

**UPSC Syllabus Topic : GS Paper 3 Science and Technology – Developments and their applications and effects in everyday life.**

### **Concerns in Dam Safety – Damned by Our Dams Amidst Swirling Safety Issues**

Recently, Sikkim faced severe destruction due to a Glacial Lake Outburst Flood (GLOF), resulting in the bursting of South Lhonak Lake in north-western Sikkim. The Teesta hydropower dam was destroyed, submerging the associated 1,200MW Teesta-III hydropower project. This incident has drawn attention to the broader issue of dam safety in India.

**Status of Dam Infrastructure in India:** India ranks as the third most dammed country globally, boasting a total of 6,138 large dams. Notably, around 65% of the Himalayan rivers' hydropower potential, approximately 25,000MW, is harnessed for energy production.

**Dam Safety Status in India:** Despite its vast dam infrastructure, India grapples with a concerning record of dam safety:

1. **Dam Failures:** The National Dam Safety Authority reports 42 instances of dam failures, such as the Machchu dam incident in Gujarat in 1979, resulting in 2,000 fatalities.
2. **Dam-induced Floods:** Examples include floods induced by the Hirakud Dam in the Mahanadi basin.

#### **Reasons for Poor Dam Safety:**

1. **Ageing Dams:** Approximately 80% of India's large dams exceed 25 years in age, with 234 being over a century old.
2. **Lack of Performance Assessment:** There is a dearth of mechanisms to evaluate the viable lifespan and performance of dams.
3. **Unscientific Operation:** Factors like neglecting seismicity, unscientific water release strategies contribute to safety concerns.
4. **Non-Decommissioning of Old Dams:** Dams, despite ageing, are not retired due to factors like policy limitations and socio-economic considerations.

#### **Challenges in Decommissioning:**

1. **Policymaking Dynamics:** Lack of diversity in policymakers, predominantly civil engineers, affects decision-making.
2. **Socio-Economic Concerns:** Economic ecosystems around dams and resettlement challenges impede decommissioning.
3. **Tedious Process:** Decommissioning involves time-consuming studies, rehabilitation planning, and alternative resource strategies.

**Measures for Himalayan Dam Safety:** Experts propose several measures:

1. **Monitoring Glacial Lakes:** Regular monitoring, updating Glacial Lake inventories every five years.
2. **Climate Assessment:** Evaluating climate change effects on hydropower project risks in the Himalayan region.
3. **GLOF Assessment and Mitigation:** Integrating GLOF assessments and mitigation measures

into Himalayan hydropower projects.

4. **Mountain Regulation Zone:** Considering a Mountain Regulation Zone akin to a Coastal Regulation Zone for regulating large infrastructure projects.
5. **In-built SOPs:** Incorporating special operating procedures in dam designs to handle eventualities like flash floods.

### **Government Initiatives:**

1. **DRIP II and DRIP III Scheme:** The Dam Rehabilitation and Improvement Project aims to rehabilitate 736 dams across 19 states by 2031, addressing issues like seepage and drainage.
2. **Dam Safety Act, 2021:** Introducing a framework for surveillance, inspection, and maintenance, along with institutional empowerment for dam safety at both central and state levels. Standardizing dam safety practices across the nation is a key focus.

Addressing these challenges and implementing proactive measures is crucial to ensuring the safety and sustainability of India's dam infrastructure, particularly in vulnerable regions like the Himalayas.

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#### **Shifting Dynamics: The Creator Economy and Its Technological Foundations**

The internet was envisioned as a tool for democratising information sharing and empowering individuals to express ideas or engage in transactions. However, it is increasingly becoming dominated by a handful of major corporate entities.

This dominance can be attributed to a lack of recognition of the potent force of network effects. Global competition policy legislation has not kept pace with the need to regulate competition effectively in the era of network effects, allowing a few well-funded players to quickly establish industry dominance.

#### **Understanding the Network Effect:**

The network effect is a business principle that demonstrates how the value of a product or service increases as more people use it. This concept is particularly relevant in the realm of digital platforms, where widespread usage amplifies the utility of the platform. Notable examples include social networks like Facebook and Instagram, where the more individuals within one's network use the platform, the more likely others are to join.

#### **The Emergence of the Creator Economy:**

The Creator Economy is an internet-facilitated economic model that enables content creators and influencers to monetise their creations. Platforms such as YouTube, TikTok, Instagram, Facebook, Twitch, and Spotify are prominent examples.

#### **Technological Foundations of the Creator Economy:**

- **Two key technologies underpin the Creator Economy:**

1. **Non-Fungible Tokens (NFTs):** NFTs are unique digital items stored on a blockchain. They

can represent various digital assets, such as images, videos, music, or online articles. NFTs provide proof of ownership and eliminate the need for intermediaries, enabling creators to sell directly to their audience.

2. **Blockchain Technology (BCT):** Blockchain is a decentralised, distributed ledger technology that ensures secure and transparent transactions. NFTs, being unique digital items, are stored on the blockchain, guaranteeing decentralised control and trustworthiness.

#### **Potential Advantages of the Creator Economy:**

1. **Elimination of Intermediaries:** The creator economy diminishes the need for intermediaries, allowing creators to produce and distribute content, products, or services independently on digital platforms.
2. **Direct Relationship with Audience:** By removing intermediaries, the creator economy fosters direct relationships between creators and their audience, enhancing engagement and personalisation.
3. **Democratisation of Creativity:** Reduced entry barriers enable individuals to become creators with minimal initial expenses, fostering a diverse range of voices and challenging traditional media structures.
4. **Creative Independence:** Content creators enjoy the freedom to produce material aligned with their vision and values without external influence.
5. **Attraction of New Audiences:** The creator economy draws in new audiences seeking authentic and specialised content not easily accessible through conventional media channels.
6. **Application Across Multiple Fields:** The creator economy model can extend to various services, including financial, legal, medical, educational, technical, and more.

As the creator economy continues to rise, countries must undertake substantial legislative innovations to adapt to this evolving landscape and fully harness its benefits.