

## ● POLITY

## ● ECONOMICS

## ● TECHNOLOGY

## ● ECOLOGY

## POLITY AND GOVERNANCE

## GOVERNORS DELAYING CRUCIAL BILLS A MATTER OF CONCERN, SAYS SC

**CONTEXT:** Govt. of Kerala had approached the Supreme Court regarding occupants of Raj Bhavan creating hurdles in decision making and also citing Justice Punchi Committee report.

**STORY SO FAR:** The Supreme Court expressed acute displeasure at Governors holding back key Bills, especially in non-BJP-ruled States, until State governments approach the top court for judicial intervention.

The Chief Justice of India, D.Y. Chandrachud, observed that this was a serious issue and that parties should not be made to approach the Supreme Court for the Governors to act. He also said that Governors should not be oblivious of the fact that they are not elected by the people.

The court was hearing a petition filed by the Punjab government accusing the Governor of sitting on seven key Bills related to subjects including fiscal and State-affiliated colleges. The State said that the Bills were passed by the Vidhan Sabha in June after it was recalled by the Speaker under Rule 16 of the Vidhan Sabha Rules.

The Solicitor-General, Tushar Mehta, said that the Governor was taking "appropriate action" on the Bills presented to him. However, the court was not satisfied with his explanation and questioned the Assembly's action to reconvene three months after the Vidhan Sabha was adjourned sine die in March.

The court also noted that the Kerala government had also approached the Supreme Court against its Governor holding back crucial Bills. Senior advocate K.K. Venugopal, for Kerala, submitted that some of these Bills have been pending with the Governor for over two years.

The court adjourned the matter to Friday, November 10, and asked the Solicitor-General to seek instructions from the Governor on the Bills pending with him.

**CONCLUSION :** The Supreme Court has made it clear that it will not tolerate Governors sitting on key Bills, especially in non-BJP-ruled States. The court has also said that Governors should not be oblivious of the fact that they are not elected by the people.

## POLITY AND GOVERNANCE

## A TELCO DOUBLE DIP ATTEMPT THAT THREATENS NET NEUTRALITY

**CONTEXT:** Upholding the principles of net neutrality is essential to foster a conducive environment for innovation, competition, and consumer welfare, especially in India.

In July of this year, the Indian government asked the Telecom Regulatory Authority of India (TRAI) to gather public input on whether and how to regulate Over-The-Top (OTT) services. This request has caused a lot of controversy and discussion.

**BACKGROUND:** The telecom companies in India have been clamouring for the regulation of Over-The-Top (OTT) services, such as Netflix and Amazon Prime Video, arguing that they should share in the costs of bandwidth. This argument is flawed and undermines the principle of net neutrality, which is the idea that all data is treated equally without discrimination by Internet service providers (ISPs).

Net neutrality is essential for fostering innovation, competition, and consumer welfare. It has been adopted by many countries around the world, including India. It is important to uphold the principles of net neutrality and resist the demands of the telecom companies.

Telecom companies are facing reduced revenue from traditional streams such as SMS and increased costs from upgrading infrastructure to handle increased data traffic. They are asking OTT services to share bandwidth costs.

**FLAWED ARGUMENT THAT AFFECTS NET NEUTRALITY**

- Telecom companies are asking OTT services to share in the costs of bandwidth.
- This argument is fundamentally flawed because:
  1. Telecom companies do not own the Internet; they provide access to it.
  2. OTT platforms generate demand for Internet access and pay for content delivery networks (CDNs).
  3. Telecom companies capitalize on this demand by charging subscribers for Internet access.
  4. OTT services and Internet access are distinct markets.
  5. Charging both consumers and content providers would undermine net neutrality.

*"Doing nothing is very hard to do. You never know when you're finished."—Leslie Nielsen*

**ANALOGY:** If popular vehicles were charged an additional toll, it would push up the price for buyers and make them less attractive.

If OTT platforms were to acquiesce to the demands of the telcos, the costs would trickle down to subscribers, either through increased subscription fees or degraded service quality.

This would be detrimental to consumers who rely on OTT services for entertainment, education, and professional pursuits.

### PRINCIPLE OF NET NEUTRALITY

**Net neutrality is the principle that all Internet traffic should be treated equally by Internet service providers (ISPs).**

- It was largely popularized by Tim Wu in a 2003 paper, aiming to create a level playing field on the Internet, preventing discrimination by ISPs.
- It draws from the concept of common carriage, which advocates non-discriminatory service to all customers.
- Net neutrality has been examined by various experts, including economists (for market competition and consumer welfare), legal experts (for regulatory frameworks), computer scientists (for technology-based enforcement), and policy analysts (for its impact on various social groups, political expression, fairness, justice, and equality).

### BASIS OF TRAI REGULATION

Net neutrality is a crucial principle for an open Internet and consumer welfare. TRAI has adopted net neutrality regulations in India, and many other countries have followed suit.

- TRAI's prohibition of discriminatory tariffs for data services forced the withdrawal of Facebook's Free Basics platform and some other offerings in India.
- TRAI's comprehensive recommendations on net neutrality have largely guided its adoption in India.
- Many other countries have also adopted net neutrality.
- It is imperative to uphold the principles of net neutrality to preserve the ethos of an open Internet and foster a conducive environment for innovation, competition, and consumer welfare.

**SUMMARY:** India has adopted net neutrality, which prohibits telecom companies from discriminating against different types of content and services. This is important for preserving an open Internet and fostering innovation.

### POLITY AND GOVERNANCE

## HEERALAL SAMARIYA IS CHIEF INFORMATION COMMISSIONER

**CONTEXT:** Information Commissioner Heeralal Samariya was on Monday sworn in as the Chief Information Commissioner (CIC) by President Droupadi Murmu. He is the first person from the Dalit community to hold the post.

**THE STORY SO FAR:** The 63-year-old retired IAS officer of the 1985 batch was born in the remote village of Pahadi in Bharatpur district of Rajasthan. Mr. Samariya has held positions as Secretary in the Ministry of Labour and Employment, Joint Secretary in the Ministry of Chemicals and Fertilizers, and Commissioner of Commercial Taxes, Telangana. He was sworn in as an Information Commissioner in the Central Information Commission on November 7, 2020.

After taking charge, Mr. Samariya administered the oath of office to two Information Commissioners — Anandi Ramalingam and Vinod Kumar Tiwari — at the Central Information Commission.

**SIGNIFICANCE:** The post of the CIC had been lying vacant since October 3 following the completion of Y.K. Sinha's tenure. On October 30, the Supreme Court asked both the Centre and the State governments to take steps to fill vacant posts in the CIC and the State Information Commissions.

### POLITY AND GOVERNANCE

## STATES IN COURT AGAINST THEIR GOVERNORS

**CONTEXT:** Tamil Nadu, Kerala, and Punjab have approached the Supreme Court to decide a time frame for which Governors have to either return or grant assent to Bills passed by Legislatures. Some of these Bills have been sitting with the Governors for years.

**BACKGROUND:** Several non-BJP-ruled states have lodged a complaint with the Supreme Court, alleging that their Governors are unreasonably delaying the approval of important Bills. These pending Bills pertain to significant sectors, including public health, higher education, Lokayukta, and cooperative societies.

**STORY SO FAR:** Several non-BJP-ruled states have accused their Governors of unreasonably delaying the approval of crucial Bills. Tamil Nadu claims that Governor R.N. Ravi is causing a "constitutional deadlock" by not taking action on the Bills. Kerala asserts that eight proposed laws have been pending with the Governor for years. Punjab states that seven Bills have been stuck with the Governor since June, causing a potential administrative standstill. The Supreme Court had to intervene in Telangana to clear Bills pending since September 2022, highlighting concerns about Governors' influence in Opposition-ruled states.



+91 9383 432 123  
+91 7777 875 588  
0484 452 77 77

**Excellence through  
Education & Dedication**

## THE PROCESS OF GRANTING ASSENT

The Governor has three options according to Article 200 when a Bill passed by both Houses of the Legislature is presented to him:

**ASSENT:** The Governor can give his assent to the Bill.

**WITHHOLD ASSENT:** The Governor can withhold assent to the Bill, but only if it is a non-Money Bill and he thinks it derogates from or endangers the power of judicial review of the High Court.

**RESERVE THE BILL FOR THE CONSIDERATION OF THE PRESIDENT:** The Governor can reserve the Bill for the consideration of the President.

If the Governor chooses to withhold assent, he must return the Bill to the Legislative Assembly with a message requesting that the Bill be reconsidered. The Legislative Assembly may then reconsider and pass the Bill again, and in this case, the Governor must give his assent.

**This process ensures that the Governor, who is the constitutional head of the State, respects the considered decision of the elected representatives of the people.**

### THE GIST

- Tamil Nadu has accused Governor R.N. Ravi of toying with the citizens' mandate by sitting on the Bills by neither assenting nor returning them.
- Advocate Dushyant Dave, appearing for Telangana, has submitted that legislatures in Opposition-ruled States were at the mercy of the Governors, who had become a law unto themselves.
- Dr. B. R. Ambedkar has said that "in a responsible government there can be no room for the Governor acting on discretion".

### DO GOVERNORS HAVE DISCRETION?

Governors have discretion in only a few limited cases.

Before the first proviso in the draft Article 175 (now Article 200), Governors had discretion to return Bills. However, this was amended by the Constituent Assembly in 1949.

Dr. B. R. Ambedkar said that in a responsible government, there can be no room for the Governor acting on discretion.

T. T. Krishnamachari, a Constituent Assembly member from Madras and later Finance Minister, said that the Governor cannot act on his own, he can only act on the advice of the Ministry.

Article 163 makes it clear that the Governor is not expected to act independently.

The Supreme Court has held that the Governor exercises all his powers and functions conferred on him by or under the Constitution on the aid and advice of his Council of Ministers save in spheres where the Governor is required by or under the Constitution to exercise his functions in his discretion.

The assent or return of the Bill does not involve the discretion of individuals occupying the Governor's post.

Thus, Governors have discretion in only a few limited cases, such as when they are required by the Constitution to exercise their functions in their discretion. The assent or return of a Bill is not one of these cases.

### BY WHEN SHOULD BILLS BE RETURNED?

Governors have a constitutional obligation to assent or return a Bill "as soon as possible".

- The Supreme Court has interpreted this phrase to mean "as early as practicable without avoidable delay".
- Justice (now retired) Rohinton F. Nariman said in a 2020 judgment that a 'reasonable time' would mean three months.
- The States have urged the court to interpret the phrase and fix a time limit by which Governors should assent or return a Bill.
- Kerala has asked the Supreme Court to form a seven-judge Bench to review a 1962 judgment which held the view that Article 200 did not provide for a time limit.

**SIGNIFICANCE:** The case of non-BJP ruled States accusing their Governors of using a non-existent discretion to unreasonably delay the passing of crucial Bills into law is significant for several reasons.

First, it raises the issue of the role of Governors in a democracy. Governors are supposed to be impartial and act on the advice of their Council of Ministers. However, in recent years, Governors have been accused of acting in partisan ways and delaying or withholding assent to Bills passed by Opposition-ruled State legislatures. This undermines the democratic process and the principle of federalism.

Second, the case highlights the importance of the Supreme Court in protecting the rights of States and the Constitution. The Supreme Court has intervened in several cases to compel Governors to act on Bills expeditiously. This is important because States cannot function effectively if their Governors are able to delay or withhold assent to Bills indefinitely.

Third, the case raises the question of whether a time limit should be set for Governors to act on Bills. The Constitution is silent on this issue, but the Supreme Court has interpreted the phrase "as soon as possible" to mean "as early as practicable without avoidable delay." Some States have called for a specific time limit to be set, arguing that this would help to prevent Governors from using their discretion to delay or withhold assent to Bills for political or other reasons.

The outcome of this case will have important implications for the relationship between the Centre and the States, as well as for the functioning of democracy in India.



## SCIENCE AND TECHNOLOGY

## HOW THE PERSONAL DATA OF 815 MILLION INDIANS GOT BREACHED

**CONTEXT:** An American cybersecurity firm reported that a threat actor known as "pwn0001" was selling the personal information of numerous Indian citizens on the dark web. This information includes Aadhaar numbers and passport details.

**THE STORY SO FAR:** On October 15, Resecurity, an American cybersecurity company, revealed that the personal information of 815 million Indian citizens, including Aadhaar numbers and passport details, was available for sale on the dark web. The threat actors responsible were asking for \$80,000 for this data, which they claimed to have sourced from the Indian Council of Medical Research (ICMR). The ICMR has been targeted by numerous cyber-attacks, with 6,000 incidents reported just last year.

### WHAT IS THE NATURE OF PERSONALLY IDENTIFIABLE INFORMATION?

Personally Identifiable Information (PII) is data that can be used to identify an individual, either on its own or when combined with other relevant information. It includes direct identifiers like passport information and quasi-identifiers that, when combined with other data, can reveal a person's identity. The PII data being sold on the dark web included Aadhaar numbers, a unique 12-digit identification issued by the UIDAI on behalf of the Indian government, and was offered by a threat actor known as "pwn0001."

Another threat actor named "Lucius" claimed to have access to a more extensive range of PII data, which included voter IDs and driving license records.

### HOW DID SUCH ACTORS GAIN ACCESS TO SUCH DATA?

The threat actors who sold stolen data on the dark web didn't reveal how they obtained the data. They declined to provide specifics, making it difficult to determine the source of the data breach. One of the threat actors, Lucius, claimed to have access to a large data leak, but this claim hasn't been verified.

India's Computer Emergency Response Team is investigating the data leak reports, and the government is working on securely storing massive amounts of data, including legacy data from past decades. The data samples mentioned UIDAI, Aadhaar cards, and voter ID cards, suggesting a potential breach of a third party handling this information.

### WHAT CAN USERS DO TO SAFEGUARD THEIR PERSONAL INFORMATION?

To protect themselves, users should check if their information was part of the data leak and be cautious of emails from unknown sources, as this stolen data may be used for phishing attempts. Changing user IDs and passwords is advised to prevent brute-force attacks.

Implementing two-factor authentication for all accounts is recommended for added security. If users notice any

suspicious online account activity, they should promptly report it to the relevant authorities.

**SIGNIFICANCE:** The security and privacy of personal information, especially sensitive data like Aadhaar numbers, remains a critical concern. The recent data leaks underscore the importance of vigilance among users. Taking proactive measures such as checking for potential data exposure, adopting two-factor authentication, and promptly reporting suspicious activities can help safeguard personal information in an increasingly digital age.

## INTERNATIONAL RELATIONS

## INDIA, BHUTAN TO DISCUSS NEW ROUTES OF REGIONAL CONNECTIVITY

**CONTEXT:** India and Bhutan agreed to discuss new routes of regional connectivity and upgrade border and immigration posts to support Bhutan's fifth King Jigme Khesar Namgyel Wangchuck's plans for a smart city at Gelephu on the border between Bhutan and Assam.

This was decided at a bilateral meeting between the visiting Bhutanese King and Indian Prime minister Narendra Modi.

**STORY SO FAR:** During a meeting between Indian Prime Minister Narendra Modi and Bhutan's King Jigme Khesar Namgyel Wangchuck, the two nations agreed to discuss new regional connectivity routes and the upgrade of border and immigration posts.

- This supports Bhutan's plans for a smart city at Gelephu, located on the border between Bhutan and Assam.

They also discussed the final survey for a crossborder rail link between Gelephu and Kokrajhar, a possible 18 km rail link between Samtse and Banarhat, and enabling Bhutanese trade items to be transported from Haldibari in West Bengal to Chilahati in Bangladesh.

Bhutan also plans to build an international airport at Gelephu as part of a larger Special Economic Zone initiative.

### DEVELOPMENT ASSISTANCE

During the meeting between the Bhutanese King and Indian Prime Minister Modi, the leaders discussed various topics, including the support of India for Bhutan's new Five-Year Plan.

They also agreed to designate the Darranga-Samdrup Jongkhar border crossing as an immigration check post to enhance connectivity and promote tourism. Furthermore, they discussed upgrading trade infrastructure, including the modernization of an Integrated Check Post and facilities in Gelephu, aimed at facilitating travel and trade exchanges between the two countries.

Bhutan is seeking to boost its economy and tourism industry, which has been impacted by the COVID pandemic and a net out-migration of its youth.

The King plans to meet with top business leaders in Mumbai to explore economic opportunities.

## GEOGRAPHY

### 'AFTERSHOCK' ROCKS NEPAL, DELHI

**CONTEXT:** Three days after a violent earthquake struck the Jajarkot region of Nepal, killing at least 150 people, a second earthquake, or an 'aftershock' struck the region on Monday.

**STORY SO FAR :** Nepal experienced a second earthquake, or aftershock, in the Jajarkot region just days after a deadly earthquake on November 3. The aftershock, with a magnitude of 5.6, triggered tremors felt as far as Delhi. However, there were no reports of casualties or structural damage. The region is known for its seismic activity due to the collision of the Indian Plate with the Eurasian Plate. While there is no strict definition of an aftershock, the proximity and timing suggest that it could be considered as such. Nepal's Himalayan region is prone to earthquakes due to its complex tectonic settings.

**SIGNIFICANCE:** The occurrence of earthquakes in the region is attributed mainly to the tectonic settings of the Himalayas comprising Himalayan Frontal Thrust (HFT), Main Boundary Thrust (MBT), and Main Central Thrust (MCT) besides several local faults and geological demarcated lineaments.

## INTERNATIONAL RELATIONS

### QUAD'S IPMDA INITIATIVE PROOF OF OUR COMMITMENT TO A FREE INDO-PACIFIC'

**CONTEXT:** Navy Chief Admiral R. Hari Kumar emphasized the importance of the Indo-Pacific Maritime Domain Awareness (IPMDA) initiative and highlighted the Navy's modernization efforts for regional security and stability.

**STORY SO FAR:** The Indian Navy is committed to a free, open, inclusive and rules-based Indo-Pacific. The Navy is on track to have 170 to 180 ships and submarines by 2028. The Navy is also working with its Quad partners and other regional nations to make the Indo-Pacific a safer and more stable place for all.

The Navy is also focused on force modernization. Sixty-six out of 68 ships under construction are being built at Indian shipyards. Further, 24 ships under contract conclusion will similarly be indigenous. The aim is for the Navy to be fully Aatmanirbhar by 2047.

The Navy is also focused on readiness. Recent events from the stand-off with China in eastern Ladakh, the conflicts in Ukraine and now in West Asia serve as a stark reminder of the need for resilience and readiness. The Navy is working to maintain a versatile naval force that can secure our maritime interests, including energy and trade routes, as well as supply chain vulnerabilities.

The Navy is also fostering cooperation and addressing maritime security challenges in the IOR through the Indian Navy's Information Fusion Centre for the Indian Ocean Region (IFC-IOR) located at Gurugram. This centre has greatly improved situational awareness in the region and enhanced Maritime Domain Awareness.

The Navy will continue to seek to strengthen collaborative partnerships with like-minded nations and organisations. These partnerships will involve sharing best practices, conducting joint exercises, and fostering a sense of collective responsibility.

**SIGNIFICANCE:** The IPMDA and the Navy's focus on force modernization will help to ensure the security and stability of the Indian Ocean Region.

## INTERNATIONAL RELATIONS

### BLINKEN WRAPS UP WEST ASIA TOUR WITH LIMITED SUCCESS

**CONTEXT:** U.S. Secretary of State Antony Blinken concluded his challenging diplomatic tour in Turkey. But he had limited success in creating a regional agreement on how to alleviate civilian suffering in Gaza while Israel continues its conflict with Hamas.

**STORY SO FAR:** U.S. Secretary of State Antony Blinken recently concluded a diplomatic tour in Turkey, where he aimed to build a regional consensus on easing civilian suffering in Gaza during the ongoing conflict with Hamas. However, the efforts have had limited success. Blinken met with Turkish Foreign Minister Hakan Fidan as part of his travels across the region, which included stops in Israel, Jordan, the occupied West Bank, Cyprus, and Iraq. The diplomatic initiatives are still a work in progress, with some common ground found on addressing the current humanitarian needs. This tour comes as Israeli troops surrounded Gaza City, and the situation remains highly complex, with potential for further escalation and casualties on both sides.

**DULL RESPONSE:** Antony Blinken's recent diplomatic mission to the region hasn't gained much support. Israel is against the idea of pausing the conflict, while Arab and Muslim nations are pushing for an immediate ceasefire due to the rising number of Palestinian civilian casualties in Gaza caused by Israeli airstrikes.



**MASTER  
THE NEW  
LEARNING  
MANTRA**

[www.vedhikiasacademy.org](http://www.vedhikiasacademy.org)



**VEDHIK  
IAS ACADEMY**  
*The New Learning Mantra*

## ECONOMY

## FREE GRAINS POSE MEDIUM-TERM FISCAL RISKS; CAN SPUR COMPETITIVE POPULISM'

**CONTEXT:** PM Narendra Modi had announced the extension of free food grains programme by five years.

**STORY SO FAR:** Prime Minister Narendra Modi has announced a five-year extension of the free foodgrains program, which will cost ₹2 lakh crore or 0.7% of GDP annually.

- This announcement has cemented the free foodgrains program as a medium-term policy.
- economists believe that this announcement reflects the difficulty in withdrawing populist policies, especially ahead of elections.
- Once announced, free schemes are always difficult to roll back and can lead to competitive populism.
- Although the near-term fiscal and inflation impact of the extension is manageable, the government's food subsidy bill would increase over time with procurement costs.
- Moreover, the government would be foregoing revenues, which could amount to 0.05% of GDP.

### ADDITIONAL INFORMATION:

- The free foodgrains program was first launched in April 2020 during the COVID-19 pandemic to provide relief to the poor and vulnerable.
- The program was initially scheduled to end in September 2022 but was extended by six months in March 2022.
- The latest extension will now see the program continue till March 2028.
- The free foodgrains program is one of a number of populist measures that have been announced by the Modi government in recent months.
- These measures have been seen as an attempt to shore up support ahead of the 2024 Lok Sabha elections.
- However, economists have warned that these measures could lead to fiscal problems in the medium to long term.

**SIGNIFICANCE:** The announcement of the five-year extension of the free foodgrains program comes at a time when the Indian economy is facing a number of challenges, including rising inflation, high fuel prices, and a depreciating rupee.

The extension of the program is likely to add to the government's fiscal burden and could also lead to higher food prices.

However, the government is likely to view the extension as a necessary step to maintain its popularity and win the 2024 Lok Sabha elections.

*"Intelligence plus character-that is the goal of true education. — Martin Luther King Jr.*



## SCIENCE AND TECHNOLOGY

## IN THE SIKKIM FLOOD'S WAKE, A TRAIL OF HAZARDS LIE IN WAIT

**CONTEXT:** On the night of October 3, the South Lhonak lake in Sikkim, a Himalayan state, overflowed, causing a glacial lake outburst flood (GLOF) that affected four districts. It led to the loss of 42 lives, and 77 people are still unaccounted for. Even now, more than a month later, experts warn that the lake continues to pose a potential threat.

**BACKGROUND:** The South Lhonak lake, a large and fast-growing glacial lake in Sikkim, burst on October 3, 2023, causing a GLOF that affected around 88,400 people. The flood was triggered by a slope failure along the lateral moraine on the lake's left bank. The lake's outlet was widened, resulting in a partial breach, and there was also a probable overtopping as water moved over the moraine along the lake's outlet.

The flood lowered the lake level, but did not drain it completely, and a lot of water still remains in the lake, making it a potential hazard. Weeks after the disaster, there have been continuous landslides along the slope that first failed on October 3, adding to the existing hazard. A landslide about 30 km downstream of the South Lhonak lake was triggered by the flood, which blocked the river, forming a landslide-dammed lake. As of November 1, the landslide-dammed lake had not drained, and considering the risk of sudden release of water downstream, it requires monitoring.

### HOW DID THE DISASTER HAPPEN?

The disaster downstream of the South Lhonak lake in Sikkim was caused by a cascade of events, including a GLOF, the breaking of a dam, and landslides.

#### 1. GLOF

The South Lhonak lake burst on October 3, 2023, causing a GLOF that affected around 88,400 people. The flood was triggered by a slope failure along the lateral moraine on the lake's left bank. The lake's outlet was widened, resulting in a partial breach, and there was also a probable overtopping as water moved over the moraine along the lake's outlet.

#### 2. Dam break

One of the most affected places was Chungthang, a town around 62 km from the lake, where the dam of Sikkim's biggest hydropower project – the 1,200-MW Teesta-III – broke. Water from the damaged reservoir combined with the GLOF, leading to even more destruction downstream of the dam.

#### 3. Landslides

Further downstream of the Teesta-III dam, two more hydropower projects were damaged: the 510-MW Teesta-V and the 500-MW Teesta-VI that is under construction. The flood also triggered landslides along the path of the flood, especially in and around the Chungthang dam.

#### 4. Loose sediment

The loose sediment may pose a threat to downstream

areas in future, and may imply a shorter lifespan for dams and lower efficiency for hydropower projects.

The disaster could have been mitigated by better glacial lake management and infrastructure planning. For example, prior analysis of a possible landslide, which can be inferred using satellite imagery, would have been helpful.

#### WHAT IS THE ROLE OF CLIMATE CHANGE?

In the South Lhonak glacier, the signs of climate change emerged decades ago and became stronger as the rate at which the glacier melted increased, resulting in a rapidly growing lake that was bound to breach – as several research studies stated. In 1990, the South Lhonak glacier was 6.4 km long. A research article published in 2021 found that, by 2019, it had reduced by about 1.3 km and that its area had declined by about 0.96 sq. km.

In 1976, the South Lhonak lake area was a mere 0.20 sq. km, according to a research article published in 2018. As the glacier shrank, the lake grew larger. By 2019, the lake was covering 1.35 sq. km, per the 2021 article.

GLOFs are natural, but the rapid increase in the lake's size as a result of the glacier's accelerated melting tied closely to anthropogenic climate warming, said Dr. VWDV (as he prefers his last name) of the University of Nottingham

As opined by Anil V Kulkarni, distinguished scientist of Climate change, The lake's rapid expansion might have weakened the permafrost that was holding the moraines, which would have been one of the important reasons behind slope failure on October 3."

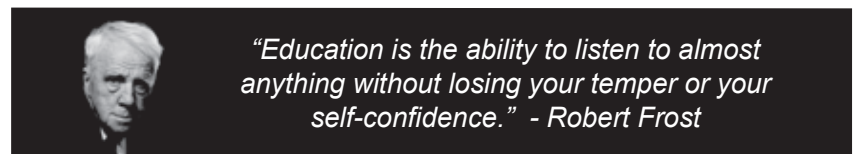
**CONCLUSION:** The glacial lake outburst flood (GLOF) disaster in Sikkim, triggered by the breach of the South Lhonak lake, remains a persistent threat after taking 42 lives, with 77 still missing more than a month later. The incident was the result of a complex sequence of events, including a slope failure and dam breaks, aggravated by the rapid growth of the lake linked to climate change. The role of climate change in accelerating glacier melt and increasing GLOF risks highlights the pressing need for climate action and better disaster preparedness in vulnerable regions.

#### SCIENCE AND TECHNOLOGY

## THE EARTH'S INTERIOR MAY HOLD RELICS OF MOON-FORMING MEGA IMPACT

**CONTEXT:** Seismologists propose that two massive continent-sized blobs in the Earth's mantle could be remnants of a moon-forming collision over 4.46 billion years ago, potentially shedding light on Earth's unique properties and its evolution as the only confirmed habitable planet.

**STORY SO FAR:** Seismologists have identified two massive continent-sized structures deep within the Earth's mantle, one beneath Africa and the other in the South Pacific, suggesting they may be remnants of an ancient cataclysmic event that gave rise to the moon, with computer simulations indicating that a collision between early Earth and a Mars-sized object named Theia over 4.46 billion years ago resulted in the moon's formation, while some debris from Theia remained in the Earth's mantle to form these enigmatic blobs, shedding light on the Earth's unique properties and the mysterious event's potential consequences for Earth's distinct evolution compared to other rocky planets in our solar system.



**VEDHIK IAS ACADEMY**  
The New Learning Mantra  
www.vedhikiasacademy.org

**Comprehensive Coaching For 568 Government Jobs**

www.vedhikiasacademy.org



# VEDHIK

## IAS ACADEMY

*The New Learning Mantra*

# START YOUR JOURNEY WITH THE BEST

**INDIA'S  
TOP MOST  
CIVIL SERVANTS  
FOR COACHING**

[www.vedhikiasacademy.org](http://www.vedhikiasacademy.org)

*Head Office:*

**Vedhik IAS Academy**  
Mercy Estate,  
MG Road, Ravipuram,  
Ernakulam-682 015,

*Corporate office:*

**Vedhik IAS Academy**  
Samkalp Bhawan, Plot No.15,  
Sector 4, Rama Krishna Puram,  
New Delhi, Delhi-110022

*Regional office*

**Vedhik IAS Academy**  
202, Raheja Chambers, 12,  
Museum Road. Bangalore -  
560001. Karnataka, India.

*GCC Office:*

**Bobscoedu,**

Bobsco Trading & Contracting Co. W. L . L  
Office 22, Dream Tower 1,  
Road: 2701, Adliya, Kingdom of Bahrain  
[www.bobscoedu.com](http://www.bobscoedu.com)