



Dam Safety Act, 2021

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For Prelims: Dam Safety Act, DRIP Project, Tehri Dam, Hirakud Dam, Mullaperiyar Dam.

For Mains: Provisions and related issues with the Dam Safety Act, Dams construction and environmental challenges, Ageing of dams in India, Measures that can be taken to ensure dam safety.

Why in News?

The [Dam Safety Bill](#) introduced in Lok Sabha in July 2019 was passed by Rajya Sabha in December 2021 to become [Dam Safety Act, 2021](#).

What is the Need for Dam Safety?

- **Ageing Dams: 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.**
 - [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.
- **Lower Shelf Life of Dams:** Hundreds of thousands of **medium and minor dams are even more precarious** as their shelf life is even lower than large dams.
 - Such dams **threaten water security, affect farmers' income, and increase flooding.** Thus, there is an urgent need to tackle this crisis.
- **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.
- **Mitigating Climate Change Impacts:** The rising frequency and severity of flooding and other extreme environmental events can **overwhelm a dam's design limits.**
- **A Hazardous Infrastructure:** Large dams, **even if structurally sound, are regarded as "high hazard" infrastructure** because of the potential for a massive loss of human lives, livelihoods and destruction in the event of failure.
 - In the most recent [Uttarakhand flash floods](#), experts say the incident was induced by the effect of [global warming](#) on [melting glaciers](#) but the effect was worsened by construction of infrastructure (Hydroelectric Power Projects, HEPs).

Note

- [Tehri Dam](#) in Uttarakhand is the **highest dam in India** built on Bhagirathi River.
- [Hirakud Dam](#) in Odisha built on river Mahanadi is the **longest dam of India.**
- [Kallanai Dam](#) in Tamil Nadu is the **oldest dam of India.** It is built on the [Kaveri river](#) and is about 2000 years old.

What are the Salient Features of the Dam Safety Act?

- **Objective:**
 - The Act provides for the **surveillance, inspection, operation, and maintenance of all specified dams** across the country.
 - These are dams with height more than 15 metres, or height between 10 m -15 m with certain design and structural conditions.
 - It also **provides for the institutional mechanism** to ensure the safety of such dams.
- **Institutional Mechanism:**
 - **Two National Level Bodies:**
 - The **National Committee on Dam Safety (NCDS)** which improvises policies and recommends regulations regarding dam safety standards.
 - The **National Dam Safety Authority (NDSA)** which implements policies of the NCDA and provides technical assistance to **State Dam Safety Organisations (SDSOs)** and resolves disputes involving an SDSO.
 - **Two State Level Bodies:**
 - The **SDSOs** will keep perpetual surveillance, inspect and monitor the dams.
 - The **State Committee on Dam Safety** supervises state dam rehabilitation programs, reviews the work of the SDSO, and the progress on measures recommended in relation to dam safety, among others.
- **Obligation of Dam Owners:**
 - Dam owners will be **responsible for the safe construction, operation, maintenance and supervision of a dam.**
 - They **must provide a dam safety unit in each dam** which will inspect the dams:
 - before and after monsoon season, and
 - during and after every earthquake, flood, calamity, or any sign of distress.
 - Functions of dam owners include:
 - preparing an **emergency action plan**
 - **carrying out risk assessment** studies at specified regular intervals
 - preparing a **comprehensive dam safety evaluation** through a panel of experts.
- **Offences and Penalties:**
 - Anyone obstructing a person in the discharge of his functions under the Act or refusing to comply with directions may be **imprisoned for a year.**
 - In case of loss of life, the person may be **imprisoned for two years.**

What is the Issue Associated with the Act?

- **Jurisdiction of Parliament to Frame a Law on Intra-State River Dams:**
 - The Act applies to all specified dams in the country. As per the Constitution, states can make laws on water including water storage and water power (Entry 17 of [State List](#)).
 - However, [Parliament](#) may regulate and develop inter-state river valleys if it deems it necessary in public interest (Entry 56 of [Union List](#)).
 - The question is **whether Parliament has the jurisdiction to regulate dams on rivers flowing entirely within a state.**

What other Initiatives have been Taken?

- In 2020, the Cabinet Committee on Economic Affairs approved the [Dam Rehabilitation and Improvement Project \(DRIP\)](#) Phase II and Phase III.
 - It envisages comprehensive rehabilitation of 736 existing dams located across the country and complements the **Dam Safety Act, 2021.**

What More Should be Done to Ensure Dam Safety?

- Since the dam safety is dependent on many external factors, the environmentalists and the

environmental angle in this, needs to be taken. It should be ensured that the **inspection of dams is done by the respective state governments.**

- A **preventive mechanism to avoid dam failures** is necessary because if a dam fails, no amount of punishment can compensate for the loss of lives.
- With the **changing climate**, it has become absolutely essential to really think about the issue of water carefully and proactively.
 - While considering uniformity across dams, **local factors such as climate and catchment areas**, need to be taken into consideration.
- **Dam decommissioning should be seen as equally important** as dam building in the overall planning process on water storage infrastructure developments.
- There is need for an **overarching umbrella authority to smoothen interstate disputes over dams** such as the [Mullaperiyar Dam Issue](#) which has been in news for contention between Kerala and Tamil Nadu governments.
 - Kerala has argued that the dam having outlived its life of 50 years is unsafe to maintain water at the full reservoir level.

UPSC Civil Services Examination, Previous Year Questions (PYQs)

Prelims

Q. On which one of the following rivers is the Tehri Hydropower Complex located? (2008)

- (a) Alaknanda
- (b) Bhagirathi
- (c) Dhauliganga
- (d) Mandakini

Ans: (b)

Exp:

- The Tehri Hydropower Complex (Tehri HPC) is located on the Bhagirathi River in the State of Uttarakhand in India. **Hence, option (b) is correct.**

Mains

Q. Suppose the Government of India is thinking of constructing a dam in a mountain valley bound by forests and inhabited by ethnic communities. What rational policy should it resort to in dealing with unforeseen contingencies? (2018)

Q. What do you understand by Run-of-river hydroelectricity project? How is it different from any other hydroelectricity project? (2013)