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GLACIAL LAKE OUTBURST FLOOD (GLOF)

This article covers "Daily Current Affairs" and the topic details "Glacial Lake Outburst Flood (GLOF)". This topic has relevance in the "Disaster Management" section of the UPSC CSE exam.

For Prelims:

What is Glacial Lake Outburst Flood (GLOF)?

For Mains:

GS3: Disaster Management

Why in the news?

The South Lhonak Lake in Sikkim burst recently, causing flash floods in North Sikkim. This glacial lake, formed by the melting Lhonak glacier, has seen notable changes.

About Glacial Lake Outburst Flood (GLOF)

- Glacial lakes are unique water bodies closely associated with melting glaciers. Due to their unstable nature, these lakes can pose significant risks to the environment and human settlements.
- When a glacial lake experiences a sudden release of water, it results in a phenomenon known as a Glacial Lake Outburst Flood (GLOF).

Glacial Lakes: Potential Time Bombs

- Glacial lakes, such as the South Lhonak Lake, can take various forms, including sitting in front of, on top of, or beneath a melting glacier. These bodies of water tend to expand over time as glaciers melt, making them increasingly hazardous.
- The main reason for this danger is that glacial lakes are typically dammed by unstable materials like ice and sediment composed of loose rocks and debris.
- When the boundary around these glacial lakes gives way, it can rapidly discharge immense volumes of water cascading down the mountain slopes.
- This sudden deluge can potentially cause extensive flooding in downstream areas, thereby earning the name "Glacial Lake Outburst Flood" or GLOF.

Triggers for GLOF

GLOF events are not solely the result of natural glacial meltwater dynamics. Various factors can trigger these devastating floods. Among the most prominent triggers are:

- **Earthquakes:** Seismic activity can disrupt the fragile balance around glacial lakes, leading to their sudden release of water. This can result in catastrophic flooding downstream.

- **Extreme Rainfall:** Intense and prolonged rainfall in the region can contribute to the rapid expansion of glacial lakes, increasing the risk of a GLOF event.
- **Ice Avalanches:** In regions where glacial lakes are often nestled in steep, mountainous terrain, ice avalanches can directly impact the lakes. When these avalanches displace water within the lakes, it can overflow natural dams and cause downstream flooding.

The 2013 Uttarakhand Disaster

- In 2013, the Kedarnath region in Uttarakhand, India, witnessed a devastating natural disaster. Flash floods, coupled with a GLOF event triggered by the Chorabari Tal glacial lake, claimed the lives of thousands of people.
- This tragic incident serves as a stark reminder of the potential dangers of glacial lakes and the importance of understanding and monitoring them in vulnerable regions.

More about South Lhonak Lake GLOF

- **Flash Floods Due to Heavy Rain:** The South Lhonak Lake's outburst was triggered by heavy and relentless rainfall in the region, leading to flash flooding.
- **Impact on Teesta River and Districts:** The lake's outburst raised Teesta River's water levels, flooding four districts: Mangan, Gangtok, Pakyong, and Namchi. This event highlights the downstream vulnerability to glacial lake outburst floods (GLOFs).
- **Monitoring and Environmental Changes:** The Central Water Commission monitors the South Lhonak Lake as one of eleven large glacial lakes. Notable environmental changes include:
 - **Glacial Retreat:** Over 29 years, the Lhonak glacier has shrunk from 6.4 km to 5.1 km, revealing the impact of climate change.
 - **Growing Lake:** Starting at 0.17 sq km in 1977, the Lhonak lake expanded to 0.78 sq km in 2002 and 1.35 sq km in 2019. Recent growth, observed from September 17 to 28, added roughly 5 hectares or around 3% to its size.

NDMA Guidelines on Risk Mitigation of GLOF:

- **Identifying and Mapping Dangerous Lakes:** Guidelines recommend identifying and mapping high-risk glacial lakes using field observations, historical data, and landscape features to assess potential hazards.
- **Structural Measures:** Preventing glacial dam breaches involves controlled breaching, water pumping, or siphoning to reduce lake water volume, reducing the risk of GLOFs.
- **Early Warning Systems:** Installing sensors and monitoring equipment helps detect changes in water levels and temperature, enabling timely alerts and evacuation plans for at-risk communities.
- **Capacity Building:** Enhancing the readiness of local communities and authorities through training in risk assessment, response planning, and search and rescue operations is vital for GLOF preparedness.
- **Public Awareness:** Creating awareness among vulnerable communities about GLOF risks and safety measures through engagement programs and information campaigns is essential.
- **Research and Monitoring:** Continuous research and monitoring of environmental changes, glacial retreats, and new lake formations improve understanding and prediction of potential GLOF events, aiding mitigation efforts.

Sources:

At least seven dead as glacial lake bursts in Sikkim – The Hindu

Q1. With reference to the Glacial Lake Outburst Flood (GLOF), consider the following statements:

1. Glacial lakes are typically dammed by stable materials like ice and sediment composed of loose rocks and debris.
2. Seismic activity can disrupt the fragile balance around glacial lakes, leading to their sudden release of water.
3. Intense and prolonged rainfall in the region can contribute to the rapid expansion of glacial lakes, increasing the risk of a GLOF event.

Which of the statements given above is/are correct?

- (a) 1 and 2 only
- (b) 2 and 3 only
- (c) 3 only
- (d) None

Answer: (b)

Q2. Consider the following:

1. Destruction of property and infrastructure
2. Spread of diseases
3. Creation of new glacial lakes
4. Improved irrigation systems

How many of the above are not correct potential consequences of a GLOF?

- (a) Only one
- (b) Only two
- (c) Only three
- (d) All Four

Answer: (c)

Q3. Explain the concept of Glacial Lake Outburst Flood (GLOF). Discuss the guidelines provided by the National Disaster Management Authority (NDMA) to mitigate Glacial Lake Outburst Floods (GLOFs) risks.

Gaurav Nikumbh

CENTRAL UNIVERSITIES (AMENDMENT) BILL, 2023

This article covers "Daily Current Affairs" and the topic details "Central Universities (Amendment) Bill, 2023". This topic has relevance in the Governance section of the UPSC CSE exam.

GS 2: Governance

Why in the news?

The union cabinet has approved the creation of a Central Tribal University in Telangana by amending the Central Universities Act, 2009.

Overview:

The Union Cabinet, chaired by the Prime Minister, has approved the introduction of the Central Universities (Amendment) Bill, 2023, which aims to further amend the Central Universities Act, 2009. This amendment is intended to facilitate the establishment of the **Sammakka Sarakka Central Tribal University in Mulugu District**. This move is in accordance with the provisions outlined in the Thirteenth Schedule to the Andhra Pradesh Re-organisation Act, 2014.

Objectives of the New University:

The primary objectives of the Sammakka Sarakka Central Tribal University are as follows:

- Increase access to higher education in the State.
- Improve the quality of higher education.
- Promote avenues of higher education.
- Advanced knowledge of tribal art, culture, and traditional knowledge systems.
- Benefit the tribal population in the State by providing instructional and research facilities.

Central Universities (Amendment) Bill, 2022:

The Central Universities (Amendment) Bill, 2022, introduced in the Lok Sabha on August 1, 2022, includes several key features:

- **Establishment of Gati Shakti Vishwavidyalaya:** The Bill aims to convert the National Rail and Transportation Institute in Vadodara, currently a deemed university, into the Gati Shakti Vishwavidyalaya, which will become a central university. The Vishwavidyalaya will be sponsored and funded by the central government through the Ministry of Railways.
- **Scope of Education:** Gati Shakti Vishwavidyalaya will focus on providing quality teaching, research, and skill development in disciplines related to transportation, technology, and management. Additionally, it may establish centers both in India and abroad if needed. The establishment of this university addresses the requirement for trained talent in the transportation sector.
- **Appointment of a New Vice-Chancellor:** The existing Vice-Chancellor of the National Rail and Transportation Institute will hold office for either six months from the date of the Act's notification or until a new Vice-Chancellor for Gati Shakti Vishwavidyalaya is appointed, whichever occurs earlier.

SOURCE:

<https://www.financialexpress.com/jobs-career/education-union-cabinet-approves-central-tribal-university-in-telangana-fulfilling-ap-reorganisation-act-2014-3263483/>

Q.1 Which of the following statements is correct regarding the Central Universities (Amendment) Bill, 2023?

- (a) The bill aims to establish a new central university dedicated to technology and transportation in Vadodara.
- (b) The bill seeks to further amend the Central Universities Act, 2009, to create a tribal university in Telangana state.
- (c) The bill proposes the conversion of state universities into central universities across India.
- (d) The bill primarily focuses on enhancing funding for existing central universities.

ANSWER: B

Q.2 What is the main objective of the Central Universities (Amendment) Bill, 2022, which was introduced in Lok Sabha?

- (a) To establish a new central university dedicated to agriculture research.
- (b) To convert the National Rail and Transportation Institute into a central university.
- (c) To increase the funding for existing central universities.
- (d) To promote the establishment of state-level universities across India

ANSWER: B

Q.3 In a rapidly evolving world, the role of higher education institutions is pivotal in addressing contemporary challenges. Discuss

Rishabh

