Chapter No- 02

Natural Resources and Associated Problems

Natural Resources

- Resources – Sources of supply
- Definition – All means satisfying the human needs in time and place .

OR

- The environmental factors which fulfill the needs of human being and improve the lifestyle are called as Natural Resources .

OR

- The life on planet Earth which depends upon variety of goods and service provided by the nature.

Types of Natural Resources

A) Renewable / Reversible / Non-Exhaustible Resources-

e.g.- Solar, Wind ,Tidal , Hydal ,Geothermal , Biomass, Forest ,Wildlife etc.

B)Non- Renewable / Irreversible / Exhaustible –

e.g.- Fossil fuel like Coal , Petroleum products Minerals and Metals etc.

Natural Resources

- Forest Resources
- Water Resources
- Mineral Resources
- Food Resources
- Energy Resources
- Land Resources

Forest Resources

- Uses of Forest Resources
- A) Commercial use –
- B) Ecological use –

a) Production of oxygen
b) Reduce global warming
c) Wildlife Habitat
d) Regulation of Hydrological Cycle
e) Soil conservation
f) Pollution Moderators




Deforestation- associated problem








Causes of Deforestation-

1) Shifting Cultivation.

2)Fuel Requirement

3) Raw materials for industries

- Packing box industries
- Railway sleepers industries
- Plywood industries
- Furniture industries
- Match Box industries
- Paper and pulp industries
- Textile industries



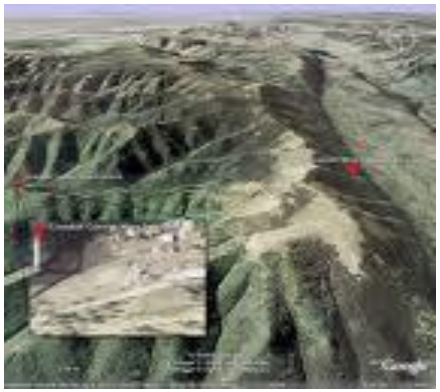




4) Developing activities-

Dam Construction

Hydroelectric Power Project



Mining Activities

Road Construction

Harbor

5) Overgrazing-



- Forest Fires




Effects of Deforestation -

- Loss of Ecosystem
- Loss of Bio-diversity
- Change in Hydrological Cycle
- Soil Erosion
- Landslides
- Increase in Global Warming

Loss of Ecosystem

Loss of Bio-diversity

Soil Erosion

Landslides

Water Resources

- Distribution of Earth surface-
- 70 % Water and 30% Land

- 97.2 % - Ocean
- 2.15 % - Ice sheet
- 0.65 % - Fresh water

  Surface water and Ground water

Uses of water resources

- For Drinking purpose
- For Domestic purpose
- For Generation of Electricity
- For Agriculture Irrigation
- For Industrialization
- For Navigation
- For Transportation

Flood

- Flood is submerging of extensive land area in water for several days in continuation.

or

Flood simply means inundation of extensive land area with water for several days.

Causes of flood:-

- High rainfall

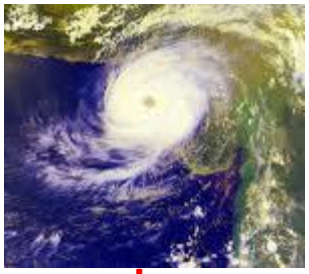
Melting of snow

Deforestation

Urbanization

Siltation

Dam construction



cyclone

Tsunami

Other causes

Effects of floods

- Disruption of service such as break down the communication system
- Disruption of rail track and roads
- Health impact such as famine and various diseases
- Loss of forest , soil erosion ,Landslides wildlife and loss of ecological balance.
- Loss of life ,cattle's , property etc.
- Loss of Human being

Disruption of rail track

Disruption of roads

Famine & various water born diseases

Loss of forest , soil erosion ,Landslides wildlife and loss of ecological balance Loss of life ,cattle's , property etc.

Control measures of floods-

- A forestation
- Dam construction
- Construction of embankments on the bank of river
- Installation of better warning system
- By hastening the discharge water.
- By diverting the flow of water.
- Public awareness.

Drought

- When annual rainfall is below than normal level or less than evaporation rate ,then drought condition occurred.

Causes of Drought

- Unstable hydrological cycle
- Overuse of water resources
- Deforestation
- Overgrazing

Effects of Drought

- **Scarcity of water**
- **Loss of ecosystem**
- **Loss of Biodiversity**
- **Loss of crops and agriculture sector**
- **Soil erosion**
- **Rehabilitation problems**

Dam –Benefits and Problems

- Benefits-
- It provides water for drinking purpose
- It provides water for Agriculture purpose

- Generation of electricity.
- Navigation

- Fisheries

- To control the flood
- Reduce the famines

Problems-

- Deforestation
- Loss of ecosystem
- Loss of Biodiversity
- Soil erosion and water logging
- Submerging of villages and fertile soil
- Resettlement and rehabilitation problems
- Possibility of Earthquake.

Mineral Resources

Uses of Mineral Resources

- For development of industrial plants & machineries -
- For construction of building, housing
- For generation of electricity .
- Communication System-
- Transportation system-
- Defense equipments –
- Medicinal system –
- In agriculture system –
- Jewellery -

Metal elements	Selected uses
Aluminum	Aircraft , rockets, building material , electrical wiring , packing etc
Chromium	Steel alloys , In textile and tanning Industries
Copper	Alloy material ,gold jewellery ,silverware, brss and bronze , electrical wiring, pipes and cooking vessels
Gold	Ornaments , medical use , electronic use use in aerospace
Silver	Jewellery ,vessel ,photography ,alloy, electronic
Manganese	For making high strength ,heat resistant steel alloy.
Nickel	Coin , alloy ,metal plating.
Iron	Heavy machineries , steel production transportation means
Platinum	Jewellery ,equipments, industrial catalyst
Uranium	Nuclear bomb, electricity,
Lead	Leaded gasoline , car batteries, Paints
Zinc	Brass, electrodes, medicine

Liquid Metal elements	Selected uses
Mercury	Thermometer, dental activities, Electric switches

Non- Metal elements	Selected uses
Phosphorous	Fertilizers, medicines, detergents
Sulphur	Insecticides , rubber Tyres and medicines
Lime stone	Used for concrete , building stone , used in agriculture ,cement industries
Potash	Used as fertilizers

Mineral resources found in India

1)Bihar and Orissa – Iron, Manganese , Copper ,Thorium , Uranium ,Aluminum , Chromium and industrial mineral like mica ,sillimanite ,phosphate and major coal reserve.

2) Madhya Pradesh- Second mineral rich state. Reserve of Iron, Manganese ores ,coal ,limestone and bauxite.

3)Tamilnadu- Deposit of Manganese, Magnesium , Mica limestone and lignite.

4) Karnataka – has all gold deposit of India., good quantity of iron, porcelain clays, chromium ores.

5) Kerala - has huge deposit of heavy mineral sands of limonite , monazite , zircon rutile ,and zinc deposit .as well as uranium , mica ,stellate ,beryllium , and precious gemstones.

6)Gujarat and Assam – have petroleum and coal deposits.

7)West Bengal – Coal resources.

8)Maharashtra - – have petroleum deposits and bauxite deposit

9)Andra Pradesh- Low grade coal ,industrial minerals .

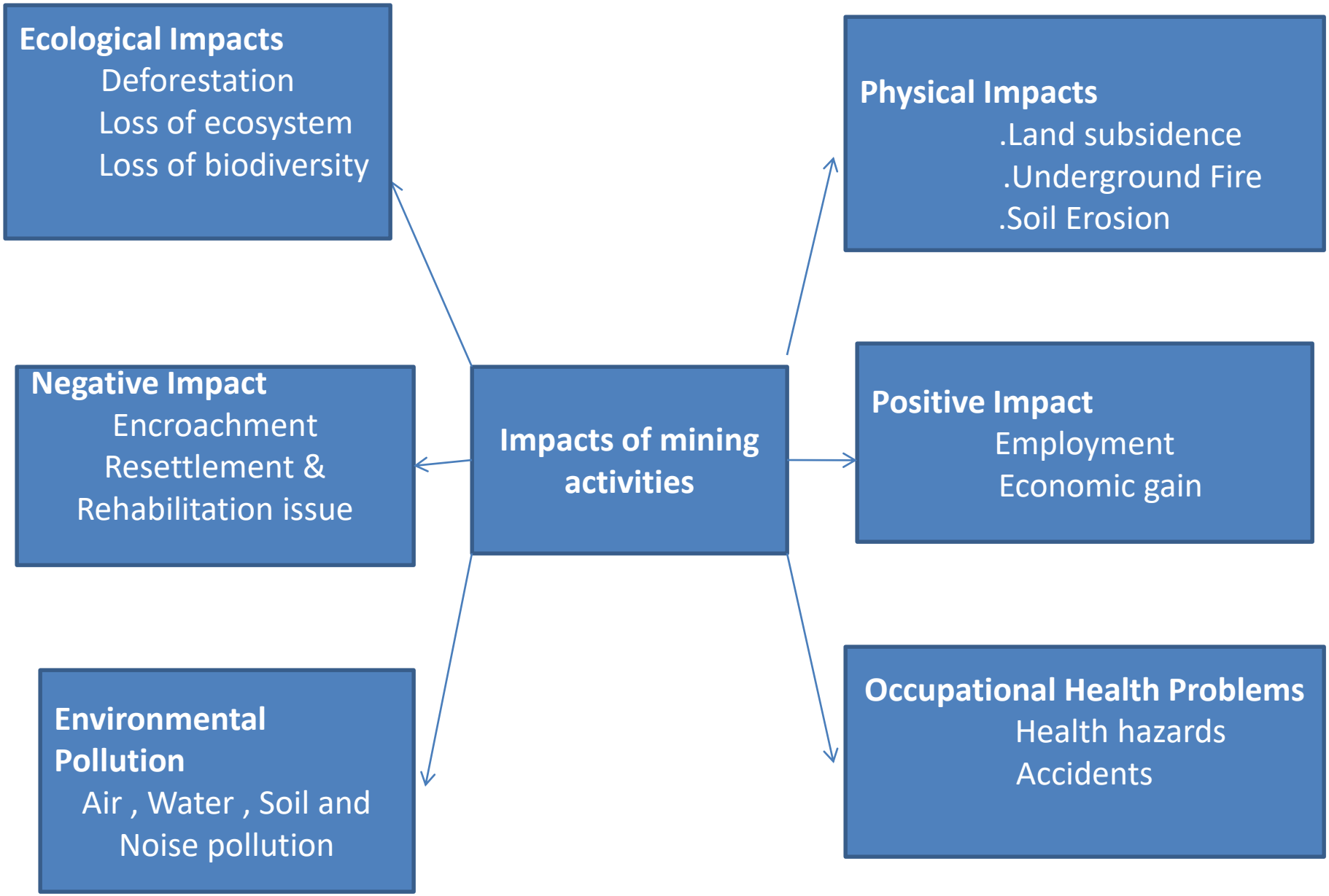
Indian scenario as a case study -

India is the producers of 84 minerals the annual value which is about Rs. 50,000 crore .

At least 5 major mines need a mention here which are known for causing severe Envt. Problems

- Jaduguda uranium mine, Jharkhand- exposing local people to radioactive hazards
- Jharia coal mines , Jharkhand- underground fire leading to land subsidence,and forced displacement of people
- Kudremukh iron ore mine,Karnataka –causing river pollutionand threat to biodiversity
- East cost bauxite mine, Karnataka – Land encroachment and issues of rehabilitation
- North eastern Coal Fields, Assam –Very high sulphur cantamination of ground water.

- **Impacts of mining activities on the Environment**


Ecological Impacts
Deforestation
Loss of ecosystem
Loss of biodiversity
Physical Impacts
.Land subsidence
.Underground Fire
.Soil Erosion
Negative Impact
Encroachment
Resettlement &
Rehabilitation issue
Impacts of mining activities
Positive Impact
Employment
Economic gain
Environmental Pollution
Air , Water , Soil and
Noise pollution
Occupational Health Problems
Health hazards
Accidents

Food Resources

Fruits

Food grains

Vegetables

Milk

Meat


http://pictures.nicolas.delorme.org

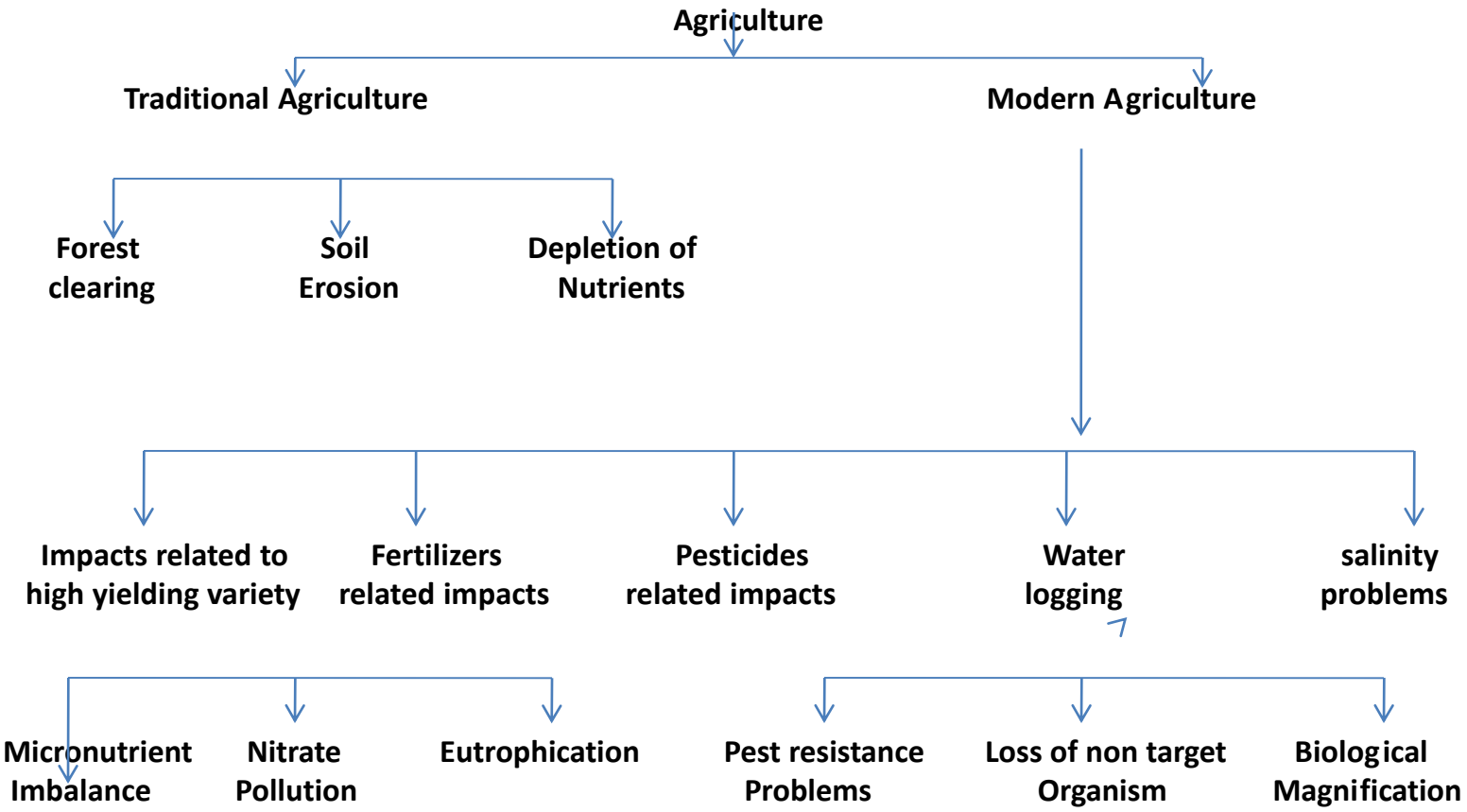
Impact of Overgrazing and Agriculture

Impact of Overgrazing

Overgrazing

- **Soil Erosion**
- **Land Degradation**
- **Loss of Useful species**

Impact of Agriculture



Traditional Agriculture

- Big Plots
- Use of simple wooden agriculture Implements.
- Use of Traditional seeds
- Use of Organic fertilizers and pesticides.
- Use of traditional irrigation system
- Low production
- No any side effects on Environment.

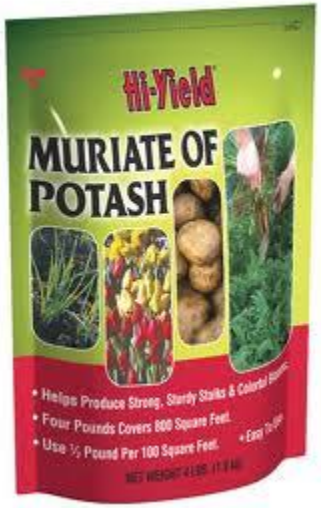
- Forest clearing
- Soil erosion
- Depletion of nutrients

Modern Agriculture

- Small Plots
- Use of modern agriculture Implements.
- Use of hybrid seeds
- Use of Chemical fertilizers and pesticides.
- Use of modern irrigation system
- More production
- More side effects on Environment.


IFFCO
INDIAN FARMERS FERTILISER
COOPERATIVE LIMITED AONLA


硫 铵
Tradenote.net
含氮量≥20%
净 重 50kg
滕州市瑞得丰精细化工有限公司
电话：0632-2727896 2727868


Hi-Yield
MURIATE OF POTASH
• Helps Produce Strong, Sturdy Stalks & Colorful Blooms
• Four Pounds Covers 800 Square Feet.
• Use ½ Pound Per 100 Square Feet.


Safer
Flower Garden
INSECTICIDAL SOAP
Thuricide
OCTAGON
COLGATE'S
OCTAGON
SOAP

Eutrophication

Energy Resources

Types of Energy Resources

A) Renewable / Reversible / Non-Exhaustible Energy Resources-

e.g.- Solar, Wind ,Tidal , Hydal ,Geothermal , Biomass, Forest ,Wildlife etc.

B)Non- Renewable / Irreversible / Exhaustible Energy Resources–

e.g.- Fossil fuel like Coal , Petroleum products Minerals and Metals etc.

Solar Energy

Solar calculators

Solar Lamp

Solar water heater

solar watch

solar street light

TV

Radio

Solar cooker

Wind energy

Wind mill

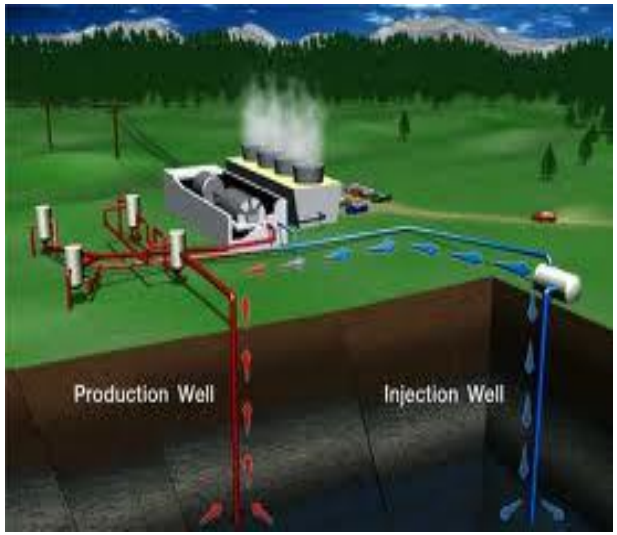
Wind farms

Hydro power

Tidal Energy

Biomass energy

Geothermal energy



GEOTHERMAL ENERGY ASSOCIATION

Land Resources

- Land use categories in India:-

Sr.No.	Land use categories	Area in million ha.
01	Cultivated	142
02	Forest	67
03	Non agriculture	20
04	Barren and pasture	55
05	fallow	25

Importance of soil resources

- From which we can grow diff. type of food ,fooder ,medicine and drugs.
- It provides physical strength to crops
- It provides nutrients to the crops
- It act as habitat of microorganisms
- It has high water holding capacity
- It has high infiltration rate
- It maintain the proper pH level.

Land degradation

- Soil erosion

Definition - The movement of top soil ,especially surface litter from one place to another place

OR

The removal of soil at greater rate than its formation rate ,due to natural agencies like high wind speed and high rainfall.

Causes of Soil erosion

- High wind speed
- high rainfall.
- Deforestation
- Overgrazing
- Various human development activities

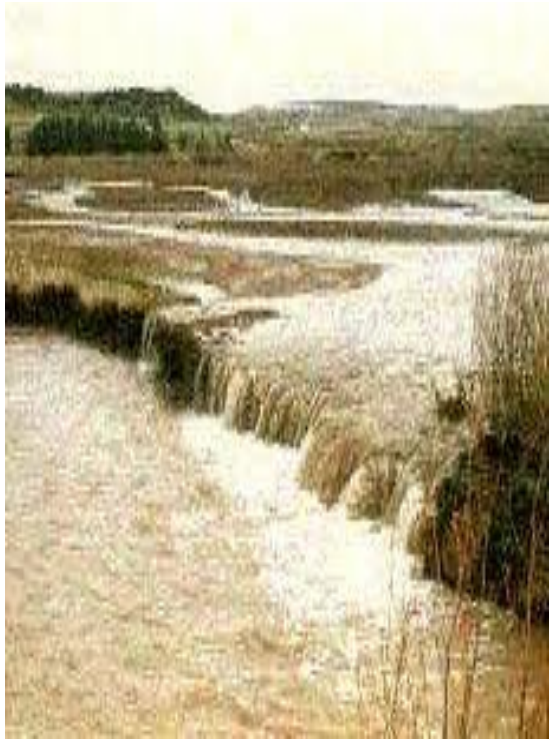
Types of soil erosion

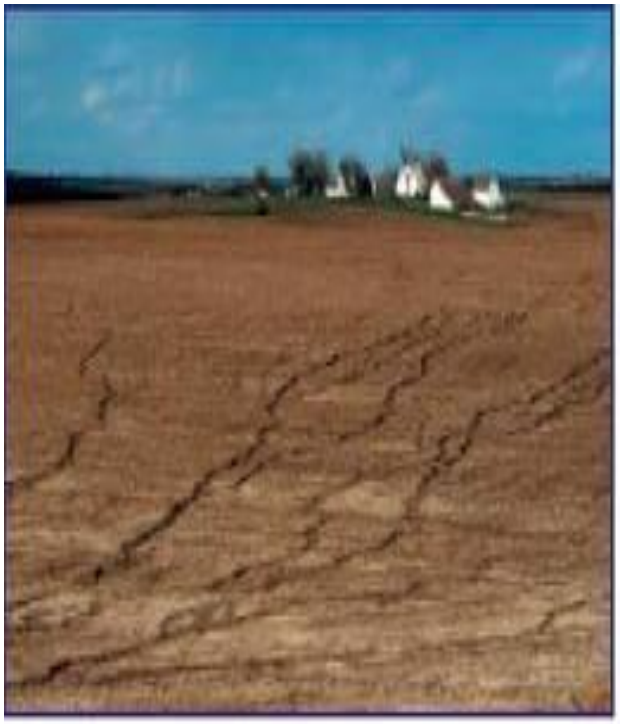
- Wind erosion



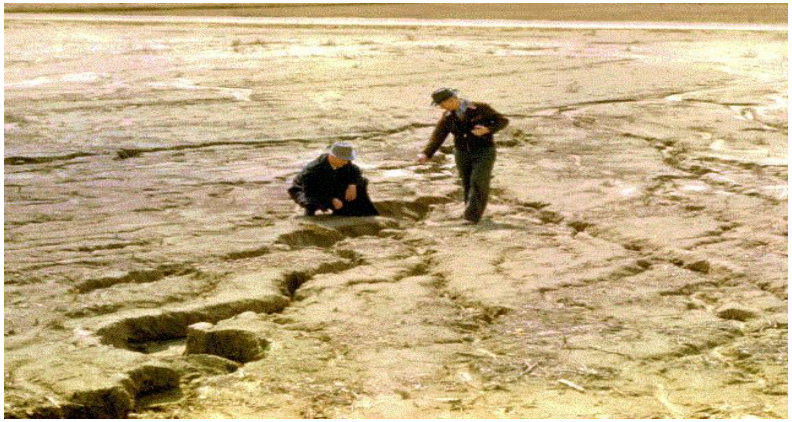
- This type of wind erosion is effective in some part Rajasthan ,Haryana ,MP and some part of Marathawada in Maharashtra.

- Sheet erosion





Rill erosion



Gully erosion

Effects of soil erosion

- Reduce the soil fertility
- Reduce the crop productivity
- Decline the soil depth.
- Decrease the recycling of organic matter
- Decrease the infiltration rate of soil.
- Decrease the water holding capacity of soil.
- Loss of useful microorganisms
- Loss of organic material.
- Decrease the drainage network.
- Siltation of lake or reservoirs

Control measures of soil erosion -

- Developments of green belts .
- Proper use of land resources
- Proper use of Chemical fertilizers and pesticides
- Prohibition on shifting cultivation
- Avoid deforestation
- Avoid Overgrazing
- Crop rotation for better soil improvement.
- Contour farming.
- Flood control measures
- Reclamation of waste land.

Desertification

- Definition :- It is gradually process of land degradation where the conversion of productive land in to unproductive land.

Causes of Desertification

- Deforestation
- Overgrazing
- Unstable hydrological cycle.
- Urbanization
- Industrialization
- Various developmental activities
- Overuse and misuse of water resources.

Effects of Desertification

- **Loss of lives**
- **Loss of crops**
- **Scarcity of water**
- **Loss of ecosystem**
- **Loss of Biodiversity**
- **Loss of crops and agriculture sector**
- **Soil erosion**
- **Rehabilitation problems**

Control of Desertification

- Proper use of land resources
- Plant more trees
- Avoid deforestation
- Avoid overgrazing
- Avoid misuse or overuse of water resources
- Public awareness.

Role of individual in conservation of Natural Resources

- Avoid misuse or overuse of natural resources
- Developments of green belts
- Avoid deforestation
- Avoid Overgrazing
- Rain water harvesting and watershed management.
- Reuse and recycle of waste water
- Use modern irrigation system
- Save electricity
- Use renewable energy resources
- Use more public transportation
- Avoid misuse or overuse of chemical fertilizers and pesticides.
- Do not waste the food resources
- Public awareness.

Equitable use of resources for sustainable lifestyle-

- sustainable Development - The development that meets the needs of present generation without compromising the ability of future generation to meet their own need.

Sr.No.	Category	MDS,s	LDC,s
01	Total population	22%	78 %
02	Total consumption of NR.	88 %	12%
03	Total consumption of Energy	73 %	27 %
04	Environmental Pollution	More	Less
05	Countries like	USA , Canada , UK, Japan ,Australia etc	India China , Pakistan , Nepal etc

- Save the Earth
- Save the Natural Resources.