

UNIT II - WATER RESOURCES AND ENVIRONMENT MICROBIOLOGY

2.3 DAMS BENEFITS AND PROBLEMS

1. What are Dams?

- Dams are structures built across rivers or streams to store, control, or redirect water.

2. Benefits of Dams

1. Water Storage:
 - Stores water for drinking, agriculture, and industrial use.
2. Irrigation:
 - Supplies water to farmlands during dry seasons.
3. Hydropower Generation:
 - Produces renewable electricity using water flow.
4. Flood Control:
 - Regulates river flow and reduces the risk of floods.
5. Recreation and Tourism:
 - Reservoirs created by dams support boating, fishing, and tourism.
6. Improved Navigation:
 - Helps maintain river levels for transportation.
7. Ecosystem Support:
 - Provides consistent water supply during dry periods for downstream ecosystems.

3. Problems with Dams

1. Environmental Issues:
 - Disruption of river ecosystems and fish migration.
 - Submersion of forests, wetlands, and wildlife habitats.
2. Social Impacts:
 - Displacement of local communities.
 - Loss of cultural and historical sites.
3. Sedimentation:
 - Sediments accumulate in reservoirs, reducing storage capacity over time.
4. Waterlogging and Salinization:
 - Excessive irrigation can harm soil fertility.
5. Seismic Risk:
 - Large dams may trigger earthquakes in seismically active areas.
6. Downstream Effects:

- Reduced water flow affects agriculture, fisheries, and ecosystems downstream.
7. High Cost:
- Building and maintaining dams require significant investment.

4. Balancing Benefits and Problems

- Environmental Impact Assessments (EIAs):
 - Conduct studies to minimize harm before dam construction.
- Sustainable Management:
 - Ensure fair water sharing and equitable benefits.
- Fish Ladders:
 - Allow fish to migrate across dams.
- Catchment Area Treatment:
 - Prevent sedimentation by protecting upstream areas.

2.3.1 EFFECTS OF DAM ON TRIBAL PEOPLE

1. Who are Tribal People?

- Indigenous communities living in harmony with nature, often dependent on forests, rivers, and land for their livelihood and culture.

2. Effects of Dams on Tribal People

1. Displacement

- Tribal communities are forced to leave their ancestral lands due to dam construction and the submergence of villages.
- Leads to loss of homes, livelihoods, and cultural heritage.

2. Loss of Livelihood

- Dams flood forests, farmland, and fishing areas, depriving tribal people of resources they depend on for survival.
- Difficult to adapt to new environments or jobs after displacement.

3. Cultural Disruption

- Sacred sites, burial grounds, and cultural landmarks are often submerged.
- Breaks the connection between tribal people and their traditional way of life.

4. Inadequate Rehabilitation

- Compensation and resettlement efforts are often insufficient or delayed.
- Tribal people struggle with inadequate housing, poor infrastructure, and lack of access to schools and healthcare.

5. Social Marginalization

- Displaced tribal communities face challenges integrating into new areas.
- Loss of identity and discrimination can lead to alienation and poverty.

6. Environmental Changes

- Dams alter local ecosystems, making it harder for tribal people to hunt, gather, or fish.
 - Increased waterlogging and salinization damage nearby land.
-

3. Examples of Impact

- Narmada Valley Project (India): Thousands of tribal families displaced without proper resettlement, leading to protests like the Narmada Bachao Andolan.
 - Sardar Sarovar Dam: Tribal lands submerged, affecting livelihoods and culture.
-

4. Solutions to Mitigate Effects

1. Fair Compensation: Provide adequate monetary and land compensation for displaced families.
2. Proper Rehabilitation: Ensure resettlement areas have good infrastructure, schools, and healthcare facilities.
3. Participation in Planning: Involve tribal communities in decision-making about dam projects.
4. Preserving Culture: Protect and respect tribal heritage sites during dam construction.
5. Alternative Livelihoods: Provide skill training and support for new jobs.

