

Impact of climate change on water bodies

Why in news?

Climate change has severe effects on waterbodies causing decline in freshwater supply, environment degradation and deterioration of water quality for humans and livestock.

What are the importance of water bodies or lakes?

- **Water supply** - Lakes are a major source of freshwater for drinking, irrigation, and industrial use.
- **Recreation** - Lakes are popular for swimming, boating, fishing, and other recreational activities.
- **Employment** - The fishing and tourism industries that rely on lakes provide jobs for millions of people around the world.
- **Water quality** - Lakes help to filter and clean water which helps to protect human health and the environment.
- **Climate regulator** - Lakes help to regulate the climate by storing heat and releasing it slowly.
- This helps to moderate temperatures and reduce the risk of extreme weather events.
- **Biodiversity** - Lakes are home to a wide variety of plants and animals, which play an important role in the ecosystem.
- **Flood prevention** - Lakes can help to prevent flooding by storing excess water during heavy rains.
- **Erosion control** - Lakes can help to control erosion by slowing down the flow of water and depositing sediment.
- **Hydroelectric Power Generation** - Some lakes, especially those formed by dams, are utilized for hydroelectric power generation.
- **Carbon Sink and Nutrient Cycling** - Lakes are significant components of the global carbon cycle.
- They can act as carbon sinks, sequestering carbon dioxide from the atmosphere.
- Additionally lakes play a role in nutrient cycling, influencing the distribution and cycling of important elements like nitrogen and phosphorus.
- **Cultural and Spiritual Significance** - Many lakes hold cultural and spiritual significance for indigenous communities and local populations.



What are the effects of the climate changes on water bodies?

- **World's largest lakes and reservoirs** - Have shrunk more than 50% over the 3 decades.
- From these water bodies, approximately 600 cubic km of water was lost between 1992 and 2020 which is equivalent to the total water used in the United States for the entire year of 2015.
- **Sedimentation** - Main cause of the decline in the water storage for more than more than half of the reservoirs located in peninsular India.
- Sedimentation has a larger impact than hydro climate variability such as droughts and recovery from droughts.
- Among the worst affected natural lakes in the country is Ladakh's Tso Moriri.
- **Water consumption** - Unsustainable water consumption in the world's large lake have led to the decreased water levels.
- **Arctic lakes** - Shrunk as a result of a combination of changes in precipitation, runoff, temperature, and PET, which are likely a concurrent result of natural variability and climate change.
- **Humid tropics and high altitudes** - Natural lakes located in humid tropics and high altitudes are also experiencing water shortages.
- **Human activities** - Such as unsustainable consumption of water and increasing temperature and potential evapotranspiration (PET) have led to reduced water levels.

Sedimentation is the process of particles such as sand and stones settling to the bottom of a body of water.

What are the consequences of shrinking lakes?

- Nearly two billion people or one-quarter of the global population in 2023 will be affected as their livelihood depends on lakes.
- Affects hydroelectricity generation as lakes are important source of hydroelectricity.
- Freshwater decline and environmental degradation.
- Disrupts the water and carbon cycles.

- Reduce the environmental capacity to absorb carbon dioxide and increase carbon emissions as lakes are hotspots of carbon cycling.

Potential evapotranspiration (PET) is the loss of water due to both evaporation and transpiration.

What are the ways to conserve water bodies?

- There is a need to manage water bodies in an integrated manner.
- Restrictions on water consumption and climate mitigation to bring down global temperatures.
- Promote sustainable fisheries.
- Reduction in water pollution
- To make awareness about responsible use of water.
- To manage Nutrient Runoffs.

Reference

1. [The Indian Express | Effects Of Climate Change On Water Bodies](#)

