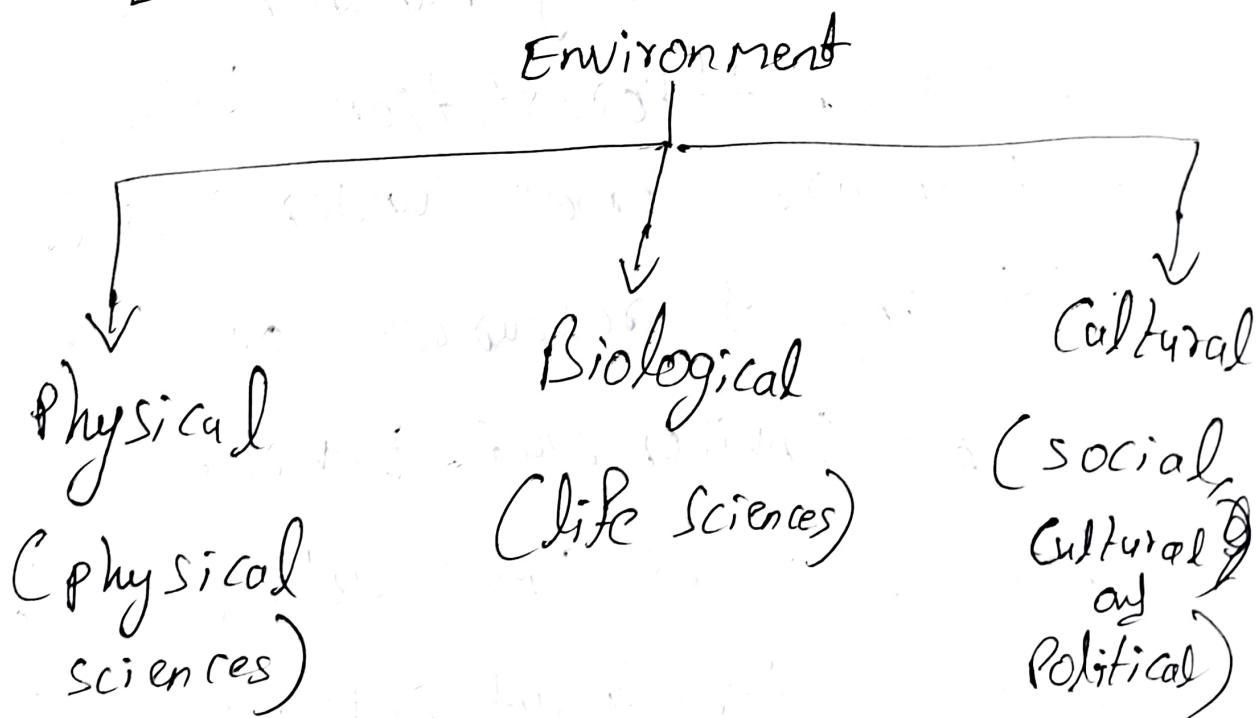


Environment

- * Environment refers to Surrounding
- * And it was given by the French Biologist named Jacob Van Verkal.
- * Before the Environment, Ecology is the word given by Ernest Kuckal.
- * ~~S~~imulations that a person receives from birth to death is called as Environment.



i) Physical:

Physical nature related to the Earth, water, land, forest, chemical.

ii) Biological:

Flora, Fauna, Microbes.

iii) Cultural:

Not Natural, Only human made processes. Afforestation, deforestation are comes under social, utilising of resources comes under social environment. Environmental laws, policies comes under political. How, culturally and Religiously environment ~~comes~~ personnel to us comes under cultural.

Scope of Environmental studies.

It is defined how environment is useful for individual & society.

- i) Environmental Research (R&D)
- ii) Environmental Engineering.
- iii) Environmental Management.
(Tourism)
- iv) Conservation Policies.
- v) Environmental Psychology.
- vi) Environmental pollution & Control.
- vii) Social Issues - CSR activities
(Corporate Social Responsibilities)
- viii) Environmental Sociology.
- ix) Demography.
- x) Environmental Lawyers.
- xi) Environmental Journalists.
- xii) Toxicologist.

xiii) Landscape Architect.

xiv) Marine Biologist.

xv) Environmental Geologist.

Renewable & Non-Renewable

Resources

* Renewable Resources are the resources which do not exhaust over a period of time.

* Non-Renewable Resources are the resources which will exhaust over a period of time.

Renewable Resources	Non-Renewable Resources
i) Non-Exhaust	ii) Exhaust
ii) Ecofriendly	iii) Releases Smoke & Ash
iii) less expensive	iv) More Expensive
iv) Non-Conventional (non-traditional)	v) Conventional (traditional).

NonRenewable Sources & Conventional :

i) Coal:

- * Coal is the oldest and the most conventional Energy.
- * Coal is as of 3 types:
 - a) Anthracite (Hard coal)
 - b). Lignite (Brown coal)
 - c) Bituminous (soft coal)
- * China is the largest producer of Coal in the world.
- * In India, Coal was produced in Gondwana Region (JH, BH, WB, GH) and in Tertiary Region (JK, Himalaya).
- * The Highest Producer and the Reserves in India is at Jharkhand in the Jaria area.

ii) Oil:

- * USA is the largest producer of Crude Oil in the world.
- * OPEC - Oil and Petroleum Exporting Countries is a group of 11 countries - Algeria, Indonesia, Iran, Iraq, Kuwait, Libya, Nigeria, Qatar, Saudi Arabia, UAE and Venezuela.
- * Largest Crude Oil reserves in the world is located in Saudi Arabia.
- * Digboi is the oldest crude oil reserve in India in Assam. And Makum we found the first crude oil traces in India. And in Surma Valley in Arunachal Pradesh.

iii) Natural Gas :

- * USA is the largest producer of the Natural gas in the world.
- * World's largest Natural Gas reserves were found in Kazakhstan in USSR which covers 40% of NG.
- * India has 1730 km long Natural Gas Pipe line named as HVJ (Hazira-Vijapur-Jagdishpur)
- * Western India, some parts of Central India and South India have the Natural Gas resources in India.

iv) Nuclear Energy:

- * Nuclear Energy comes under the non-Renewable Resources because of the limited amount of Reserves of Uranium & Thorium.
- * USA is the largest Nuclear-Energy producer in the world and has 83 Nuclear Power stations followed by USSR with 40 power-stations and UK with 35 power-stations.
- * In India, the first Nuclear-Power station is setup in Mumbai at Tarapore in 1969. And Present India has 4 Nuclear Power stations named:
 - i) Narora of Uttar Pradesh

- ii) Rawat bhata of Rajasthan
- iii) Kakrapur grid in MH and
- iv) Tarapore of Mumbai.

And the upcoming power station is located in Kalpakkam in T.N., which is in developing stage.

- * Gaya in Bihar has the highest Uranium production in India, followed by Nellore in Andhra Pradesh and Palakkad in Kerala.
- * Thorium is produced only in Kerala in India.



- * The Mineral Resources: Nature minerals divided into:
- * Based on
i) Metallic Resources
 - ii) Non-Metallic Resources
- * Based on Origin, Minerals are divided into:
- a) Cooling of Molten Rock Material.
eg:- Zinc, Lead, Gold, Tin.
 - b) Evaporation. eg:- Sodium chloride.
 - c) Heat and pressure. eg:- Talc. & Graphite.
 - d) Weathering: disintegration of the rocks.
eg:- Bauxite (Aluminum)
 - e) Oxidation eg:- Copper
 - f) Microbial Activities. eg:- Sulphur and Manganese

* Copper:- It is the 1st used metal founded in the human history.

Bauxite : Odisha is the largest producer.

Diamond : Madhya Pradesh

Gold : Karnataka

Copper : Rajasthan

Petroleum : Assam

Coal : Jharkhand

Iron - ore : Odisha

Gypsum : Rajasthan

Zinc : Rajasthan

Uranium : Andhra Pradesh

Thorium : Kerala.

Tungsten : Rajasthan.

MICA : Andhra Pradesh

- * Coal: India is the 5th largest reserve for Coal & the 2nd largest consumer after China.
- * Iron ore: India is the 7th largest reserve & the 11th largest exporting country.
- * Manganese: India is the 2nd largest reserve after Zimbabwe.
- * Bauxite: India is the 7th largest reserve.
- * MICA: India is the 8th largest reserve.

India has 2 Organisation for the Mineral Exploration: GSI and Indian Bureau of Mines.

* India has New Mineral Policy 1993 through which all rules and regulation are followed.

* Objectives of NMP 1993:-

- i) To explore & Identify Mineral wealth of a Country.
- ii) To ensure regular Mineral Availability to the Concessed Industries.
- iii) To Satisfy the future needs.
- iv) Measures for Processing and Conservation of Minerals.
- v) To create a balance between Mineral resources, environment and Ecology.
- vi) Promoting exports of Minerals.
- vii) To promote Research & Development in Minerals.

Strategies of NMP 1993:

- i) Foreign Equity & Technology participation.
- ii) Mining operations will not be done in ecologically & biologically rich areas.
- iii) Without proper planning, no mining activity will be done.
- iv) Old used mines, that are not in use should be converted into a forest.
- v) Foreign & Domestic enterprises will be ~~solve~~ invited for the mineral extraction through joint ventures.

* Conservation of Mineral resources:

- i) Economic use of Mineral resources
- ii) To make a product long lasting.
- iii) Reuse & Recycling.
- iv) ~~Do not~~ Use for cheaper substitutes.
- v) Search for New deposits.
- vi) Protection of existing Mineral resources.

Renewable Energy

Solar Energy:

- * China is the largest producer.
- * 481.48 MW is the India's capacity to produce S.E.

Wind Energy:

- * China is the largest producer.
- * India is the 5th position

and capacity is 20,000 MW.
* Gujarat is the largest producer in India followed by Rajasthan and Tamil Nadu.

Ocean Energy:

- * Divided into 3 diff parts:
 - i) Tidal Energy. (height & length)
 - ii) Ocean Thermal Energy Conversion (OTEC)
 - iii) Wave Energy. (currents) (speed)

* Tidal: India has 8000 to 9000 MW. South Korea is the largest producer. Sihwa Lake in South Korea. In India, Gulf of Cambay or Gulf of Kutchchh.

* OTEC : established in 1979 by USA. Lakshadweep & Andaman have OTEC sources. USA is largest.

* Wave Energy : ~~in~~ Thiruvananthapuram in Kerala is largest in India and 60,000 MW is capacity. Turkey is the largest in the world.

Geothermal Energy : It is the easiest of heat produced by Earth. And USA is highest producer. Manikaran in H.P. and Puga valley in Ladakh are the largest producer in India.

Forest Resources :

- * India's Forest ~~as~~ cover is 17 lakh, 13, 789 Sq.Km as per reports in 2022. This is total of ~~28~~ 21.72 % of India's land area. Madhya Pradesh (84.53%) is the largest cover, followed by Arunachal Pradesh.
- In the year 21-22, India has seen Maximum growth of 2261 sq km forest.
- * Russia is the largest Forest cover area. And, India is at tenth place.
- * Maximum growth is found In Andhra Pradesh in India.

- * USA has highest place of wood cover forest.
- * Tree density is formula to measure the wood cover of a forest. It is ~~length~~ between distance two growing trees.
- * 90% of forest produces in India used for commercial ~~use~~ purposes.
- * Coniferous trees produces soft wood and Monsoon area trees produces hard wood.
- * 70% of hard wood used for fuels. and 30% used for Industrial purpose.
- * 70% of soft wood used for Industrial purpose and 30% used for fuels.

- * Timbers are mainly used for domestic purpose and Jammu & Kashmir is highest producer.
- * Karnataka is highest producer for fuel wood.
- * Bamboo is most important tree. India is the 2nd largest producer. And India, Assam is the largest producer.
- * China is the largest producer of Bamboo in the world.

Hydro electricity

- * China is the largest producer and South America is the highest consumer (75%).

Food Resources :

It refers to which gives us energy and helps in the growth of physiological needs of a body.

~~Anna pratha / over grazing~~ is one of the most import food products in india.

In Princeton it refers to anything that is old in nature and have hunting & gathering system.

In Jharkhand, Bihar communities do monkey catching.

USA, France, Netherland are the highest import.

Germany, USA, Japan are

the largest f. exporters.

1970 - 1971 - 1972

1st & 2nd quarter

1st & 2nd quarter

1st & 2nd quarter

~~1st & 2nd quarter~~

1st & 2nd quarter

Ecosystem

- * Interaction between Biotic and Abiotic Organisms.
- * The word Oikos means surroundings, given by the Botanist, A.G.Tansley in 1935.
- * Structure of ecosystems is divided into two types (Abiotic):
 - i) physical (moisture, wind, solar radiation)
 - ii) chemical (Minerals, gases)
- + Biotic:
 - i) Producers, ii) consumers.
 - iii) decomposers.

* Types of Ecosystems:

- i) Natural ;
 - a) Forest
 - b) Grasslands
 - c) Desert

will come under Terrestrial.

Grasslands:

- a) Taiga
(large fields)
- b) Tundra
(snowy)
(yearly snowfall)

ii) Aquatic

- a) Lentic
- b) Lotic

2) Man made

* Functions of Ecosystems:

- i) It supports the life system.
- ii) Energy Cycle.
- iii) Nutrient Cycle.

i) Ecology - Given by Arnest which means study of ecosystem.

objectives for study of ecology:

i) To understand that how the environment factors influence the biotic & Abiotic factors.

ii) To understand the relationship between environment and biotic and Abiotic factors.

iii) To understand the outcome of the relationship

→ Ecoscape: Study of a particular landscape.

* Escape refers to particularly
geographical area both
land and water.

* Ectone: It is ~~the~~
differences between the
ecosystems. This word given
by Alfred Wallace in 1862
to ecosystem.

* Features of Ecology:

- i) Diversity
- ii) Ecological Succession.

Green House Effect / Ozone Layer Depletion

Study of

~~the~~ X₃

the

Given

in 1859

system

~~by~~

Lord

Bod

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* chlorine is more harmful than Bromine for ozone.

chlorine:

- 1) chlorofluoro carbons (CFC_5)
- 2) carbon tetrachlorides.
- 3) Hydrofluoro carbon.
- 4) Methyl chloroform.

Bromine:

- 1) Halon.
- 2) Methyl Bromide.
- 3) Hydro Bromofluoro carbons.

Montreal Protocol in
the year 1987 this is
the 1st and the largest
convention held to protect
ozone layer.

Skin Cancer is major disease
caused by depletion of ozone layer.

Man-made things causes O.D.

1) CFC's - AC, Fridgo's, Aerosols.

Natural causes:

1) Sun Spots. These will emits
harmful gases.

2) Stratospheric wind.

3) Nitrogen: Nitrates, Ammonia,
, caffeine.

* Fire extinguisher can cause incense in the Carbon TetraChloride.

* How to Limit Ozone Depletion?

- 1) Limiting using of ODS.
- 2) Using the Eco-Friendly options.
- 3) Less use of Fertilisers and ~~P~~ Pesticides.
- 4) Less use of Nitrates.

Green House Effect

- * Green House creates warmth
→ Global warming → climate change.
- * Natural Greenhouse Gases:
- ;) Carbon dioxide.
 - ;) Nitrous oxide.

iii) Methane

iv) Water vapour

Terrestrial radiation - The radiation that creates heating of the Earth.

This causes the waves.

Blue wave - short wave.

Red wave - long wave.
(Infrared waves)

Man-made Green House Process:

i) Passive - House of Glass,
Because can absorb heat.

ii) Active - Not ^{much} Sunlight,

Mechanical way of Heating
is used to heat by using
glass.

* Increasing the Green House Gas

- 1) Burning of fossil fuels - CO_2
- 2) Fertilisers, Pesticides - Methane
- 3) Fossil fuels, Fertilisers - Nitrous Oxide
- 4) CFC's

Effects of acid rain will
majorly affect western Canada.

EPA - Environmental Protection Agency

It says that a acid rain
is a broad term that includes
any type of precipitation
that contains acidic compounds
such as sulphuric Acid, Nitric Acid.

Natural causes for Acid rains;
volcanoes, lightning, Thunderstorms.

pH of water = 7

pH of Rainfall = 5.7

Rainfall having pH less than
pH of 5.7 is considered
as Acid rain.



- * In 1970 studied said that weak acid rains have positive impacts.
- * 1st acid rain was happened at 65.5 my ago in Triassic Period.
- * Speed of jet stream on Earth is 350 kmph.
- * Two types of Acid rains:
 - i) Wet Deposition. (water body with caries)
 - ii) Dry Deposition.
- * Common Acid rain having 4.2 pH level.

- * NADP - National Atmospheric Deposition Program
 - * NTN - National Trends Network
will measure wet deposition.
 - * 250 measuring stations
for wet deposition.
-
- * CASTNET - Clean Air Status and Trends Network.
has 90 stations for dry deposition.
 - * Long term Monitoring
has aquatic species.

Environmental Ethics

ethics :

* Three types of

i) Western (Europe & western)

ii) Sinicatic (Chinese, Japanese, Korea)

iii) Indian (Hinduism, Sanism, Buddhism)

* Western: Humans are superior and can do anything.

* Sinicatic: Beautiful & Perfect.

* Indian: Nature Worship.

* Aristotle - Western.

* Domination - Western.

Modification - Sinocentric.

Worshipping - Indian.

* Indian - Natural Determinism.

* Western - Possibilism.

* Sinocentric -
 ↗ Nco-determinism
 or
 Stop-Go-determinism

Given by Griffith Taylor.

* Anthropocentric - Western.

* Stewardship - Indian.

* Eco-Pessimism -

* ~~Possibilism~~ →

* Eco - Feminism : Colonization

- i) Women.
- ii) Foreign People.
- iii) Their Land & Nature.

* Biocentrism : Given by Aldo Leopold.

→ Equity . Environmental

* Three types of InEquity:

- i) Procedural. (Industrialization)
- ii) Geographical InEquity.
- iii) Social InEquity. (Colonial - peripheral theory) Given

by Tzed Man.