Disappearing Lakes in India

Mains: *GS III – Environment*

Why in News?

In India, the lake ecosystems are disappearing at an alarming rate due to increasing anthropogenic pressures in the Anthropocene epoch and this decline of lakes raises serious concerns not only for environmental sustainability but also for economic stability and social well-being.

What are the ecological and socio-economic significance of lakes?

- **Groundwater recharge –** Lakes act as natural reservoirs that facilitate groundwater recharge.
- In a country like India, where a large population depends on groundwater for drinking and irrigation, lakes are essential for long-term water security.
- **Flood regulation –** During periods of heavy rainfall, lakes function as natural buffers by absorbing excess runoff.
- This reduces the risk of flooding in downstream areas, making them critical for disaster mitigation.
- **Biodiversity hotspots –** Lakes support rich biodiversity, providing habitat for aquatic flora and fauna as well as migratory birds.
    - **For instance,** Chilika Lake serves as a major habitat for migratory birds and is one of the largest brackish water lagoons in the world.
- **Livelihood support –** Lakes sustain livelihoods through fisheries, agriculture, and allied activities.
- They also provide water for domestic use and contribute to local economies via tourism and recreation.
- **Cultural and spiritual importance –** Many lakes in India hold deep cultural and religious significance.
    - **For Example,** Pushkar Lake and Dal Lake, which are integral to local traditions and rituals.
- **Freshwater supply –** Lakes are a major source of accessible freshwater, making their conservation directly linked to water security.

*Lakes constitute one of the most vital natural resources, performing indispensable ecological, hydrological, and socio-economic functions. Globally, lakes cover nearly **4% of the Earth's land surface** and provide about **90% of surface freshwater.***

Socio-ecological implications of disappearing lakes?

- **Ecological imbalance –** Loss of lakes disrupts ecosystems, leading to biodiversity loss and extinction of aquatic species. It also affects migratory patterns of birds and ecological food chains.
- **Water scarcity –** Declining lakes reduce groundwater recharge, exacerbating water scarcity, especially in urban and semi-arid regions.
- **Increased flood risk –** Without lakes to absorb excess rainwater, urban flooding becomes more frequent and severe.
- **Economic loss –** Communities dependent on lakes for fishing, agriculture, and tourism face livelihood disruptions.
- **Cultural erosion –** The disappearance of culturally significant lakes undermines traditional practices and community identity.

Factors responsible for the disappearance of lakes?

- **Pollution and eutrophication –** Lakes are increasingly used as dumping grounds for sewage and solid waste due to inadequate waste management.
- Nutrient-rich runoff from agriculture and industrial effluents leads to eutrophication, characterized by excessive algal blooms and oxygen depletion.
- This severely impacts aquatic life.
    - **For example**, Hussain Sagar Lake and Bellandur Lake have suffered from severe pollution.
- **Encroachment and land-use change –** Rapid urbanization and rising land values have led to illegal encroachment of lakebeds.
- Wetlands are often converted into real estate, shrinking or eliminating lakes entirely.
- **Illegal mining –** Unregulated extraction of sand and gravel from lakebeds degrades their structure and reduces water-holding capacity.
- Lakes such as Surajkund Lake and Balsamand Lake are affected by such activities.
- **Unregulated tourism –** Tourism increases waste generation and pollution, putting additional stress on fragile lake ecosystems.
- **Cultural practices –** Practices such as idol immersion contribute to water pollution and ecological stress due to the use of non-biodegradable materials.

What are the available legal and institutional framework?

- **Constitutional provisions –** Water is a State subject under the Indian Constitution, making states primarily responsible for the management of lakes and water bodies.
- **Wetlands (conservation and management) rules, 2017 –** These rules, framed under the Environment Protection Act, 1986, provide a regulatory framework for wetland conservation.
- They emphasize the principle of “wise use” and mandate the creation of State Wetland Authorities and a National Wetland Committee.
    - **Limitations:**
        - Applicable only to notified wetlands or Ramsar sites
        - Exclusion of wetlands within forest and protected areas
        - Fragmented institutional responsibilities
- **Public Trust Doctrine (PTD) –** The PTD establishes that the state holds natural

resources in trust for the public.
- In *Swachh Association vs State of Maharashtra (2025)*, the Supreme Court expanded the scope of PTD to include even artificial lakes, thereby strengthening the state's responsibility for conservation.

What are the policy initiatives for lake conservation?

- **National Lake Conservation Programme (NCLP), 2001 –** This programme focused on restoring water quality and ecological balance of lakes.
- **National Programme for Conservation of Aquatic Ecosystems (NPCA) –** In 2013, NCLP was merged with the National Wetlands Conservation Programme to form NPCA. It aims at integrated conservation of lakes and wetlands.
    - **Limitations:**
        - Coverage restricted to selected water bodies
        - Dependence on state nominations
        - Issues in funding, monitoring, and implementation
- **Challenges in governance**
    - Despite existing frameworks, lake conservation suffers from:
    - Fragmented institutional responsibilities
    - Weak enforcement of regulations
    - Lack of scientific mapping and monitoring
    - Limited community participation
    - The Comptroller and Auditor General (CAG) has highlighted these governance gaps, noting significant disappearance and shrinkage of lakes in regions such as Jammu and Kashmir.

What could be done?

- **Comprehensive national legislation –** There is a need for a dedicated central law for lake conservation, ensuring uniform standards and accountability.
- **Creation of a nodal authority –** A statutory body at the national level can help coordinate efforts across states and agencies.
- **Scientific mapping and monitoring –** Use of GIS and remote sensing technologies can help track changes in lake ecosystems and prevent encroachment.
- **Strengthening pollution control –** Strict enforcement of laws regulating sewage discharge and industrial effluents is essential.
- **Community participation –** Involving local communities in conservation efforts can improve monitoring and ensure sustainable use.
- **Sustainable urban planning –** Integrating lakes into urban planning as ecological assets rather than land resources is critical.

What lies ahead?

- The disappearance of lakes in India reflects a deeper crisis of environmental governance and unsustainable development.
- Given their immense ecological and socio-economic importance, urgent and coordinated action is required to protect and restore these vital ecosystems.
- Strengthening legal frameworks, improving policy implementation, and fostering

community engagement are key to ensuring that lakes continue to sustain life and livelihoods for future generations.

Reference

The Indian Express| Lakes and its Importance