



Ageing Dams

This article is based on [“The problem of ageing dams”](#) which was published in The Hindu on 01/02/2021. It talks about the issue of ageing dams in India.

Recently, a UN University report titled "Ageing water infrastructure: An emerging global risk", held that by 2050, most people on Earth would live downstream of tens of thousands of large dams built in the 20th century, many of them including India's already operating at or beyond their design life, putting lives and property at risk.

Ageing signs of dams include increasing cases of dam failures, progressively increasing costs of dam repair and maintenance, increasing reservoir sedimentation, and loss of a dam's functionality and effectiveness.

India is ranked third in the world in terms of building large dams. Of the over 5,200 large dams built so far, about 1,100 large dams have already reached 50 years of age, and some are older than 120 years.

Moreover, hundreds of thousands of medium and minor dams are even more precarious as their shelf life is even lower than large dams. India's aging dams can threaten water security, affect farmers' income, and increase flooding. Thus, there is an urgent need to tackle this crisis.

Issues Related to Ageing Dam

- **Faster Rate of Storage Loss:** As dams age, soil replaces the water in the reservoirs. Therefore, the storage capacity cannot be claimed to be the same as in the 1900s and 1950s.
 - However, the storage space in Indian reservoirs is receding at a rate faster than anticipated. Reservoirs are poised to become extinct in less than a few decades, with untold consequences already underway.
 - A 2003 report observed that India's iconic Bhakra dam's siltation rate is 139.86% higher than originally assumed.
 - At this rate, the Bhakra dam is now expected to function for merely 47 years, virtually halved from the original estimate of 88 years”.
- **Impact of Climate Change:** The rising frequency and severity of flooding and other extreme environmental events can overwhelm a dam's design limits and accelerate a dam's ageing process.
 - Thus, it is important to note with increasing floods; climate change will accelerate the dam ageing process.
- **Structurally Vulnerable Dams:** Almost every scholarly study on reservoir sedimentation shows that Indian reservoirs are designed with a poor understanding of sedimentation science.
 - Moreover, Any large storage structure, be it concrete, masonry, or earth, can become structurally weak with time. Such is the case with a number of old dams in India.
- **Lack of Storage Information:** The loss of large dams' storage capacity over time is part of the dam ageing process.
 - However, this information continues to be sporadically documented in India and serves as a blind spot in terms of understanding the true gravity of the water crisis in the country.

Consequences of Ageing Dams

- **Impacting Food Security:** When soil replaces the water in reservoirs, supply gets choked. In this case, the cropped area may begin receiving less and less water as time progresses.
 - As a result, the net sown water area either shrink in size or depends on rains or groundwater, which is over-exploited.
- **Impacting Farmers' Income:** As crop yield may get affected severely, it would disrupt the farmer's income.
 - Moreover, water is a crucial factor for crop yield and credit, crop insurance, and investment.
- **Increased Flooding:** The flawed siltation rates reinforce the argument that the designed flood cushion within several reservoirs across many river basins may have already depleted substantially, due to which floods have become more frequent downstream of dams.
 - The flooding of Bharuch in 2020, Kerala in 2018, and Chennai in 2015 are a few examples attributed to downstream releases from reservoirs.

Way Forward

- **Attracting Global Attention:** There is a need to attract global attention to the issue of ageing water storage infrastructure and stimulate international efforts to deal with this emerging, rising water risk.
- **Sustainable Decommissioning:** Decommissioning will also have various positive and negative economic, social, and ecological impacts to be considered in a local and regional social, economic, and geographic context "critical to protect the broader, sustainable development objectives for a region."
- **Transparency in Information:** India's water organizations have to be more transparent concerning dysfunctional and deteriorating large dams.
 - Thus, real-time information on the live storage capacity of large storage structures should be made available.
 - A realistic estimate of the country's irrigation potential needs to be made based on this for proper planning and management of available water.
- **Alternative Measures:** Water policymakers, planners, and water managers need to think of alternative plans for large storage structures. Some alternatives include:
 - Selecting sites for construction of water harvesting structures of varying capacities;
 - Building medium or minor irrigation-based small storage structures;
 - Identifying mechanisms to recharge aquifers and store water underground;

Conclusion

India will eventually feel difficulty in finding sufficient water in the 21st century to feed the rising population by 2050, grow abundant crops, create sustainable cities, or ensure growth. Therefore, all stakeholders must come together to address this situation urgently.

Drishti Mains Question

India's aging dams can threaten water security, affect farmers' income, and increase flooding. Discuss.

This editorial is based on **"On the upswing"** published in The Indian Express on January 29th, 2020. Now watch this on our Youtube channel.