



1. What is a Resource?

RESOURCE → Everything available in our environment which can be used to satisfy our needs, provided it is **technologically accessible**, **economically feasible** and **culturally acceptable**.

How are Resources Created?

- Resources are a function of **human activities**; humans interact with nature through technology.
- Human beings themselves are an important **resource** - they create resources through knowledge, skills and technology.
- Substances become resources only when their **utility (Function)** changes value into a resource.

2. Classification of Resources

On the Basis of Origin

Type	Meaning	Examples
Biotic	Obtained from biosphere; have life	Human beings, flora, fauna, fisheries, livestock
Abiotic	Composed of non-living things	Rocks, metals, water

On the Basis of Exhaustibility

Type	Meaning	Examples
Renewable	Can be renewed/replenished physically, biologically or through other processes	Solar & wind energy, water, forests
Non-Renewable	Take long geological time periods for formation; finite stock	Fossil fuels (coal, petroleum)

On the Basis of Ownership

- ① **Individual Resources** — owned privately (land, plots, houses).
- ② **Community Owned Resources** — accessible to all (parks, grazing grounds, burial grounds).
- ③ **National Resources** — belong to the nation (resources within political boundaries, territorial water up to 12 nautical miles).
- ④ **International Resources** — regulated by international institutions (resources beyond 200 nautical miles of EEZ = Open Ocean).

On the Basis of Status of Development

Type	Meaning
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Potential Resources	Found in a region but not yet utilised (e.g. wind & solar energy in Rajasthan and Gujarat)
Developed Resources	Surveyed, their quality & quantity determined for utilisation
Stock	Materials available but lack technology to use them
Reserves	Subset of stock which can be put into use with existing technology but not used yet



3. Need for Resource Planning

- Resources are vital but unevenly distributed across India.
- Some regions are rich in certain resources but deficient in others; some regions are self-sufficient.

RESOURCE PLANNING → **Widely accepted strategy** for judicious/balanced utilisation of resources at national, state, regional and local levels.

Resource Planning Involves

- ① Identification & inventory of resources - surveying, mapping, qualitative & quantitative estimation.
- ② Evolving a planning structure with appropriate **technology, skill and institutional setup**.
- ③ Matching the resource development plans with **overall national development plans**.

- India has diverse resources: river basins of north, mineral & fossil fuels of Chotanagpur plateau, etc.
- Arunachal Pradesh has water but lacks infrastructure; Rajasthan rich in solar/wind but lacks water.
- Without resource planning, equitable distribution and balanced development is not possible.

★ Despite development plans, the benefits have not reached all sections equally — colonial period exploitation also a factor.

4. Conservation of Resources

- Irrational use of resources is causing problems - depletion, degradation and environmental issues.
- **Gandhiji's view**: "There is enough for everybody's need but not for anyone's greed", and resource exploitation for satisfying greed leads to crisis.

Club of Rome (1968)

- Advocated for **resource conservation** for the very first time in a more systematic way.

Gandhian Philosophy of Resource Utilisation

VIEW → Production should occur in **decentralised manner** with use of '**small machines**' run by people in their own villages and homes, to ensure resources are not over-used or exploited for greed.



5. Land Resources

- Land is a vital natural resource - supports natural vegetation, wildlife, human life, economic activities, transport & communication.
- India has great diversity of **land relief features**: mountains, plains, plateaus, hills.

- ① **Mountains** — about 30.7% of total area; ensure perennial flow of rivers, source of water for irrigation/hydropower.
- ② **Plains** — about 43% of total area; provide facilities for agriculture & industry.
- ③ **Plateaus** — about 27% of total area; rich in minerals, fossil fuels & forests.

Land Use Categories

- Land under various activities: forests, agriculture, pastures, fallow lands, etc.
- Land use depends on **physical factors** (topography, climate, soil type) and **human factors** (population density, technology, land capability).

Land Use Pattern in India

Category	Description
Forest	Land under forest cover (target 33% as per National Forest Policy 1952)
Land not available for cultivation	(a) Barren & wasteland (b) Land put to non-agricultural uses (buildings, roads, etc.)
Other uncultivated land (excluding fallow)	(a) Permanent pastures & grazing land (b) Land under misc. tree crops (c) Culturable wasteland (left fallow 5+ years)
Fallow land	(a) Current fallow - left uncultivated for 1 year (b) Other than current fallow - left uncultivated for 1-5 years
Net sown area (NSA)	Area sown actually with crops in a particular year

GROSS CROPPED AREA → Area sown **more than once** in an agricultural year plus net sown area, gives the gross cropped area.



6. Land Degradation & Conservation Measures

→ India has land of varied types and quality, but quality has deteriorated due to natural and human factors.

Natural Factors of Land Degradation

- ① **Wind erosion** in arid/semi-arid areas of Rajasthan.
- ② **Water erosion / flooding** by water in areas of higher rainfall.

Human Factors of Land Degradation

Region	Cause of Degradation
Jharkhand, Odisha, Chhattisgarh, MP	Deforestation due to mining; large scale mining leaves deep scars & debris
Punjab, Haryana, Western UP	Over-irrigation causing water-logging , leading to rise in salinity & alkalinity
Gujarat, Rajasthan, MP, Maharashtra	Overgrazing - one of the main reasons for degradation in these states
Industrial areas	Industrial effluents as waste, dumped on land affecting land quality

Conservation Measures

- ① **Afforestation** & proper management of grazing.
- ② Planting of **shelter belts** of plants, control on overgrazing.
- ③ Stabilisation of sand dunes by growing thorny bushes.
- ④ Proper management of **wastelands**.
- ⑤ Control of mining activities & proper discharge & disposal of industrial effluents and wastes after treatment.



7. Soil as a Resource

SOIL → A **renewable natural resource**; the most important output of complex interactions between climate, relief, original rock and biological activity over a long period of time, and varies from place to place.

→ Soil is a living system; basis for life through provision of nutrients along with water and other minerals.

Classification of Soils

Soil Type	Areas Found	Characteristics
Alluvial Soil	Indo-Gangetic plain, Punjab, Haryana, Rajasthan (deposited by rivers Sutlej, Ganga, Brahmaputra)	Most widely spread & important; rich in potash, phosphoric acid, lime; Khadar (new) & Bhangar (old)
Black Soil	Deccan trap region - Maharashtra, MP, Gujarat, Karnataka (lava flow areas)	Also called regur soil / "black cotton soil"; ideal for cotton; retains moisture, develops deep cracks
Red & Yellow Soil	Eastern & southern Deccan plateau, Odisha, Chhattisgarh	Develops red colour due to diffusion of iron in crystalline rocks; yellow when in hydrated form
Laterite Soil	Karnataka, Kerala, TN, MP, hilly areas of Odisha & Assam	Develops in areas with high temp & heavy rainfall (intense leaching); acidic, not suitable without fertilisers
Arid Soil	Western Rajasthan	Red/brown colour; sandy & saline, lacks humus, contains kankar layer that restricts water infiltration
Forest Soil	Hilly & mountainous areas with sufficient rainforests	Loamy & silty on valley sides, coarse-grained in upper slopes; acidic with low humus on upper slopes

★ Black soil is also known for self-ploughing - it becomes sticky when wet and develops wide cracks when dry.



8. Soil Erosion and Conservation

SOIL EROSION → The denudation of the soil cover and subsequent washing down - a serious problem for agriculture caused by both **natural** and **human** factors.

Causes of Soil Erosion

- ① **Natural Forces** — wind, glacier, water (running water cuts through clayey soils forming gullies).
- ② **Gully erosion** — area is known as **badland topography**; common in Chambal basin (called ravines).
- ③ **Sheet erosion** — water flows as sheet over large areas down a slope.
- ④ **Wind erosion** — soil blown off in arid & semi-arid areas.
- ⑤ **Human Activities** — deforestation, overgrazing, faulty methods of farming.

Methods of Soil Conservation

Method	Description
Contour Ploughing	Ploughing along the contours of a hilly slope to slow water flow down slopes
Terrace Farming	Steps cut on slopes - common in Western & Central Himalayas to control soil erosion
Strip Cropping	Large fields divided into strips; grass strips left to grow between crops to break wind force
Shelter Belts	Planting lines of trees/rows of trees to check wind force - stabilises sand dunes (e.g. western India)

★ Practice in western India has reduced wind erosion considerably through rows of trees called shelter belts.