



Natural Resources

19 November 2022

LSRC/EVS/UNIT II/ DN SARKAR 2017-18

WHAT IS RESOURCE?

- Any natural material that is used by humans.
- A **resource** is a source or supply from which benefit is produced.

DEFINITION

- Economist Erich W. Zimmermann stated in the 1930s, "Resources are not; they become." Zimmermann was asserting that resources are not fixed things that merely exist, but that their meaning and value emerge as humans appraise their worth and develop the technical and scientific knowledge to transform them into useful commodities

Contd.....

- Sources of human satisfaction, health or strength, labour, entrepreneur skills, investment funds, fixed capital assets, technology and cultural and physical attributes may all be referred to as
- Resources.

- Brian Goodall (1987), defined resource as ***“something material or abstract that can be used to satisfy some human want or deficiency.*”**

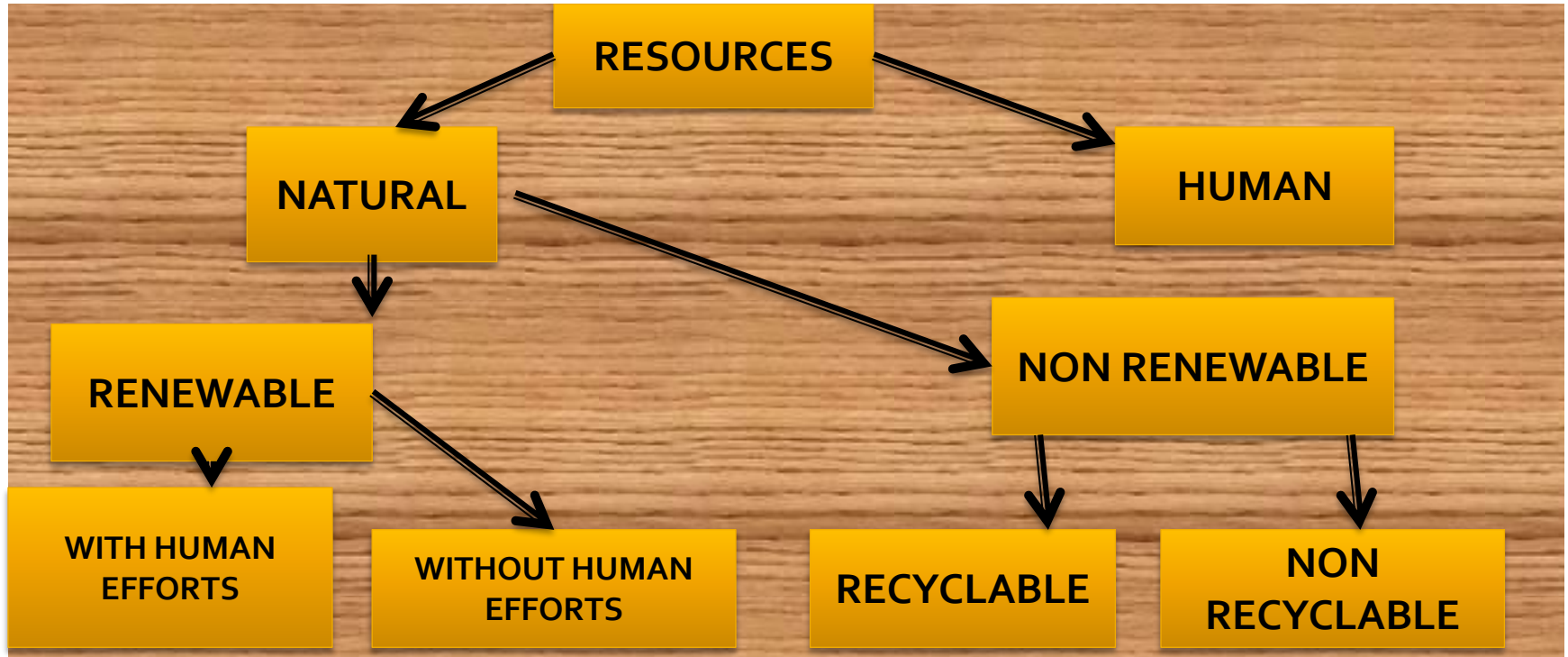
WHAT IS NATURAL RESOURCE?

- **Natural resources** occur naturally within environment that exist relatively undisturbed by humanity, in a natural form. A natural resource is often characterized by amounts of biodiversity and geo-diversity existent in various ecosystems.

Contd...

- **Natural Resource** - Any natural material that is used by humans **or** Resources that the Earth provides for you. For example coal, oil, forest etc.

TYPES OF RESOURCES



RENEWABLE RESOURCES AND NONRENEWABLE RESOURCES

■ RENEWABLE RESOURCES

A Natural Resource that can be replaced faster or at the same rate at which the resource is consumed.

■ EX: water, wind etc.

● NONRENEWABLE RESOURCES

● A resource that forms at a rate that is much slower than the rate at which the resource is consumed.

● EX: Coal, Petroleum (Oil), Natural Gas

NATURAL RESOURCES ARE ALSO CATEGORIZED BASED ON DISTRIBUTION

- **Ubiquitous Resources** are found everywhere (e.g., air, light, water).
- **Localized Resources** are found only in certain parts of the world (e.g., copper and iron ore, geothermal power).
- On the basis of ownership, resources can be classified as individual, community, national, and international.

WHY COSERVATION?

Conservation of Resources is must to safeguard resources more importantly

NON-RENEWABLE RESOURCES.

With unprecedented increase in population demand and consumption of resources have increased in many folds.

From the FUTURE point of view Resources must be conserved.

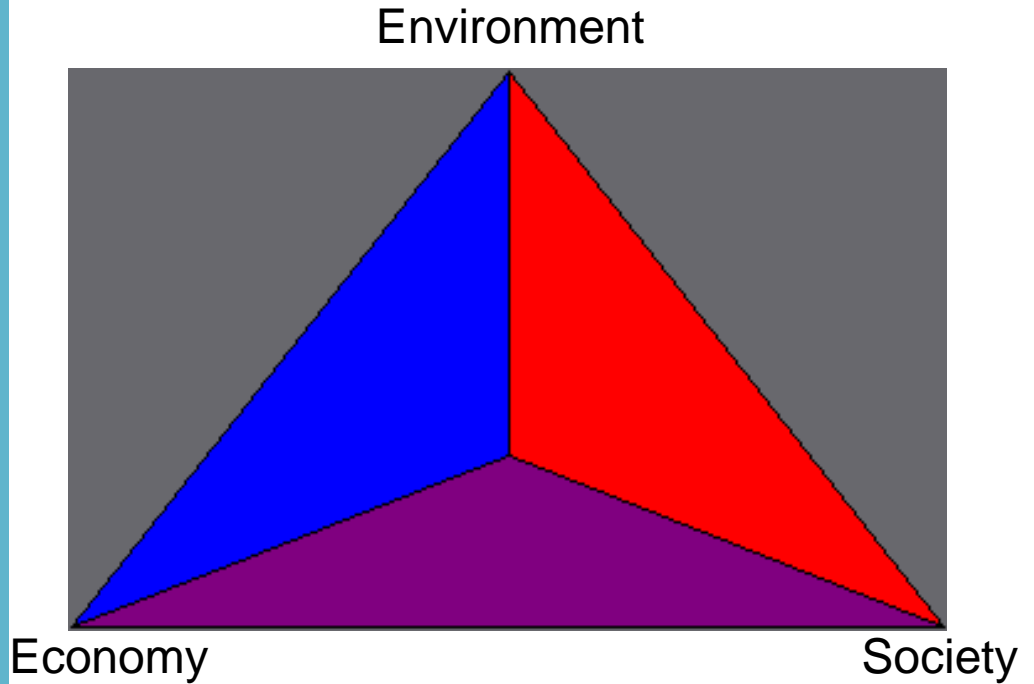


SUSTAINABLE DEVELOPMENT

Development that meets the needs and aspirations of the current generation without compromising the ability to meet those of future generations. (**W**orld **C**ommission on **E**nvironment and **D**evelopment (**WCED**) (1987): *Our Common Future*)

DIMENSIONS OF SUSTAINABLE DEVELOPMENT

Environmental
Economic
Social



WHY SUSTAINIBILITY?

DEPLETION OF EXHAUSTIBLE RESOURCES
METALS and MINERALS.

OVER-USE OF RENEWABLE RESOURCES
FORESTS, WATER and BIOTIC RESOURCES

POLLUTION
AIR, WATER, SOIL

CONSERVING NATURAL RESOURCES

3 R's

Reduce

Reuse

Recycle




WATER



SOME FACTS

- India has 2% of world's land,
- 4% of freshwater,
- 16% of population, and
- 10% of its cattle.
- **Total DEMAND: 970 to 1200 Billion Cubic Metres (BCM)**
- **Availability: 1100 to 1400 BCM.**

 Present water demand is 1122 billion m³ (Surface water 690 billion m³ and groundwater 432 billion m³).

 By 2050, the demand for ground water would increase to 1180 billion m³ i.e. less than availability.

FUTURE WATER SCENARIO

- **Water will be available to 1 person out of 3.**
- **Water quality will become unsafe in majority of the places.**
- **No food to 1/3 of the population.**
- **Many water borne diseases like Fluorosis, Dementia, Diarrhea, etc. will prevail.**
- **There will be fight for water between**
 - **Man to man.**
 - **City to city.**
 - **State to state.**
 - **Country to country**
 - **Possible third world war?**

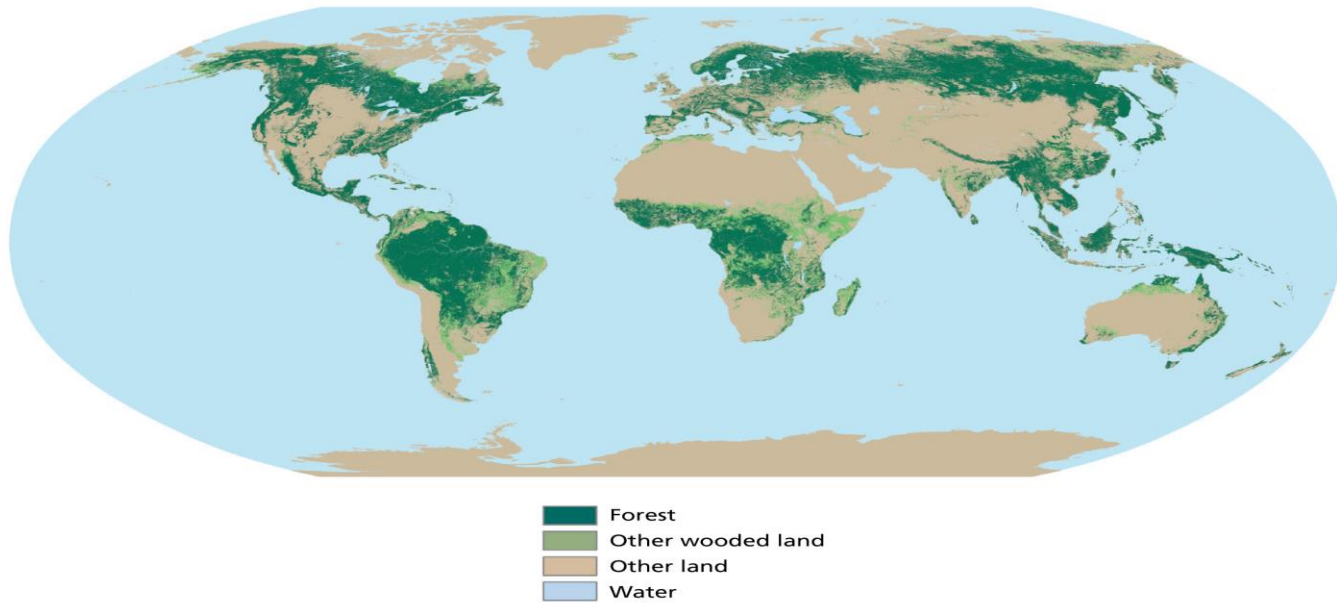
WATER CONSERVATION STRATEGIES

- REDUCING RUNOFF AMOUNT
- DECREASING RUNOFF VELOCITY
- SEDIMENTATION
- EROSION
- WASTE DISPOSAL
- DEFORESTATION IN UPSTREAM REGION
- WATERSHED MANAGEMENT
- INTEGRATED WATER RESOURCES DEVELOPMENT AND MANAGEMENT

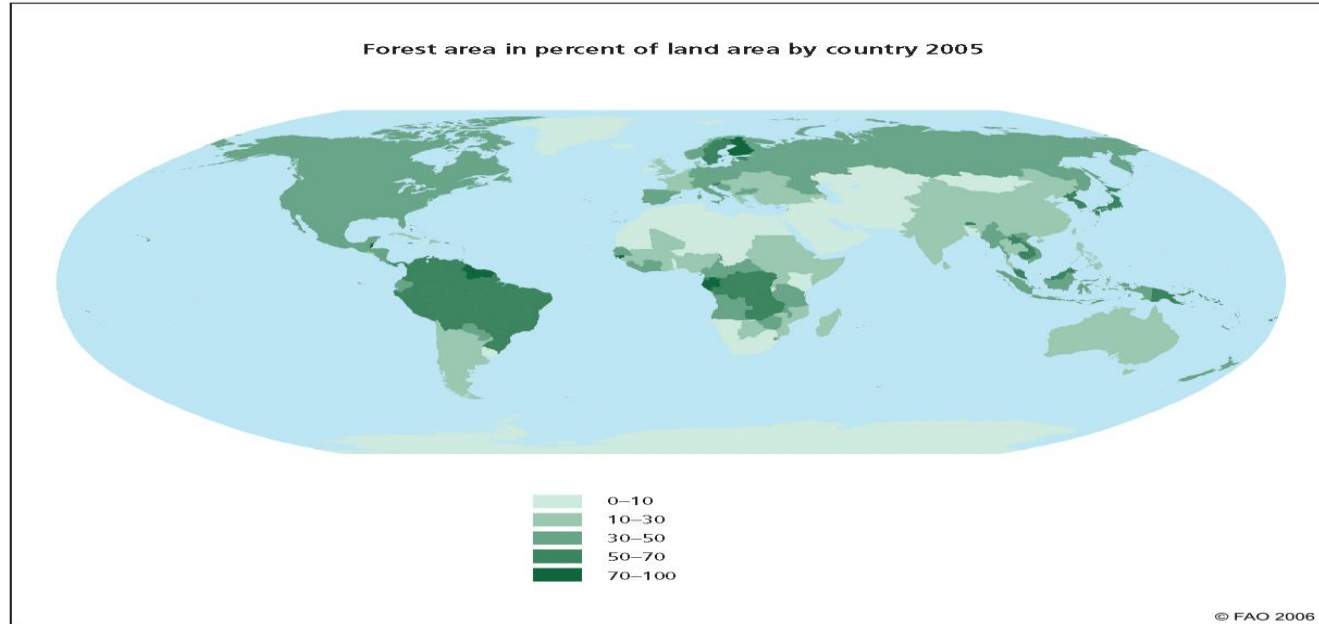
FOREST

- **Definition:** Groups of tree species commonly growing in the same stand because their environmental requirements are similar.
- FOREST types depends mainly on CLIMATE.

The world's forests



FOREST AREA IN PERCENT OF LAND AREA



■ Source : FAO

MAJOR FOREST TYPES

- ***TROPICAL***
- ***SUBTROPICAL***
- ***TEMPERATE***
- ***BOREAL***
- ***POLAR***

TROPICAL

- Found along the equator, tropical forests have consistent warm temperatures throughout the year, but rainfall can be extreme.
- *Tropical dry forests* are found in East Africa and Central America, have long seasons of drought and appear as open woodlands with shrubs and grassy understories.
- Vast tracts of evergreen *tropical rainforest* in the Amazon and Congo basins and in Southeast Asia.
- Tropical forests provide homes to more than half the plant and animal species on Earth as well as many indigenous people.
- Much of the world's tropical forests are being lost because of human development.

TROPICAL FOREST



2. Subtropical

- Scatteredly located in north and south of the tropics (Africa, Asia, Australia, Mexico, South America, and the southern United States).
- Oak, eucalyptus, and pine are typical trees.
- Much of the world's subtropical forests have been converted to grazing lands, agricultural uses, or plantations, but patches of native forests remain in national parks and wildlife preserves.

SUB TROPICAL FOREST



3. Temperate

- The temperate zone is the region between the Tropic of Cancer and the Arctic Circle, or between the Tropic of Capricorn and the Antarctic Circle.
- Variety of trees including beech, cedar, fir, hemlock, maple, oak and pine.
- Some of the world's largest and oldest trees can be found in temperate forests.

TEMPERATE FOREST



4. Boreal

- A forest area of the northern and mountainous parts of the Northern Hemisphere spreading across Canada, Russia, Scandinavia, and the U.S. state of Alaska.
- Birch, fir, larch, pine, spruce as typical tree species.
- The world's major source of commercial softwood, and global demand for that wood is expected to intensify.
- Russians call their dense conifer forest *taiga*.



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5. Polar

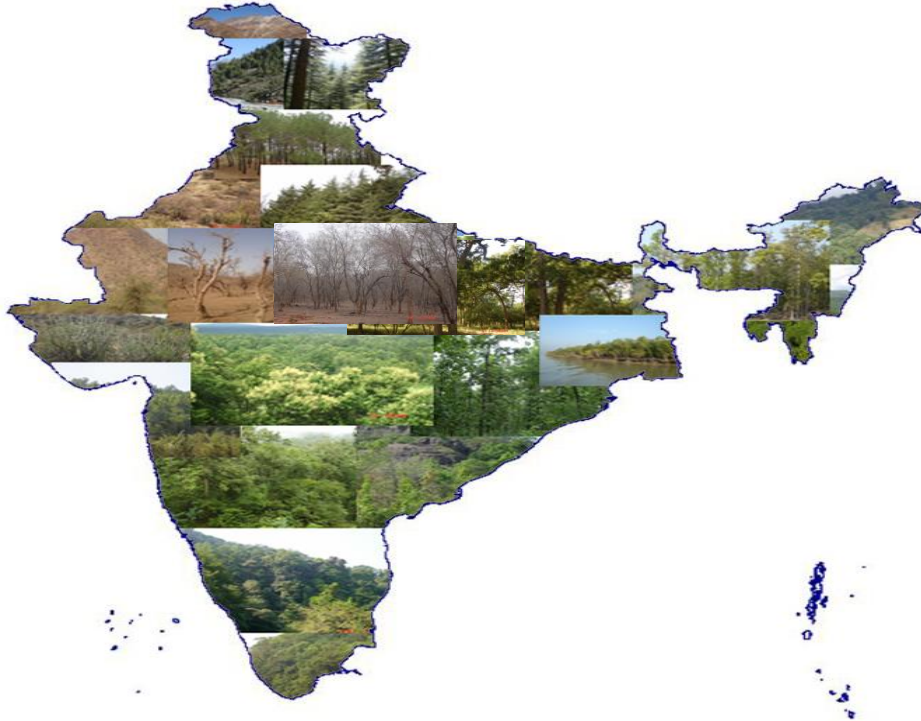
- This is the zones near or within the Arctic or Antarctic circles.
- Polar regions have very little forest land because the climate is too cold for trees to survive.
- The ground remains frozen most of the year, and the soil is covered in ice and snow.
- Because of these conditions, polar forests are often excluded from charts and graphs showing the world's forest types.



INDIA

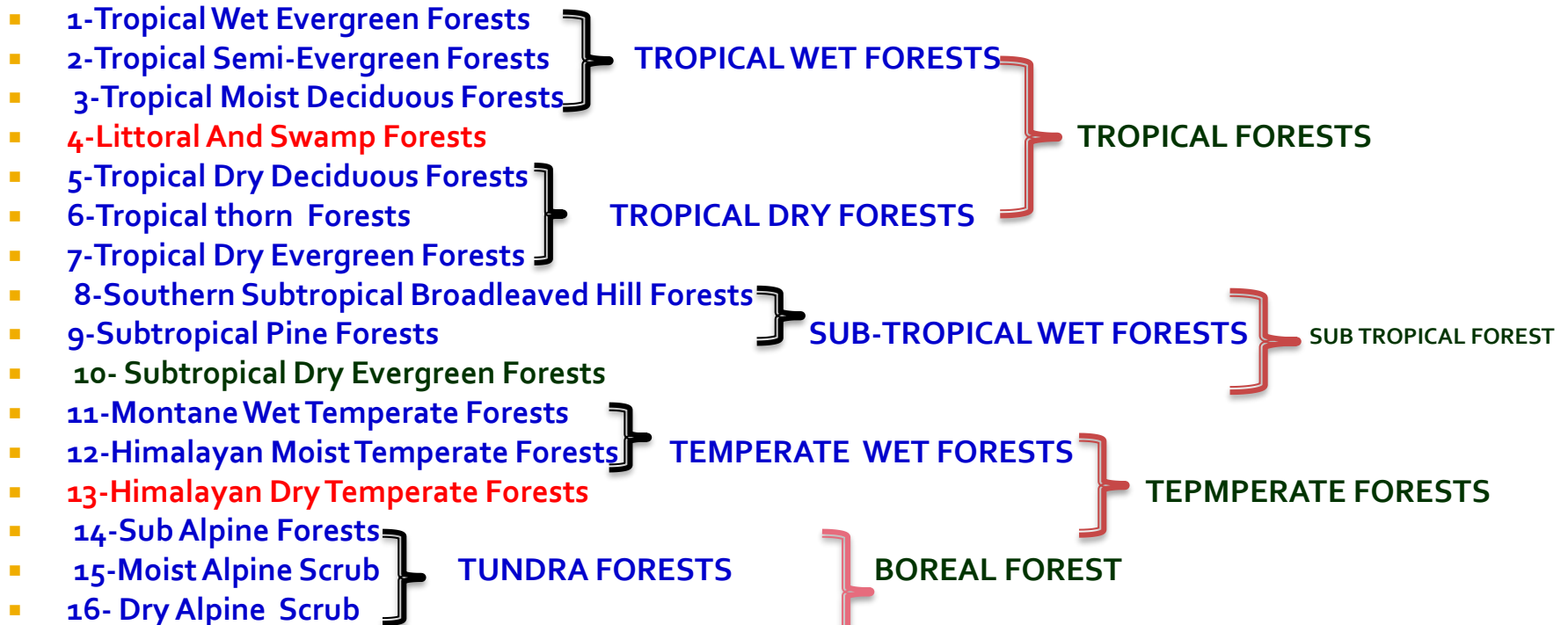
- ❖ India, with only 2.4% of the world's area, is home to over 8% of its biological diversity
- ❖ Its diversity of ecosystems (forests, wetlands, grasslands, marine areas, and deserts) is amongst the world's highest, and harbour over 137,000 species of wildlife (about 47,000 plants, and 90,000 animals)

BIOLOGICAL DIVERSITY



- tropical to temperate
- desert to wettest point on the earth
- vast coast line
- highest mountain peaks
- among largest extent of mangrove forests
- vast alluvial plains
- diverse island ecosystems and marine life

FORSET TYPES- INDIA



NEED FOR COSERVATION

- 1. DEFORESTATION
- 2. FOREST FIRE
- 3. SHIFTING CULTIVATION
- 4. DEVELOPMENTAL PROJECTS



FOREST CONSERVATION AND MANAGEMENT

- Forests provide essential social, environmental and economic value to people around the world.
- The economic benefits gained from extracting raw materials for goods from forests are often at odds with the social and ecological services forests provide.
- Conservation is necessary to ensure forests are able to provide these essential services for generations to come.
- The management of forest resources is also required to meet global demand for goods and employment.

ENERGY

- **MAXIMUM ENERGY IS CONSUMED BY INDUSTRIALISED COUNTRIES OF THE WORLD.**
- **FOSSIL FUELS LIKE COAL, OIL AND NATURAL GAS ARE BURNT IN POWER STATIONS, INDUSTRIES , HOMES AND VEHICLES TO EXTRACT ENERGY.**
- **THESE FOSSIL FUELS ARE NON-RENEWABLE RESOURCES.**
- **THEY CANNOT BE REPLACED.**

PROBLEMS WITH BURNING FOSSIL FUELS

- EMISSION OF HUGE AMOUNTS OF **CARBON DIOXIDE** INTO THE ATMOSPHERE
- CARBON DIOXIDE CAUSES **GLOBAL WARMING** OR THE **GREENHOUSE EFFECT**.

PROBLEMS OF GLOBAL WARMING

POSSIBLE PROBLEMS.

- INCREASE OR DECREASE IN TEMPERATURES.
- OCCURRENCES OF FLOODS.
- SUBMERGENCE OF LAND.
- CHANGE IN WEATHER AND CLIMATE.
- CHANGE IN CROPPING PATTERN.
- SPREAD OF DISEASES.

PROBLEMS

- POWER STATIONS USING COAL EMIT MAINLY **SULPHUR DIOXIDE** GAS WHICH LEADS TO **ACID RAINS** IN CERTAIN PARTS OF THE WORLD.
- **ACID RAINS DAMAGE FORESTS , CAUSE INJURIES TO HUMAN AND ANIMAL HEALTH.**

POLLUTION

- BESIDE ALL THESE PROBLEMS POLLUTION TO AIR AND WATER IS INEVITABLE.
- POLLUTION CAUSES VARIOUS HEALTH PROBLEMS TO PEOPLE OF ALL AGE GROUPS.

WHAT CAN BE DONE?

- USE ALTERNATIVE SOURCES OF ENERGY
- WIND ENERGY
- HYDROELECTRIC ENERGY
- SOLAR ENERGY
- TIDAL ENERGY
- NUCLEAR ENERGY
- GEOTHERMAL ENERGY
- BIOMASS ENERGY



- **MINIMISE** USE OF CONVENTIONAL ENERGY SOURCES AND **MAXIMISE** **NON- CONVENTIONAL ENERGY SOURCES** TO SAVE THE ENVIRONMENT.

CONVENTIONAL AND NON CONVENTIONAL SOURCES OF ENERGY.

- **CONVENTIONAL I.E. TRADITIONAL SOURCES** of ENERGY are coal, oil, petroleum natural gas or fossil fuels are the conventional sources for Thermal power in India.
- Water is the conventional source for Hydel Power. Uranium is the source of nuclear energy.
- **NON CONVENTIONAL SOURCES** are solar, wind, geothermal, bio gas and tidal energy.

CONVENTIONAL vs NON CONVENTIONAL SOURCES OF ENERGY.

- Non conventional energy sources are free, clean ,pollution free and non-exhaustible. Whereas conventional energy sources are expensive, creates pollution and exhaustible. But unfortunately, both nuclear and coal energy pose serious environmental problems. The combustion of coal may upset the planet's heat balance.

The production of carbon dioxide and sulphur dioxide may adversely affect the ability of the planet to produce food for its people. Coal is also a valuable petro-chemical and from long term point of view it is undesirable to burn coal for generation of electricity. The major difficulty with nuclear energy is waste disposal and accidental leakage (*e.g.* leakage at Chernobyl nuclear power plant).

Hence all countries have decided to shift gradually from conventional energy sources and develop and harness non-conventional energy sources in the larger interest of the environment.