Chapter – 2: Land, Soil, Water, Natural Vegetation and Wildlife Resources

- Tanzania, Africa – Mamba
  - Gets up early – fetch drinking water – walk a long way
  - Helps mother in house
  - Helps brothers – take care – goats
  - Family owns piece of rocky land
  - Father grows some maize and beans – not enough – feed – entire year
- New Zealand – Peter
  - Returns from school – watch uncle – take care – sheep
  - Sheep yard – wide grassy plain – use latest technology
  - Family runs wool processing factory and grows vegetables by organic farming
- Difference in both stories
  - Quality of land
  - Soil
  - Water
  - Natural vegetation
  - Animals (wildlife)
  - Technology

Land

- Most imp. natural resource
- Covers – 30 % of total area – all parts not habitable
- Uneven distribution of population – land and climate variations
  - Steep slopes, deserts, low-lying areas – sparsely populated
  - Plains, river valleys – suitable agriculture land – densely populated

Land Use

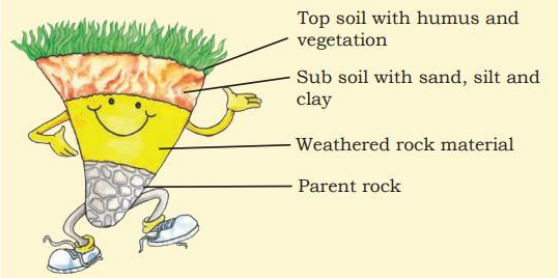
- Different purposes – agriculture, forestry, mining, building houses, roads, industries, etc. – this is commonly called Land Use
- Depend on physical factors –
  - Topography, Soil, Climate, Minerals, Availability of water
  - Population, Technology
- Classify – basis – ownership
  - Private land – individual owner
  - Community land – common uses – collection – fodder, fruits, nuts, medicinal herbs
- People – demands – ever-growing
- Quality is different – different places
- People – encroach – common areas
  - Build – commercial complex / housing complex – urban area
  - Expand – agriculture land – rural area
- Land degradation, landslides, soil erosion, desertification – major threats

Conservation of Land Resource

- Growing population – demands – large scale destruction of forests / arable (cultivated) land
- Further degradation – stopped
- Afforestation, land reclamation, regulated use of fertilizers, check on overgrazing – conserve – land resource

Soil

- Top layer of earth's surface
- Land – decide – soil type
- Made of – organic matter, minerals and weathered rocks
- Right mix – minerals and organic matter – soil fertile
- Soil profile →



Factors of Soil Formation

- Major – parent rock / climate
- Other – topography / organic material / time taken
- Soil
    - Parent Rock
        - Colour, texture, chemical properties, mineral content, permeability
    - Relief
        - Altitude, slope – accumulation (amount)
    - Flora, Fauna and Micro-organism
        - Humus (organic matter) content
    - Time
        - Thickness – soil profile
    - Climate
        - Temperature, rainfall – weathering, humus content

Degradation and Conservation of Soil

- Soil erosion and depletion – major threats
- Human factors – overgrazing, deforestation, overuse of chemical fertilizers
- Natural factors – rain wash, landslide, flood
- Conservation –
    - Mulching

        - Ground between crops – covered – straw – retain moisture
    - Contour barriers
        - Stone, grass, soil – barriers along contours (outer boundary of anything) – trenches (holes) – collect water
    - Rock dam
        - Rocks – piled – slow – water flow – prevents – soil loss
    - Terrace farming
        - Steps on steep slopes – reduce surface run-off (water and soil) – prevents soil erosion
    - Intercropping
        - Different crops – alternate rows – different time – prevent rain wash
    - Contour ploughing
        - Plough – parallel to contours – natural barrier – water
    - Shelter belts
        - Coastal / dry region – rows of tress – protect soil – wind movement

Water

- Vital (imp.) – renewable
- 3/4th earth's surface – water – water (blue) planet
- 3.5 billion years ago – life started in oceans
- Today – oceans – 2/3rd earth's surface
    - Ocean water – saline – not fit – drinking
- Fresh water – 2.7 % – 70 % – glaciers
- 1 % fresh water – fit for human use – ground water, river and lakes, water vapours
- Total volume – constant
- Quantity – vary – evaporation, precipitation, surface run-off – water cycle
- Uses –
    - drinking, washing, production
    - agriculture, industries, making electricity
- Increasing population – demands – shortage – fresh water – water sources – dry or pollution

Water Availability

- Shortage – fresh water – Africa, West Asia, South Asia, western USA, north-west Mexico, South America, Australia
- Countries – temperate zone – water scarcity
- Shortage –
    - consequence of variation in precipitation,
      OR,
    - consequence of over-exploitation and contamination

Conservation of Water Resources

- Water – unlimited – pollution – unfit – drinking

- Untreated sewage, agriculture chemicals, industrial chemicals – major contaminants – nitrates, metals, pesticides
- Chemicals – non-biodegradable
- Control – treat chemicals before – release in water
- Forest, vegetation – slow – surface run-off – increase ground water
- Water harvesting
- Canals – avoid leakage
- Sprinklers – effective irrigation
- Dry region – drip (trickle) irrigation

Natural Vegetation and Wildlife

- Products – jute, canes, bamboo – east and north-east
- Silk – silkworm – mulberry
- Plants – different things – day-to-day life
- Natural vegetation and wildlife – exist – **biosphere**
    - Narrow zone of contact between lithosphere, hydrosphere, atmosphere
- Biosphere – living beings – depend on each other **- ecosystem**
- These are valuable resources
- Plants (natural vegetation) – timber for us, shelter for animals, produce oxygen, prevent soil erosion, shelter belt, fruits, nuts, latex, oil, gum, medicinal plants, paper
- Wildlife – animals, birds, aquatic lifeforms
    - Provide milk, meat, wool, hides (leather)
    - Insects – honey, pollination, decomposers
    - Vulture – scavenger – feed – dead animals – cleanser

Distribution of Natural Vegetation

- Growth – depend – temperature, moisture
- Major groups – forest, grassland, scrubs, tundra
    - Heavy rainfall – huge trees – forests
    - Moisture decrease – size reduce – moderate rainfall – grassland
    - Low rainfall – dry area – thorny shrubs / scrubs – deep roots and waxy leaves – scrubs
    - Polar region – mosses / lichens – tundra
- People increase – more area for crops – less area for forest – need to conserve

Conservation of Natural Vegetation and Wildlife

- Forests – our wealth
- Plants and animals – together – ecosystem
- Change of climate / human interference – loss of natural habitat
- Many species – vulnerable (endangered) – and many – on the verge of extinction
- Deforestation, soil erosion, construction, forest fire, tsunami, landslide – factors – accelerate extinction
- Poaching – major concern – particular species – collection – skins, teeth, horns, bones, feathers

    - Tiger, lion, elephant, rhinoceros, deer, black buck, crocodile, snow leopard, ostrich, peacock
- Natural parks, wildlife sanctuaries, biosphere reserves – protect natural vegetation and wildlife
- Human activities – disturbed – natural balance
- Programs – social forestry / *Vanmahotasava* – regional, communal level
- School children – visit – nature camps / bird watching
- Countries - laws against killing and trading of animals
- International committee – CITES – keeps list – animals and birds – illegal to trade
    - Convention on International Trade in Endangered Species
    - 5000 fauna species and 28000 flora species