Natural Resources

1. LAND RESOURCES

Importance

- Base for all economic activities: farming, forestry, mining, industries, settlements, roads, railways, airports, tourism.
- Limited & unevenly distributed → must be managed carefully.

Landforms & their uses

Landform	Uses
Mountains	tourism, water storage (glaciers → rivers), forests, hydro-power
Plateaus	rich in minerals, pasture, good for crops (cotton, millets)
Plains	fertile soils, thick population, agriculture, trade routes

Land degradation (India)

- **Causes**: deforestation, over-grazing, mining, industrial waste, shifting cultivation, over-irrigation (waterlogging/salinity).
- **Extent**: ~30% of India's total land area is degraded.

Conservation of land

- Afforestation & agro-forestry.
- Controlled grazing.
- Proper disposal of industrial waste.
- Terrace farming on slopes.
- Strip cropping, shelter belts.

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2. SOIL RESOURCES

Extra soil types

- **Peaty & Marshy soils** – found in Kerala, Sunderbans; high humus.
- **Saline/Alkaline soils** – Rajasthan, Gujarat, Punjab; reclaimable by gypsum.
- **Forest soils** – slopes of Himalaya & Western Ghats; rich in organic matter.

Soil erosion types

Type	Features	Places
Sheet	Thin layer removed	Gentle slopes

Type	Features	Places
Rill	Small channels	Farms after rain
Gully	Deep cuts	Chambal ravines
Wind	Blows away dry soil	Rajasthan desert
Coastal	Washed by sea	E. coast, Kerala

Conservation (expanded)

- Contour bunding, bench terracing, planting grass along bunds.
- Growing cover crops (legumes) after main crop.
- Avoid over-irrigation to stop salinity.

💧 3. WATER RESOURCES

Surface water (India)

- Major river systems:
    - Himalayan: Ganga, Brahmaputra, Indus.
    - Peninsular: Godavari, Krishna, Kaveri, Narmada, Tapi.
- Lakes: Wular, Chilika, Dal, Pulicat, Sambhar.

Groundwater

- Stored in aquifers; ~60% of irrigation in India uses groundwater.
- Over-extraction → falling water table, arsenic/fluoride contamination.

Water conservation (more)

- **Watershed management** – treat drainage basins as a whole.
- **Check dams & percolation tanks** – slow down runoff, recharge aquifers.
- **Reuse** treated sewage for gardening/industry.
- Promote crops needing less water (millets).

🌳 4. NATURAL VEGETATION (FORESTS)

Functions (detailed)

- Balance O_2 & CO_2, regulate temperature.
- Bind soil, prevent landslides.
- Raw material for paper, rayon, varnish, latex.

- Cultural & religious value (e.g., peepal, banyan).

Threats

- Slash-and-burn (jhum).
- Urban sprawl, over-grazing.
- Forest fires, pests.

Govt efforts

- National Forest Policy (1952, revised 1988) → aim: 33% area under forest.
- Social forestry & farm forestry.
- Van Mahotsav (annual tree planting week).

🐅 5. WILDLIFE RESOURCES

Richness

- ~7.6% of world's mammals, 12% birds, 6% reptiles, 6.2% flowering plants.
- Famous species: tiger, Asiatic lion, elephant, snow leopard, gharial, hornbill.

Threatened species examples

Category	Examples
Critically endangered	Great Indian Bustard, Pygmy hog
Endangered	Snow leopard, Gangetic dolphin
Vulnerable	Indian pangolin, Blackbuck

Conservation projects

- **Project Tiger (1973)** – 53+ tiger reserves.
- **Crocodile Conservation Project** (1975).
- Biosphere reserves: Nilgiri, Nanda Devi, Sunderbans.

⛏️ 6. MINERALS & ENERGY (extra note)

(Often taught with resources)

- **Metallic**: iron, copper, bauxite, gold, manganese.
- **Non-metallic**: limestone, mica, gypsum, salt.
- **Energy minerals**: coal, petroleum, natural gas, uranium.

Conservation: efficient mining, recycling (aluminium, copper), using substitutes, reduce wastage.

🧭 7. CONSERVATION OF NATURAL RESOURCES

- Follow the **3 Rs** → Reduce, Reuse, Recycle.
- Adopt **sustainable development** (meet present needs without harming future).
- Community participation (Joint Forest Management).
- Technology: drip irrigation, solar & wind power instead of fossil fuels.
- Awareness: eco-clubs, campaigns, education.