

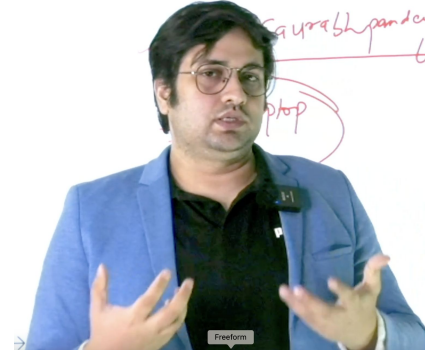
Topics - MINDS MAPS included



- Dumbur Dam
- GLOF
- Digital General Crop Estimation Survey (DGCEs)
- Vaccine derived Polio
- Space mission of india

- Mains

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” Discuss**

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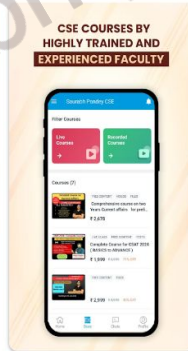
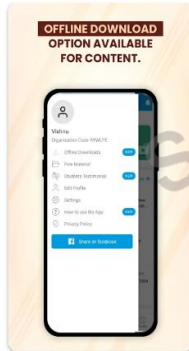
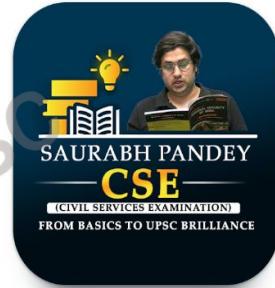
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Topic- Dumbur Dam



Overview

Location: Tripura, India

Purpose: Hydroelectric power generation, irrigation

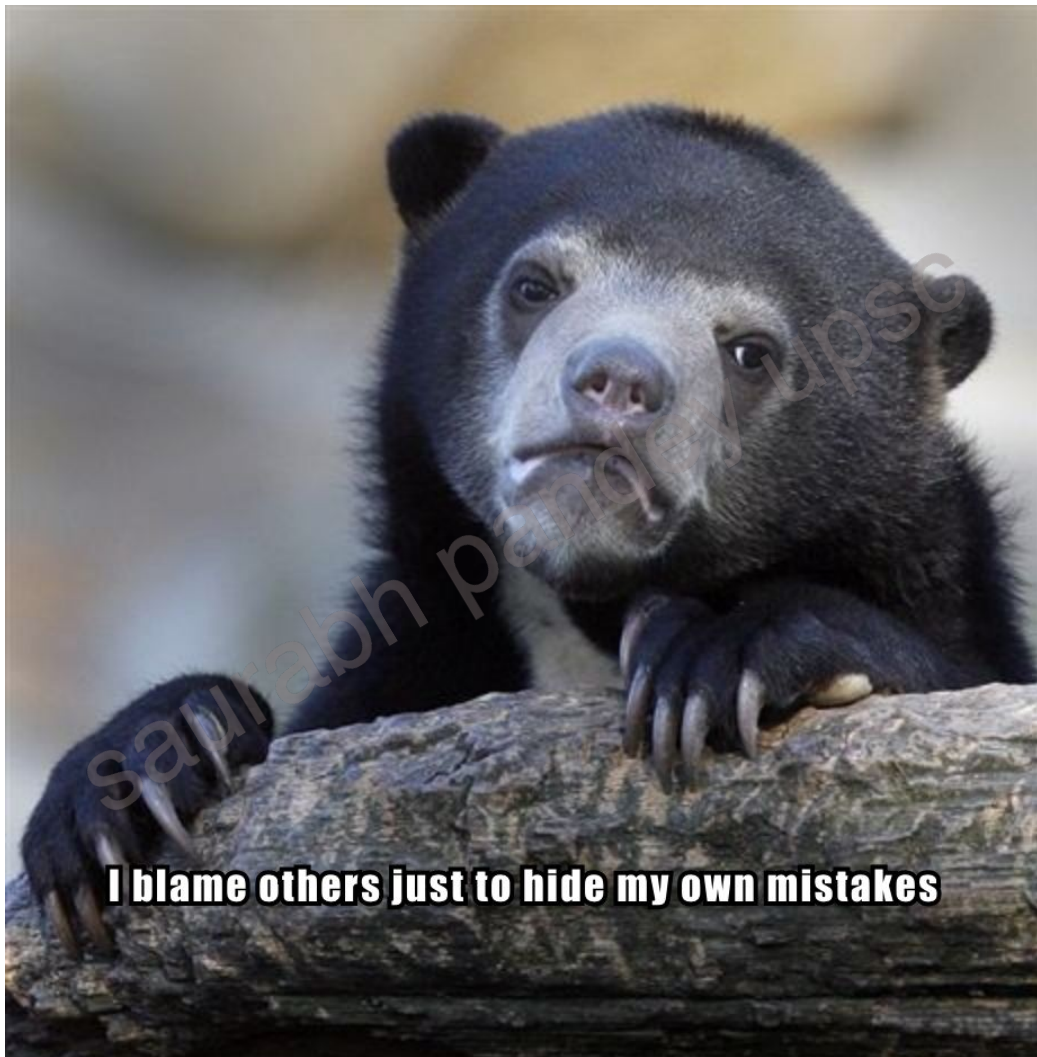
Significance: A key infrastructure project impacting local communities and neighboring countries.

Recent Issues

Flooding Concerns: Reports of flooding in Bangladesh attributed to water release from the dam.

Government Responses: Indian authorities deny responsibility for flooding, blaming heavy rainfall in downstream areas.

Diplomatic Tensions: Strained relations between India and Bangladesh due to conflicting narratives about flood causes.



I blame others just to hide my own mistakes

Impacts of Dumbur Dam

Environmental:

Changes in local ecosystems

Impact on wildlife habitats

Economic:

Agricultural benefits in Tripura

Energy production for regional needs

- **Location and Height:** The Dumbur Dam is situated approximately 120 km upstream of the Bangladesh border and stands at a height of about 30 meters.
- **Purpose of Construction:** It was built to harness the power of the Gumti River and generate electricity for the region.
- **Gumati River:** A significant river forming part of the India-Bangladesh border.

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Topic- GLOF

- **The National Glacial Lake Outburst Floods Risk Mitigation Programme was approved by the Centre.**
- **The programme aims at detailed technical hazard assessments, installing automated weather and water level monitoring stations, and early warning systems at the lakes and in downstream areas**

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Glacial Lake Outburst Floods



Overview

Definition: Sudden release of water from a glacial lake due to dam failure or glacier melting.

Causes:

Climate change 

Glacial melting 

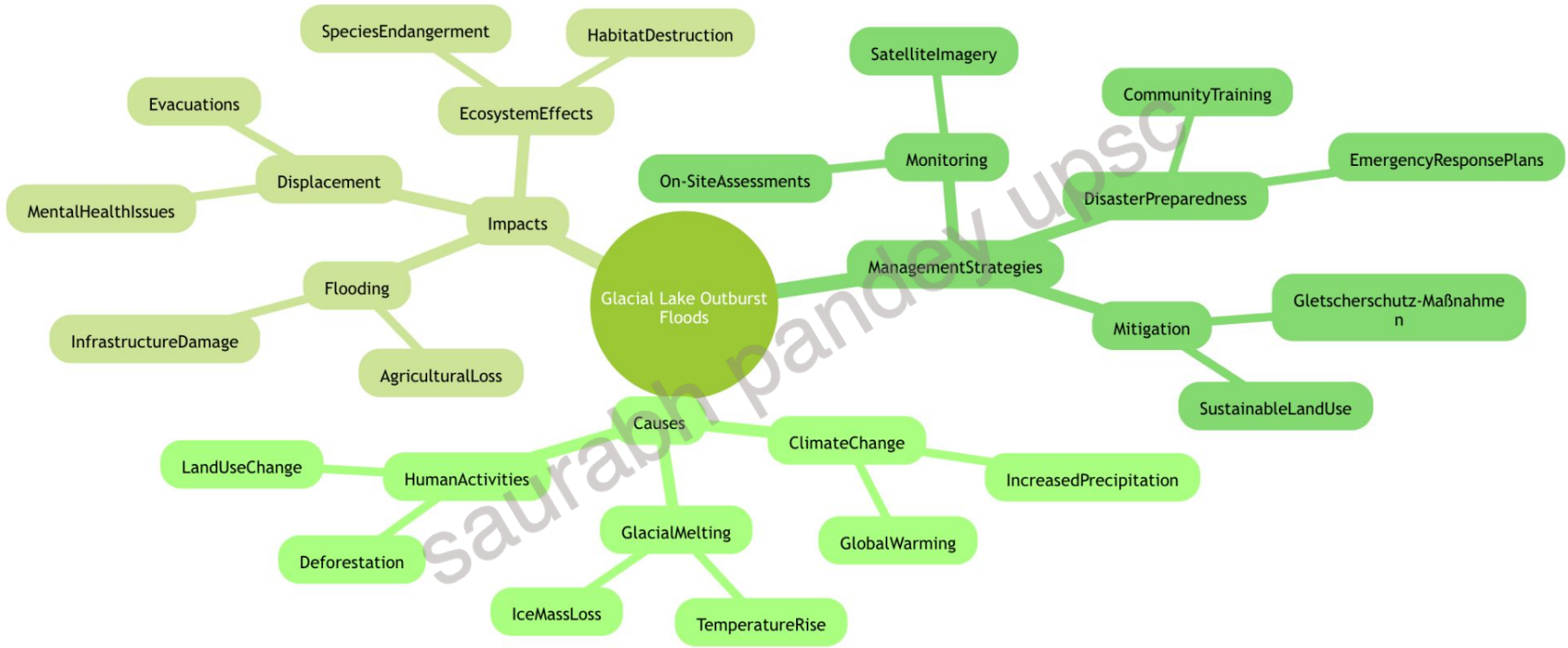
Heavy rainfall 

Impacts:

Flooding of nearby areas 

Destruction of infrastructure 

Displacement of communities 



Lhonak Lake in Sikkim

Overview of Lhonak Lake


Location: Sikkim, India 

Type: Glacial Lake 

Importance: Ecological and cultural significance 

Environmental Concerns

Climate Change: Impact on glacial lakes and surrounding ecosystems 

Flood Risks: Recent reports on flooding due to glacial lake outburst floods (GLOFs) 

Monitoring: Need for early warning systems for flood risks 

Topic- Digital General Crop Estimation Survey (DGCES)

- **Digital General Crop Estimation Survey (DGCES), the Centre convened a national conference with the States to discuss the improvement in crop production statistics .**
- **The new initiative, according to the Centre, aims at enhancing accuracy, reliability, and transparency of agricultural statistics, which will help in policy formulation, trade decisions, and agricultural planning.**

- **DGCES has been initiated to calculate yield based on scientifically designed crop cutting experiments for all major crops across the country.**
- **These initiatives are expected to provide near real-time and reliable data directly from the field.**
- **“It will provide plot-level data with geotagged areas of crops and act as a single source of truth,**

Topic - Vaccine derived Polio



Vaccine-derived

polio Vaccine-derived

- **polio is a rare condition that occurs when the weakened (also called attenuated) strain of poliovirus used in the oral polio vaccine (OPV) mutates and regains the ability to cause paralysis.**
- **OPV contains a live, attenuated virus that is used for immunisation against the disease. This weakened virus triggers an immune response when administered, thus protecting people from the disease.**
- **The attenuated virus replicates in the intestines for a limited period and is excreted in the stool.**

- **In rare cases, the virus can mutate enough to cause the disease again and circulate in areas where either immunisation is low, where immunocompromised people reside, or where sanitation and hygiene are poor.**

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- **According to the World Health Organization (WHO), the virus is classified as “circulating” (cVDPV2) if it is detected in at least two different sources, at least two months apart, that are genetically linked, showing evidence of transmission in the community.**
- **Types of poliovirus Polioviruses are enteroviruses that are transmitted primarily by the faecal-oral route.**
- **Three types — wild poliovirus type 1 (WPV1), wild poliovirus type 2 (WPV2), and wild poliovirus type 3 (WPV3) — have been known to exist. Symptomatically, all these strains are identical.**



- **The first successful polio vaccine for poliovirus was made by Jonas Salk in the early 1950s.**
- **Salk inactivated the virus using formaldehyde and injected it into the muscles of test subjects.**
- **This inactivated polio vaccine (IPV) induced systemic immunity (relating to the blood, brain, and all other organ systems) in the subjects.**
- **After Salk, Albert Sabin developed another vaccine that contained live polio strains weakened by growing them serially in macaque cells, making them unfit for human infection.**



- **Since this vaccine contained the live virus, it had to be administered through its natural mode of infection — in this case, oral.**
- **This is what we today know as the OPV. OPV is usually preferred over IPV because of its ease of administration — it does not require syringes or medical training and is inexpensive.**
- **However, the weakened virus in OPV can occasionally revert, causing the disease it is meant to prevent.**
- **IPV, on the other hand, is a less potent vaccine, but contains inactivated virus particles and hence has no risk of causing vaccine-associated paralytic poliomyelitis (VAPP) — a rare, adverse reaction to OPV.**
- **IPV is comparatively tougher to manufacture, too, as it contains a chemically inactivated virus.**



Mapping ---> Pokrovsk, formerly known as Krasnoarmiisk and Grishino, is a city and the administrative center of Pokrovsk Raion in Donetsk Oblast, Ukraine. It is located 56 kilometres northwest of Donetsk.

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Topic- Space mission of india



Highlights in the last year

Aditya L1:

India followed its lunar success with the successful launch of its solar science mission Aditya-L1 on September 2, 2023.

The launch was the easiest part of the mission, onboard ISRO's Polar Satellite Launch Vehicle (PSLV).

The spacecraft executed a series of manoeuvres to move into an orbit around the first earth-Sun Lagrange point (L1) on January 6, 2024.

It completed its first orbit around L1 on July 2, 2024. It studied a solar storm in May 2024 together with observatories on the ground and spacecraft in lunar orbit.



Gaganyaan TV-D1:

- **ISRO used a modified L-40 Vikas engine to build its Test Vehicle (TV) that it used to perform the first abort mission on October 21, 2023, as part of its ‘Gaganyaan’ human spaceflight mission.**
- **The mission demonstrated the ability of the Crew Escape System (CES) to separate from the TV, take the crew module to safety, and the crew module’s ability to decelerate before splashing down in the Bay of Bengal.**
- **The crew module at the test’s end was recovered by the Indian Navy vessel INS Shakthi**



XPoSat:

ISRO celebrated the new year with the launch of its X-ray Polarimeter Satellite (XPoSat) on January 1, 2024.

The satellite will study how radiation from various celestial objects is polarised. It is the second such space-based observatory after NASA's Imaging X-ray Polarimetry Explorer (IPEX), launched in 2021.

The two instruments on board XPoSat, called XSPECT and POLIX, began operating on January 5 and 10



INSAT-3DS:

ISRO launched the meteorological satellite INSAT-3DS on February 17 onboard a Geosynchronous Satellite Launch Vehicle (GSLV).

This mission was important to prove the vehicle's credibility before the critical NASA-ISRO Synthetic Aperture Radar (NISAR) mission, now expected to launch in early 2025.

This version of the GSLV had previously successfully launched the NVS-01 satellite in 2023.

RLV-TD:



- **ISRO used a downscale version of the Reusable Launch Vehicle, called Pushpak, to conduct two landing experiments — LEX-02 and LEX-03 — on March 22 and June 7 at its Aeronautical Testing Range in Challakere, Karnataka.**
- **The tests simulated landing conditions from space by dropping the Pushpak vehicle from a Chinook helicopter, in LEX-02 along its landing path and in LEX-03 500 metres to one side.**
- **Successes in these tests gave ISRO the confidence to move on to the ‘Orbital Return Flight Experiment**



SSLV:

On August 16, ISRO launched the third and final development flight of the Small Satellite Launch Vehicle (SSLV), placing the EOS-08 and the SR-0 Demosat satellites in orbit. With two consecutively successful test flights, ISRO declared the SSLV's development complete and green-lit its transfer to industry.

EOS-08 carried three payloads: one for earth observation in the infrared range, one to demonstrate the use of reflections from a global satellite navigation system for earth observation, and one ultraviolet dosimeter and alarm to be tested ahead of their use in the Gaganyaan crew module.

ISRO roadmaps



- **After handing over operational responsibilities to NewSpace India, Ltd. (NSIL), ISRO has prioritised research.**
- **In December 2023, ISRO Chairman S. Somanath announced a 25-year roadmap until 2047 for Gaganyaan.**
- **It intersects with the lunar exploration roadmap in the form of an Indian landing on the moon by 2040.**
- **Mr. Somanath also shared a lunar exploration roadmap that includes — apart from a crewed lunar mission — a sample-return mission, a long-duration mission on the moon's surface, docking with NASA's Lunar Gateway (under the Artemis programme), and building moon habitats.**

Gaganyaan - Human Spaceflight

- **India's First Manned Mission:** Gaganyaan represents India's maiden human spaceflight mission, aiming to send Indian astronauts to space, marking a historic milestone in the country's space exploration endeavors.
- **Crew Training and Selection:** ISRO is rigorously training and selecting astronauts for the Gaganyaan mission, prioritizing safety and preparedness to ensure the success of the ambitious venture.
- **International Collaboration:** The mission involves collaboration with other space agencies and organizations, fostering global partnerships and knowledge exchange in crewed space missions.

- **Private space missions Agnikul Cosmos successfully launched its SoRTeD-01 vehicle from its launch pad at the Satish Dhawan Space Center in Sriharikota on March 21.**
- **This was the first launch of a vehicle powered by a semi-cryogenic engine as its first stage from Indian soil. Skyroot Aerospace is progressing towards the launch of its Vikram 1 rocket.**

- **Government of India amended its foreign direct investment (FDI) policy to allow 100% direct FDI in all space and spaceflight segments except for a 74% ceiling in satellite manufacturing and operations and 49% in launch infrastructure.**

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Prelims fact ----->> Britain's drug regulator authorised the Alzheimer's drug **Leqembi** saying it's the first medicine to show some impact in slowing the progression of the disease

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