



State of India's Dams

For Prelims: Gandhi Sagar Dam, Chambal River, provisions of the Dam Safety Bill, 2019

For Mains: concerns regarding the ageing dams of India and related steps that can be taken

Why in News

According to a new [Comptroller and Auditor General of India \(CAG\)](#) report, **Gandhi Sagar Dam** on **Chambal River (Madhya Pradesh)** is in need of immediate repair.

- **Absence of regular checks, non-functional instruments and choked drains** are the major problems plaguing the dam for years.

Gandhi Sagar Dam

- It is **one of the five water reservoirs** of national importance.
- Gandhi Sagar Dam was constructed in 1960 to provide drinking water to several districts of Rajasthan and generate 115 megawatts of electricity.
 - It has been breached several times in recent years, causing flooding in downstream areas.

Key Points

- **About:**
 - 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.
 - The number of such dams will increase to 4,400 by 2050.
 - This means that **80% of the nation's large dams** face the prospect of becoming obsolete as they will be 50 years to over 150 years old.
 - The situation with hundreds of thousands of medium and minor dams is even more dangerous as their shelf life is even lower than that of large dams.
 - **Examples:** Krishna Raja Sagar dam was built in 1931 and is now 90 years old. Similarly, Mettur dam was constructed in 1934 and is now 87 years old. Both these reservoirs are located in the water scarce [Cauvery river basin](#).
- **Issues with India's Aging Dam:**
 - **Built according to the Rainfall Pattern:**
 - Indian dams are very old and built according to the rainfall pattern of the past decades. **Erratic rainfall in recent years has left them vulnerable.**
 - But the government is equipping the dams with information systems like rainfall alerts, flood alerts, and preparing emergency action plans to avoid all sorts of mishaps.

- **Decreasing Storage Capacity:**
 - As dams age, **soil replaces the water in the reservoirs**. Therefore, the storage capacity cannot be claimed to be the same as it was in the 1900s and 1950s.
 - The storage space in Indian reservoirs is receding at a rate faster than anticipated.
- **Flawed Design:**
 - Studies show that the **design of many of India's reservoirs is flawed**.
 - Indian reservoirs are designed with a poor understanding of sedimentation science.
 - The designs **underestimate the rate of siltation** and overestimate live storage capacity created.
- **High Siltation Rates:**
 - It refers both to the **increased concentration of suspended sediments and to the increased accumulation** (temporary or permanent) of fine sediments on bottoms where they are undesirable.
- **Consequences:**
 - **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.
- **Need of the Dam Safety:**
 - **To Safeguards People Lives:**
 - Ageing dams can **serve as a cause of concern for people living in the areas nearby**.
 - **Safeguarding Investment:**
 - Safety of dams is also important for **safeguarding the huge public investment in this critical physical infrastructure**, as also, for ensuring continuity of benefits derived from the dam projects and national water security.
 - **Tackle India's water crisis:**
 - Safety of dams is also **important in the emerging scenario of India's water crisis**, linked with its growing population, as also the [climate change](#).
- **Related Initiatives:**
 - **[Dam Safety Bill, 2019](#):** [Rajya Sabha](#) has recently passed the **Dam Safety Bill, 2019**.
 - The bill provides for surveillance, inspection, operation and maintenance of the specified dam, for prevention of dam failure related disaster, and also makes provision for institutional mechanisms to ensure their safe functioning.
 - **[Dam Rehabilitation and Improvement Project \(DRIP Phase II\)](#):** To improve the safety and performance of selected existing dams and associated appurtenances in a sustainable manner.

Way Forward

- The most **important aspect in ensuring dam safety** is the **existence of accountability and transparency** while taking into consideration the views of the real stakeholders--the people living downstream from the dams, who are the most at-risk group in case of a breach.
- In terms of the **operational safety**, the **rule curve**, that decides how a dam is supposed to be operated and is created when a dam is proposed, **needs to be upgraded at regular intervals on the basis of environmental changes** such as siltation and rainfall pattern since these would change the frequency and intensity of incoming flood into the dam as well as the spillway capacity.
 - The **rule curve also needs to be in the public domain** so that the people can keep a check on its correct functioning and can raise questions in its absence.
- Moreover, in **India every river has multiple dams** along its course, so a **cumulative assessment of every upstream and downstream dam** needs to be in place to ensure dam

safety in terms of operations.

Source: DTE

PDF Refernece URL: <https://www.drishtias.com/printpdf/state-of-india-s-dams>

