



LAND RESOURCES

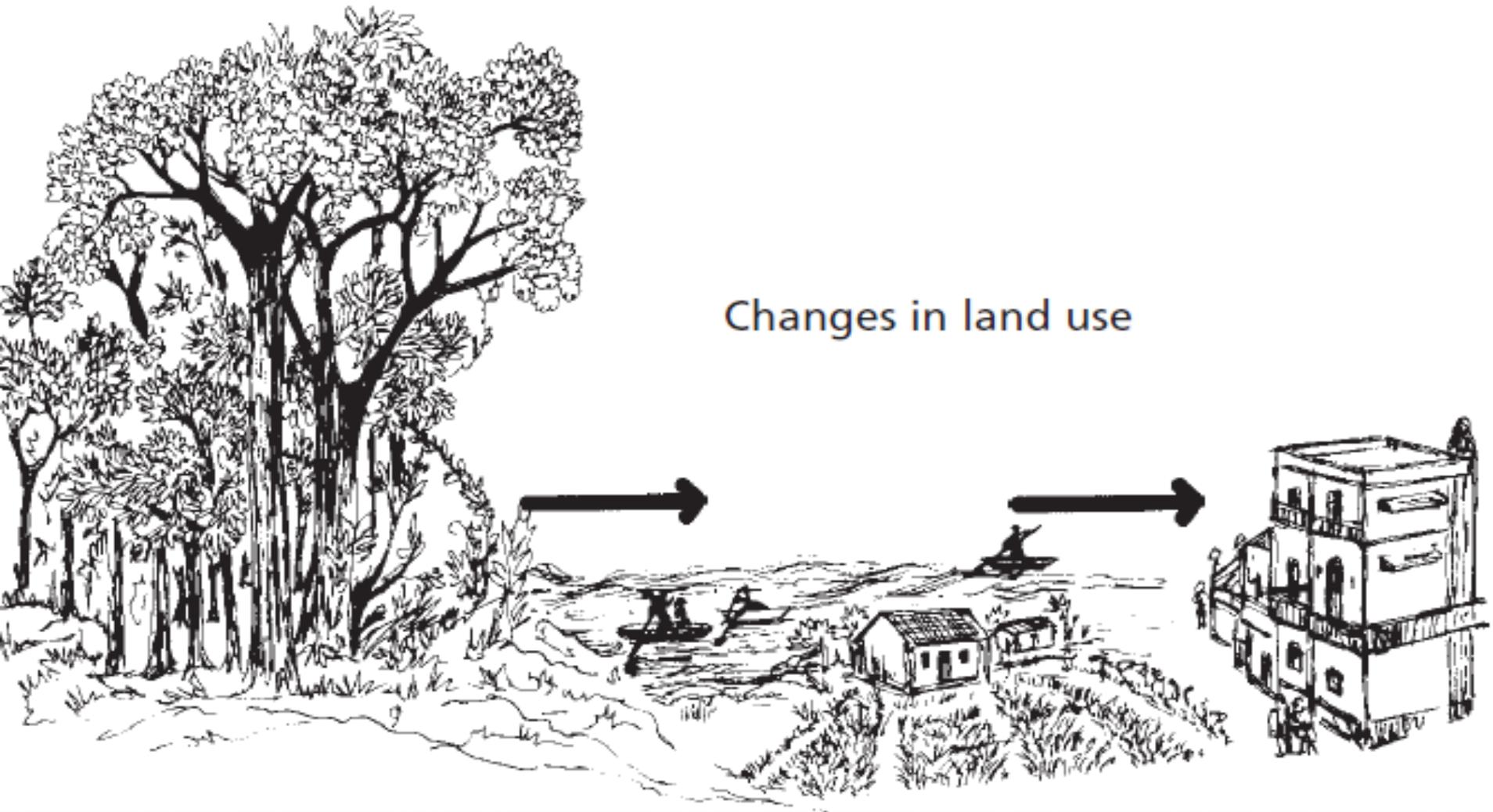
Land as a resource

- A finite and valuable resource - basic amenities of life are drawn from this resource.
- Soil - a renewable resource, rate of regeneration of soil is about 200-1000 years for the formation of 1" of soil depending on the climate and soil type.

Land degradation

- Increasing population growth leads to increased demand for arable land (for producing food, fiber and fuel wood).
 - ↳ more and more pressure on the land resource
- Soil formation is an extremely slow process.
- Causes: Soil erosion, water-logging, salinization and contamination of the soil with the various industrial wastes.

Changes in land use



Soil Erosion

- Movement of soil components (especially surface litter and top soil) from one place to another.
- Results in loss of fertility.

Types

↳ Normal erosion or geologic erosion

gradual removal of top soil by natural processes, natural balance between erosion and renewal is maintained.

↳ Accelerated erosion

Caused by anthropogenic activities;

Rate of erosion > Rate of formation of soil;

Overgrazing, deforestation, mining

Agents causing soil erosion

↳ Climatic Agents

- Water - in the form of torrential rains, rapid flow of water along slopes, run-off, and melting and movement of snow.
- Wind - in the form of saltation (vertical movement of soil under the influence of direct pressure of stormy winds)

↳ Biotic Agents

- Excessive grazing, mining and deforestation
- Top soil layer is disturbed due to the devoid of vegetal cover.

Desertification

- A process where the productive potential of arid and semi-arid lands falls by 10% or more.
- Moderate desertification – 10-25% drop
- Severe desertification – 25-50% drop
- Very severe desertification → 50% drop
- Desertification is characterized by devegetation and loss of vegetal cover, depletion of ground, salinization and severe soil erosion

Causes

→ Deforestation, Overgrazing, Mining...

Case Study

Selenium – Punjab

- In 1981-82, farmers from Hoshirapur and Nawanshehar Districts approached scientists of the Punjab Agricultural University (PAU), Ludhiana, as wheat crops had turned white.
- Soil analysis indicated selenium (Se) levels in the area were above toxic limits.
- Se is a naturally occurring trace element, essential for animal and human health, but the gap between requirement and excess is narrow.
- Soils containing $0.5 \mu\text{g Se/kg}$ or more are injurious to health.
- In some areas of Punjab, Se levels ranges from $0.31 \mu\text{g/kg}$ to $4.55 \mu\text{g/kg}$.
- Rice cultivation requires the presence of standing water.
- Being highly soluble, Se dissolves and comes to the surface. The water then evaporates leaving the Se behind.