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For UPSC CSE

23 August 2024

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SAMYAK IAS, NEAR RIDDHI-SIDDHI, JAIPUR

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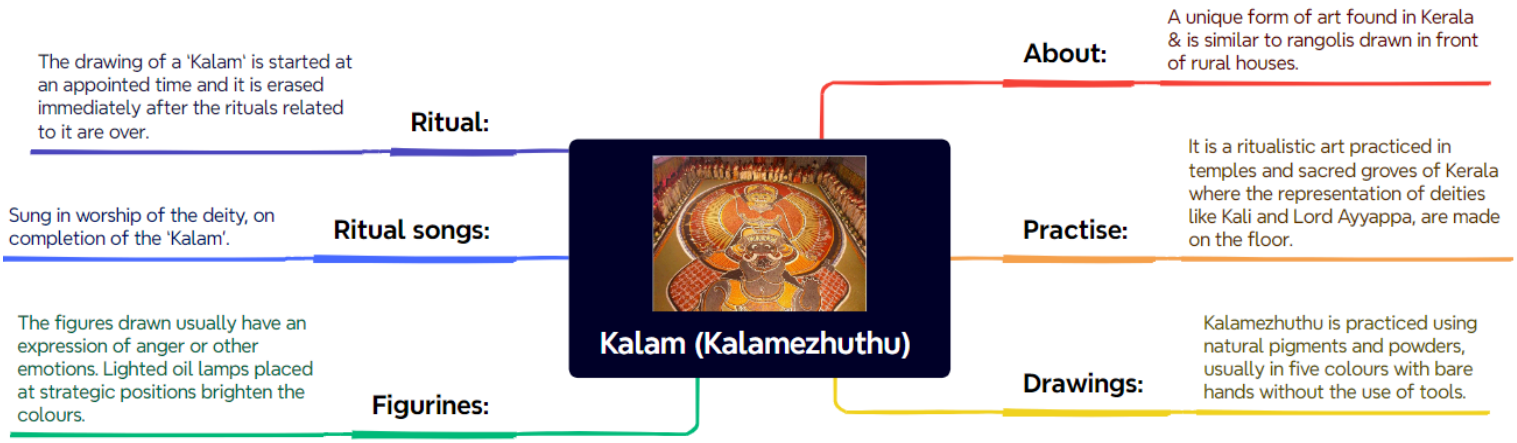
Art and Culture

1. Kalam (Kalamezhuthu) - The Hindu

Relevance: Indian Culture - Salient aspects of Art Forms, Literature and Architecture from ancient to modern times



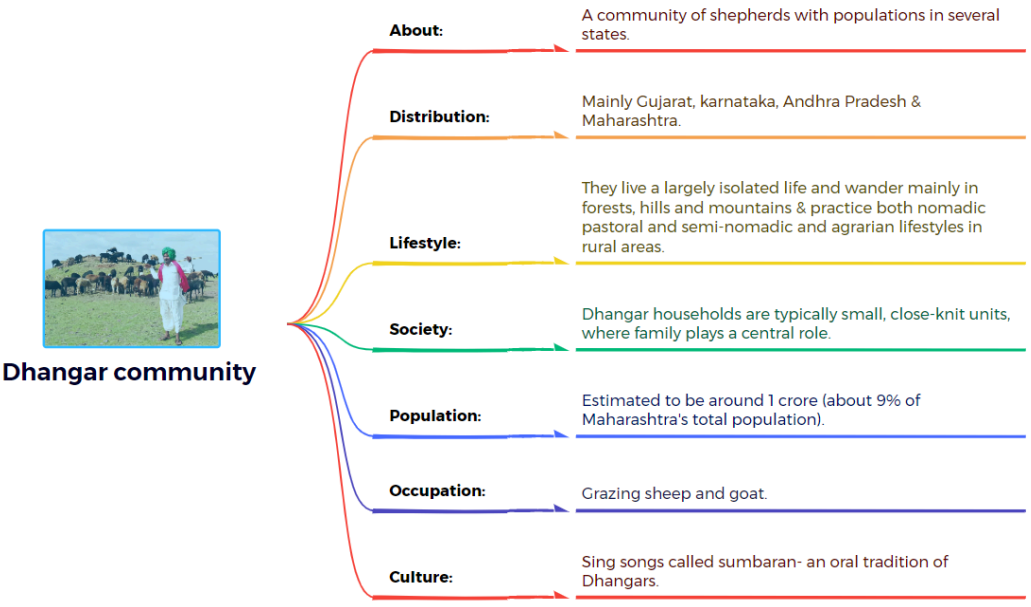
2. Dhangars of Maharashtra - Indian Express

Relevance: Indian Culture - Salient aspects of Art Forms, Literature and Architecture from ancient to modern times

Context

A large group of Dhangars recently marched to the office of the subdivisional officer in Khamgaon of Maharashtra's Buldhana district, demanding a "grazing corridor" for their sheep and goats.

Dhangar community



Geography

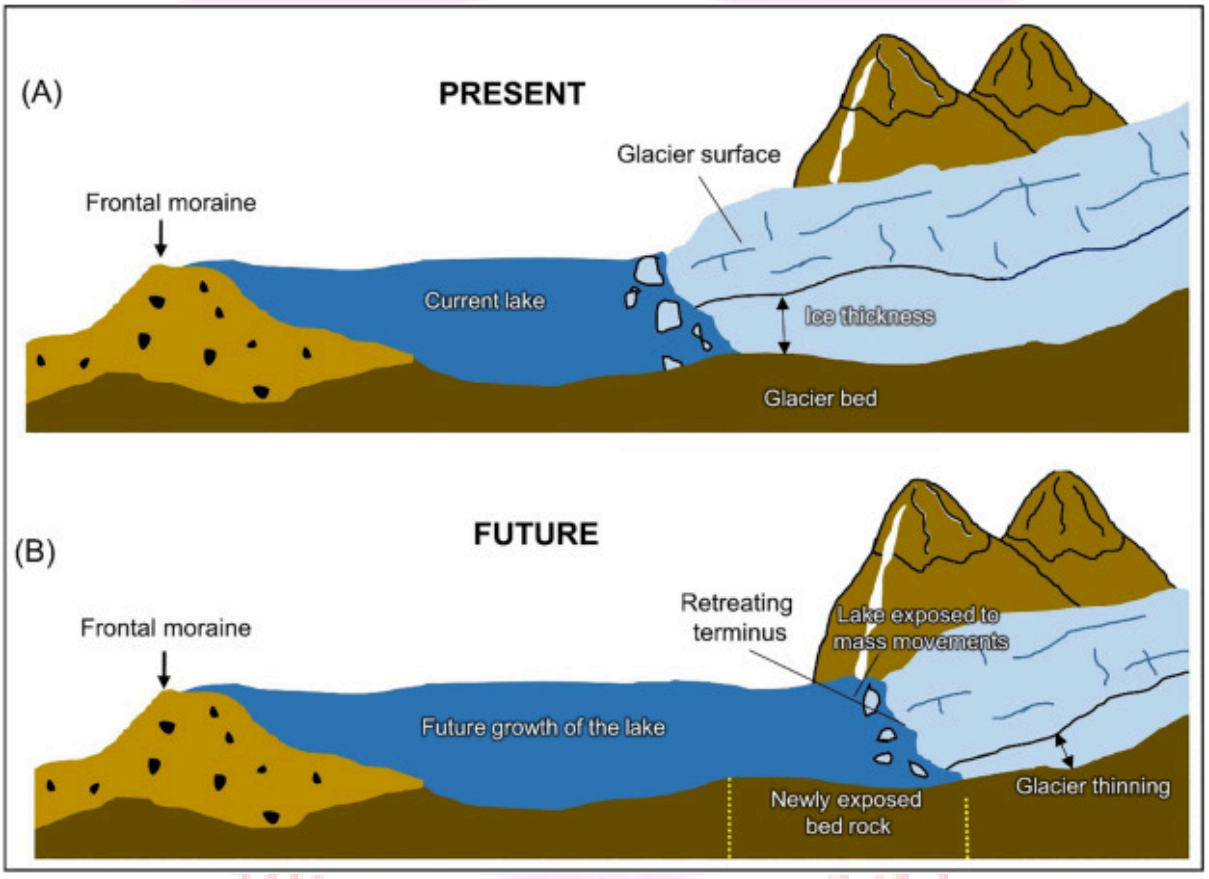
3. NDMA to monitor 189 high-risk glacial lakes to prevent disasters - The Hindu

Relevance: Important Geophysical Phenomena

Context

- Following disasters inflicted by overflowing glacial lakes in the Himalayas (eg, South Lhonak Lake in Sikkim), the NDMA has finalised a list of 189 "high-risk" glacial lakes for mitigation measures to reduce the risk emanating from them.

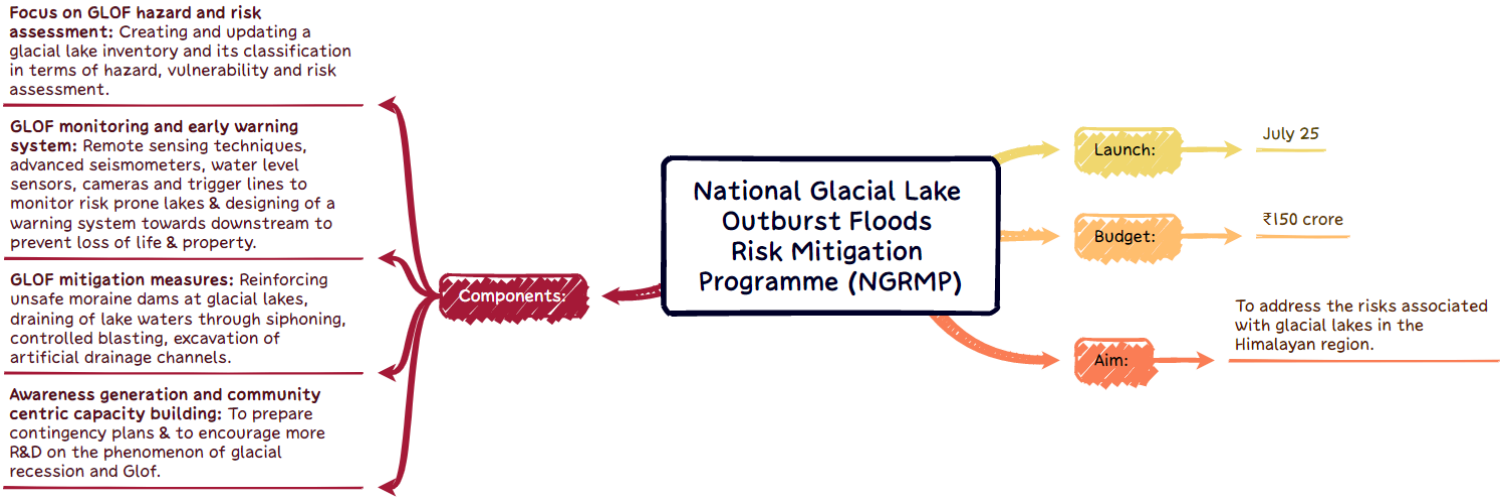
Glacial lake outburst flood (GLOF)



- **About:** A type of catastrophic flood that occurs when the dam containing a glacial lake fails, releasing a large volume of water.
- **Cause:** Rapid melting of glaciers or the buildup of water in the lake due to heavy precipitation or the inflow of meltwater.
- **Triggers:**
    - Triggered by a number of factors, including changes in the volume of the glacier, changes in the water level of the lake, and earthquakes.

- Glacial retreat due to climate change occurring in most parts of the Hindu Kush Himalayas giving rise to new glacial lakes.

National Glacial Lake Outburst Floods Risk Mitigation Programme (NGRMP)



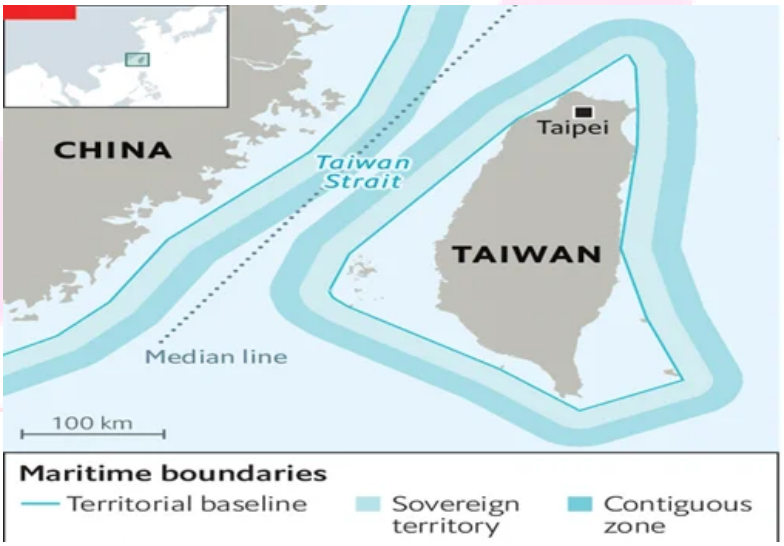
4. Taiwan Strait - The Hindu

Relevance: Salient features of World Physical Geography

Context

A U.S. warship sailed through a sensitive waterway separating Taiwan from China recently as a way to demonstrate Washington's "commitment to upholding freedom of navigation".

Taiwan Strait/ Formosa Strait



- **About:** A 180-kilometre-wide strait separating the island of Taiwan and continental Asia.
- **Extension:** From southwest to northeast between the South and East China seas.
- **Dimensions:** The narrowest part is 130 km wide & has a depth of 70 m.
- **Island:** Pescadores Islands under government of Taiwan.
- **Ports:** Amoy in mainland China and Kao-hsiung in Taiwan.

- **Median line:** An informal dividing line in the Taiwan Strait between the Chinese mainland and Taiwan drawn during the Cold War to delineate the two opposing sides and reduce the risk of clashes.

5. Gaza Strip/ Gaza - The Hindu

Relevance: Salient features of India's Physical Geography

- **About:** A Palestinian enclave on the eastern coast of the Mediterranean Sea.
- **Borders:** Egypt on the southwest for 11 kilometers and Israel on the east and north along a 51 km border.
- **Control:** Gaza Strip & West Bank are claimed by Palestine.
- **Governance:** Since the Battle of Gaza in June 2007, it has been governed by Hamas, a militant, Palestinian, fundamentalist Islamic organization, which came to power in the last-held elections in 2006.

The term "two-state solution" is sometimes mentioned in the news in the context of the affairs of: (2018)

A. China
B. Israel
C. Iraq
D. Yemen

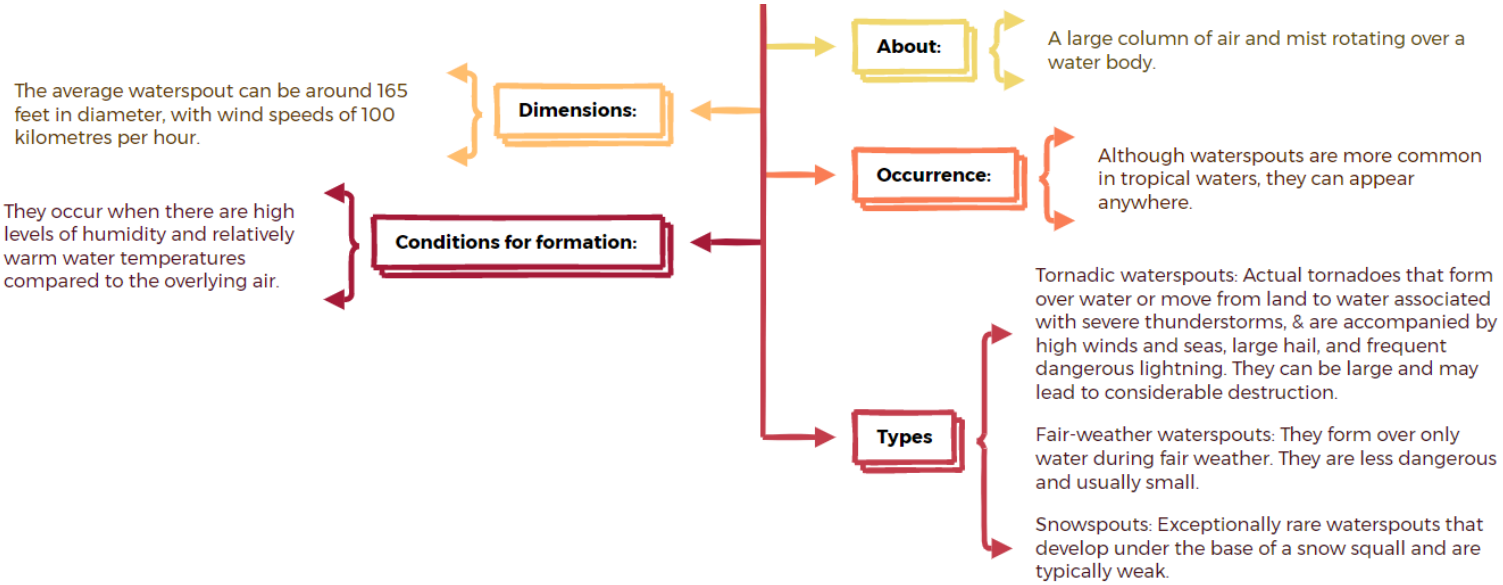
6. Waterspout - Indian Express

Relevance: Important Geophysical Phenomena

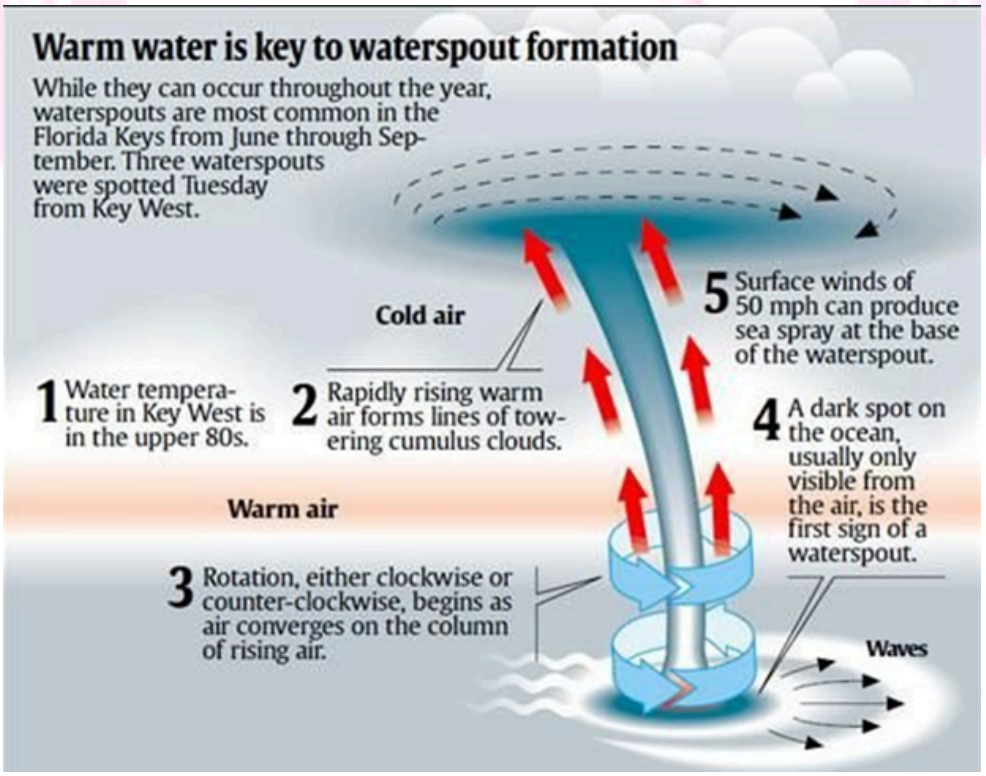
Context

At least one man died and six people are missing after a luxury yacht sank was hit by a violent storm off the coast of Sicily, Italy, recently. Experts suggest the storm could have been a waterspout - essentially a tornado over water.

Waterspouts



Formation



Society

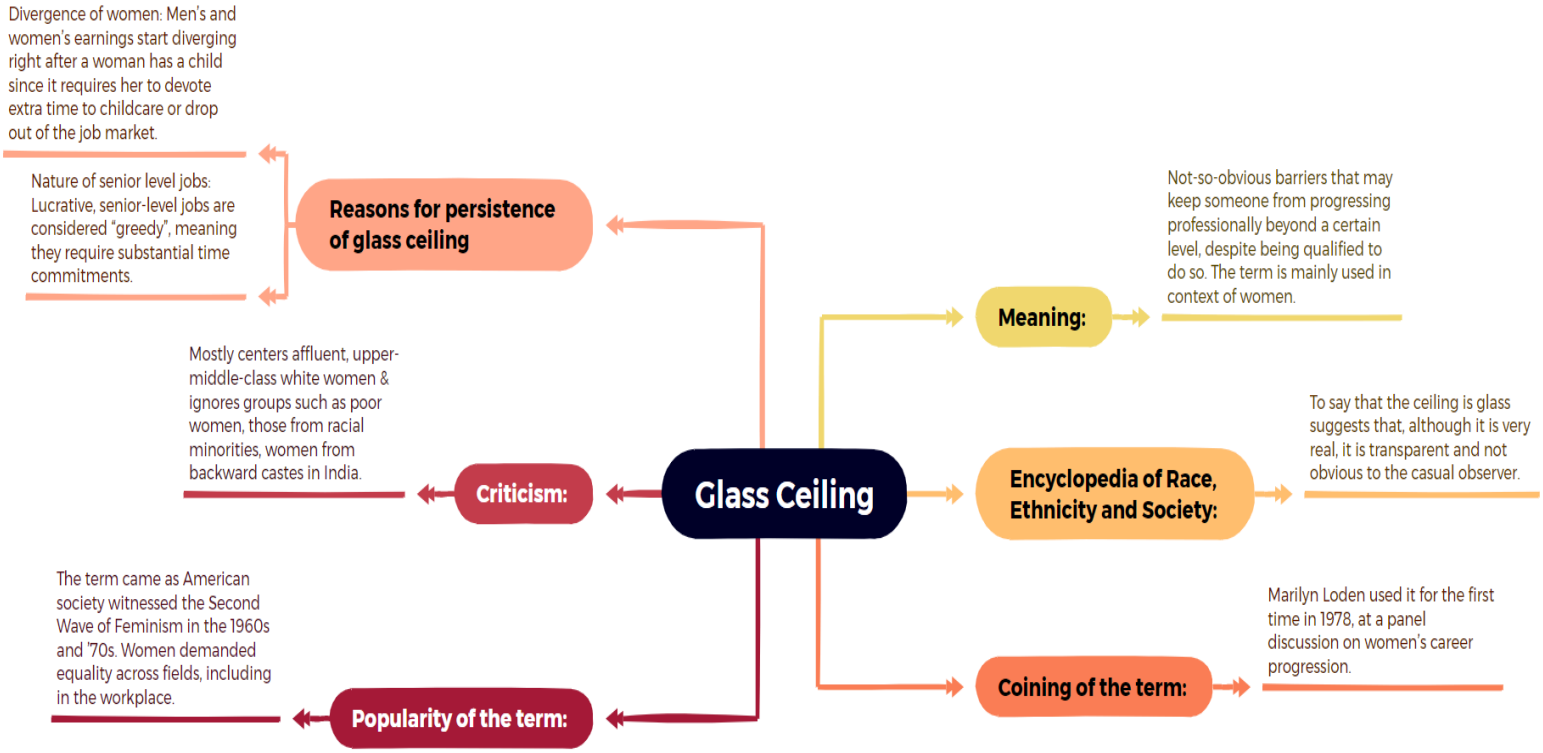
7. Glass Ceiling - Indian Express

Relevance: Salient features of Indian Society

Context

Former US Secretary of State Hillary Clinton recently said Vice President's confirmation as the Democratic Party's presidential candidate will help break through the "highest, hardest glass ceiling".

Glass Ceiling



World Affairs

8. India, Poland formulate action plan, upgrade ties to strategic partnership - The Hindu

Relevance: International Relations

Context

India and Poland have agreed to formulate and execute a five-year action plan that will guide bilateral collaboration from 2024 to 2028 across several areas, following talks between Indian Prime Minister and his Polish counterpart. The ties between the two countries are upgraded to the level of a “strategic partnership”.

India-Poland action plan

Economy

9. Centre, States discuss new mechanism for gathering crop data - The Hindu

Relevance: Indian Economy and issues

Context

Ahead of the nationwide implementation of the Digital General Crop Estimation Survey (DGCES), the Centre convened a national conference with the States to discuss the improvement in crop production statistics recently.

Digital General Crop Estimation Survey (DGCES)

- **About:** A nationwide initiative aimed at precisely assessing crop yields across a variety of crops.
- **Mechanism:** Utilizes a meticulously crafted survey methodology rooted in the principles of crop cutting experiments.
- **Benefits:** With innovative features such as GPS-enabled photo capture and automated plot selection, it significantly enhances transparency and accuracy within the system.

Environment

10. Similipal Tiger Reserve to plant bamboo grass to aid elephants - Indian Express

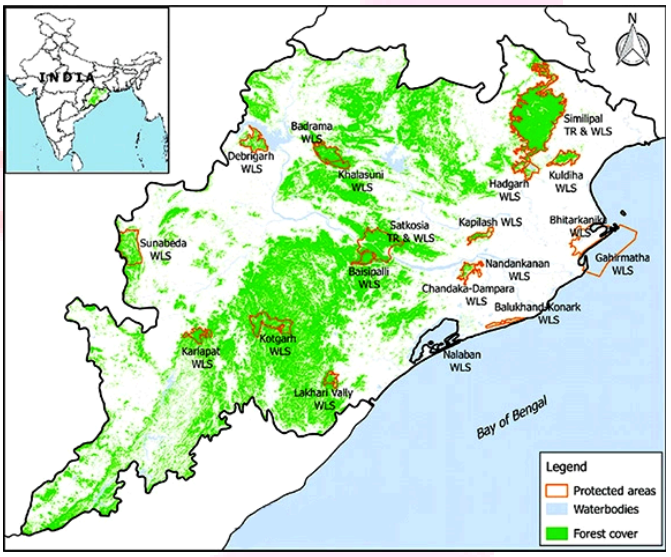
Relevance: Conservation, Environmental Pollution and Degradation

Context

Similipal Tiger Reserve authorities have decided to grow bamboo grass in the national park, one of the largest tiger reserves in the country, as part of an initiative to provide sufficient fodder for elephants.

Similipal Tiger Reserve

- **Location:** Northern part of Odisha's Mayurbhanj district & lies in the eastern end of the eastern ghat.
- **Area:** Over 2750 sq km
- **Major waterfalls:** Joranda and Barehipani
- **Designation:** Designated a tiger reserve under Project Tiger in May 1973 & as a wildlife sanctuary in 1979.
- **Tribes:** Erenga Kharias and the Mankirdias
- **Vegetation:** Tropical semi-evergreen forests, tropical moist deciduous forests, dry deciduous hill forests, high level sal forests and sprawling meadows



- **Fauna:** Tiger, elephant and hill mynah, 55 species of mammals, 304 species of birds, 60 species of reptiles, 21 species of frogs, 38 species of fish and 164 species of butterflies.
- **Flora:** 1078 species of plants including 94 species of orchids.

Sci and Tech

11. IIA finds a novel way to explore the sun's secrets by studying solar magnetic fields - The Hindu

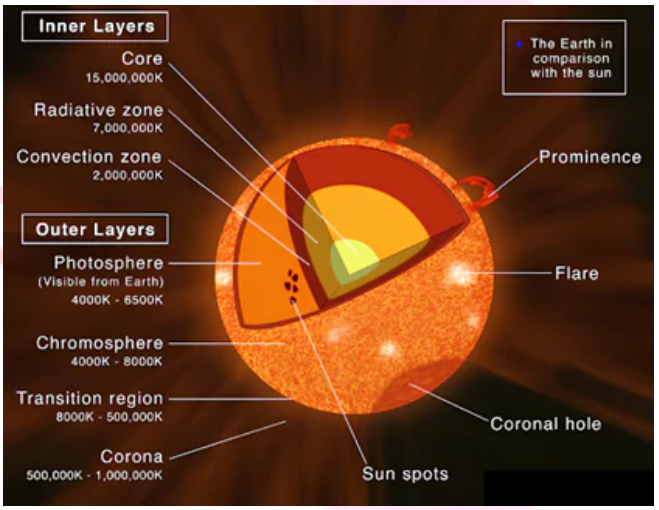
Relevance: Achievements of Indians in Science & Technology

Context

Astronomers at the Indian Institute of Astrophysics (IIA) have found a new way to probe deeper into the sun's secrets by studying the magnetic fields at different layers of the solar atmosphere. The astronomers have done this using data from IIA's Kodaikanal Tower Tunnel Telescope.

Solar atmosphere layers

- **Photosphere:** Innermost visible layer which emits sunlight having temperatures from 6,125 to 4,125 degrees Celsius & featuring sunspots and granules.
- **Chromosphere:** Emits super-heated hydrogen in the form of a reddish glow.
- **Corona:** Outermost layer, visible during total solar eclipses or with specialized instruments. White streamers or plumes of ionized gas flow outward into space. Temperatures here can reach up to 2 million° Celsius.



Kodaikanal Solar Observatory

- **About:** A solar observatory owned and operated by the Indian Institute of Astrophysics.
- **Establishment:** 1899.
- **Location:** Southern tip of the Palani Hills.
- **Achievement:** The Evershed effect (apparent radial flow of gas observed in the outer region of sunspots on the Sun was first detected in January 1909.

Indian Institute of Astrophysics (IIA)

- **About:** An autonomous Research Institute wholly financed by the Department of Science and Technology, Government of India.
- **Headquarters:** Bengaluru
- **Function:** It conducts research primarily in the areas of astronomy, astrophysics and related fields.
- **Establishment:** 1971.

12. What is vaccine-derived polio? - The Hindu

Relevance: Science and Technology- Developments

Context

A two-year-old child in Tikrikilla, Meghalaya, has been infected with vaccine-derived polio. This is not a case of wild poliovirus, but an infection that presents in some people with low immunity.

Vaccine-derived polio

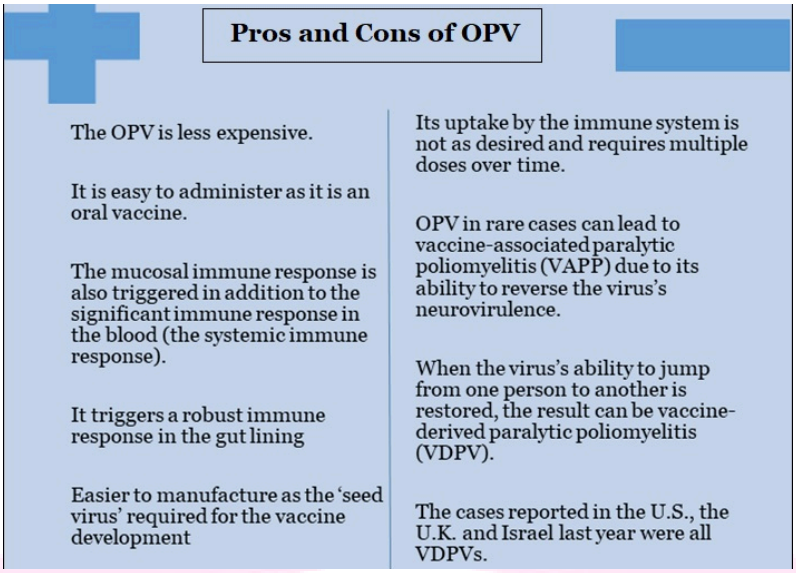
- **About:** A rare condition that occurs when the weakened strain of poliovirus used in the oral polio vaccine (OPV) mutates and regains the ability to cause paralysis.
- **Components of OPV:** It contains a live, attenuated virus that is used for immunisation against the disease.
- **Impact of the weakened virus:**
    - It 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.
- **Spread of vaccine-derived poliovirus (VDPV):** Sometimes, the virus can mutate enough to cause polio again and circulate in areas where either immunisation is low, where immunocompromised people live, or where sanitation is poor.
- **Circulating VDPV (cVDPV2):** If the virus 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:** Wild poliovirus type 1 (WPV1), Wild poliovirus type 2 (WPV2), Wild poliovirus type 3 (WPV3)

Development of Polio vaccine

- **First successful polio vaccine:** Made by Jonas Salk in the early 1950s who inactivated the virus using formaldehyde and injected it into the muscles of test subjects.
- **Vaccine by Albert Sabin:** It 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 orally. This is the OPV.

OPV and IPV

IPV	OPV
Killed formolised virus	Live attenuated virus
Given IM/SC	Given orally
Induces circulating antibody; no local immunity	Both humoral and intestinal immunity
Prevents paralysis; does not prevent reinfection by wild polio viruses	Prevents paralysis and intestinal reinfection
Not useful in epidemics	Effective in controlling epidemics
Content is 10,000 times more than OPV; Costlier	Cheaper
Does not require stringent conditions during storage and transportation	Requires to be stored and transported at sub-zero temperature, unless stabilised



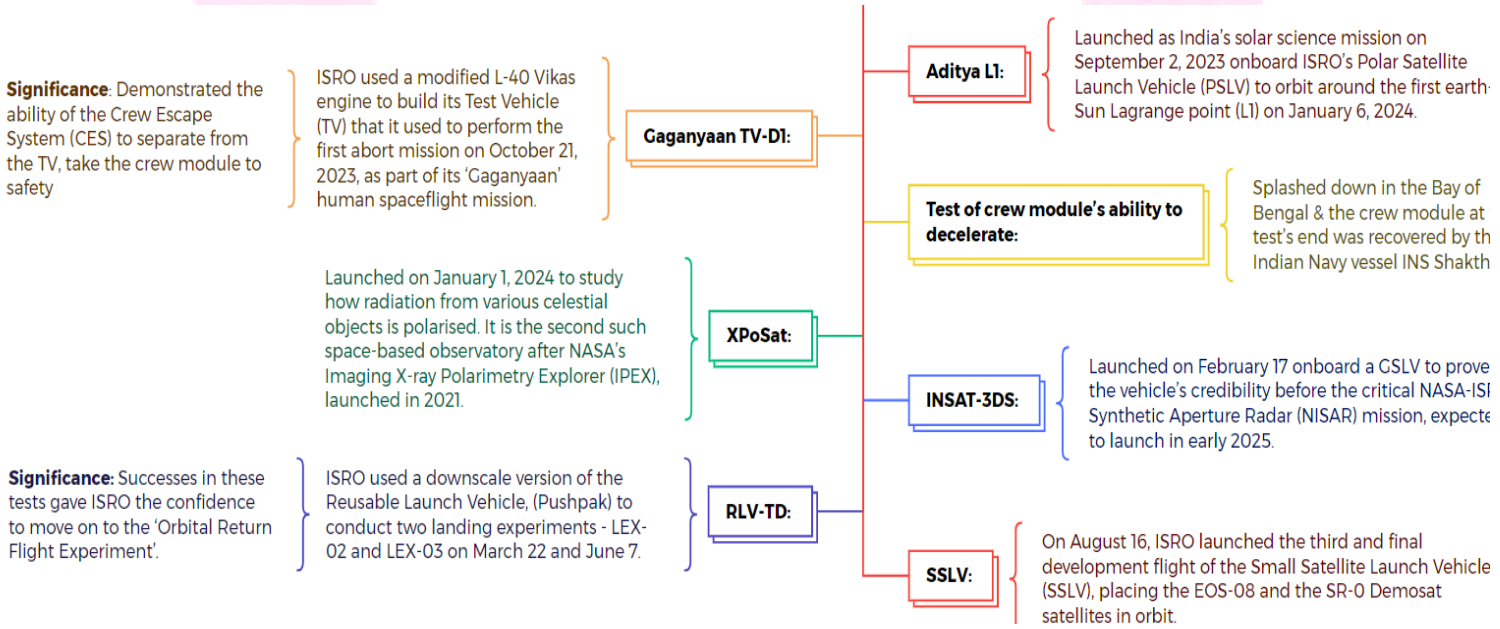
13. A look at ongoing Indian space missions - The Hindu

Relevance: Achievements of Indians in Science & Technology

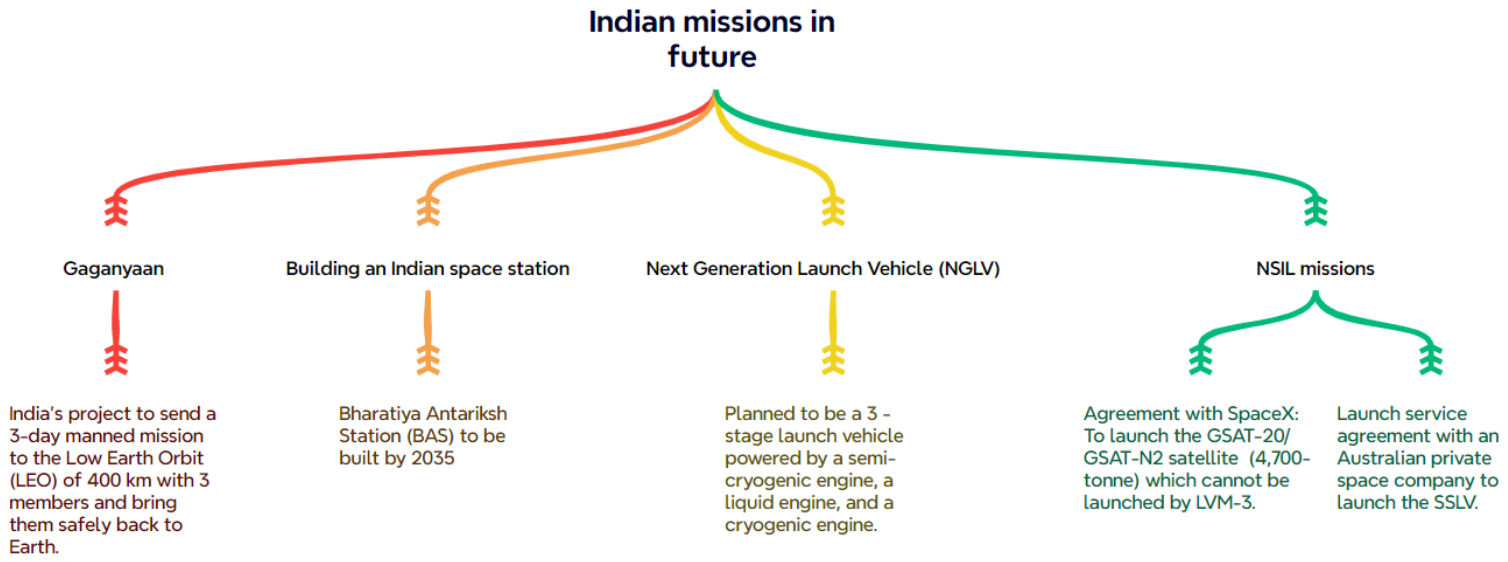
Context

A lot has been happening since the Indian Space Research Organisation (ISRO) successfully landed the lander of its Chandrayaan 3 mission, Vikram, on the surface of the moon..

Indian space missions last year



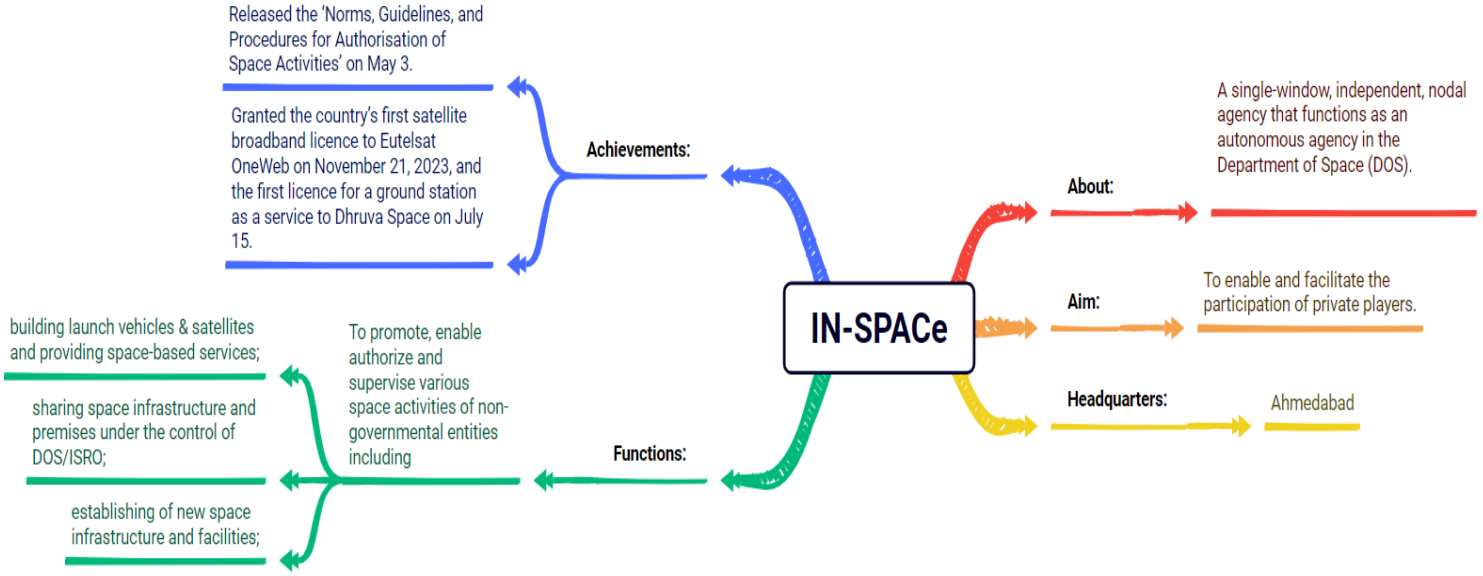
Indian missions in future



Private space missions

- **Agnikul Cosmos:** It successfully launched its SoRTeD-01 vehicle from its launch pad at the Satish Dhawan Space Center in Sriharikota which was the first launch of a vehicle powered by a semi-cryogenic engine as its first stage from Indian soil.
- **Skyroot Aerospace:** Progressing towards the launch of its Vikram 1 rocket & previously pressure-tested solid-fuel engines and launched a test vehicle called Vikram S from Sriharikota on November 18, 2022.
- **Dhruva Space and Bellatrix Aerospace:** They flew their experiments on the fourth and final stage of the PSLV-C58 mission on January 1.

IN-SPACe



14. Chandrayaan 3: the first findings - Indian Express

Relevance: Achievements of Indians in Science & Technology

Context

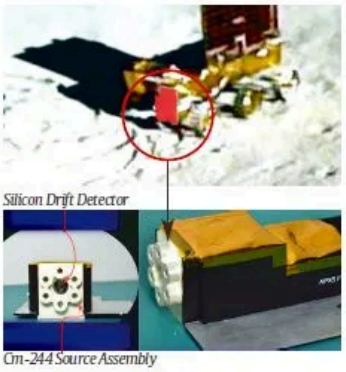
Almost a year after Chandrayaan 3 landed on the Moon, scientists in India have released the findings of studies carried out by one of the instruments on the rover module.

APXS IS a mobile chemical lab used to detect elemental compositions. It is small and lightweight; ideal for space missions to study the composition of rocks and soils of celestial bodies.

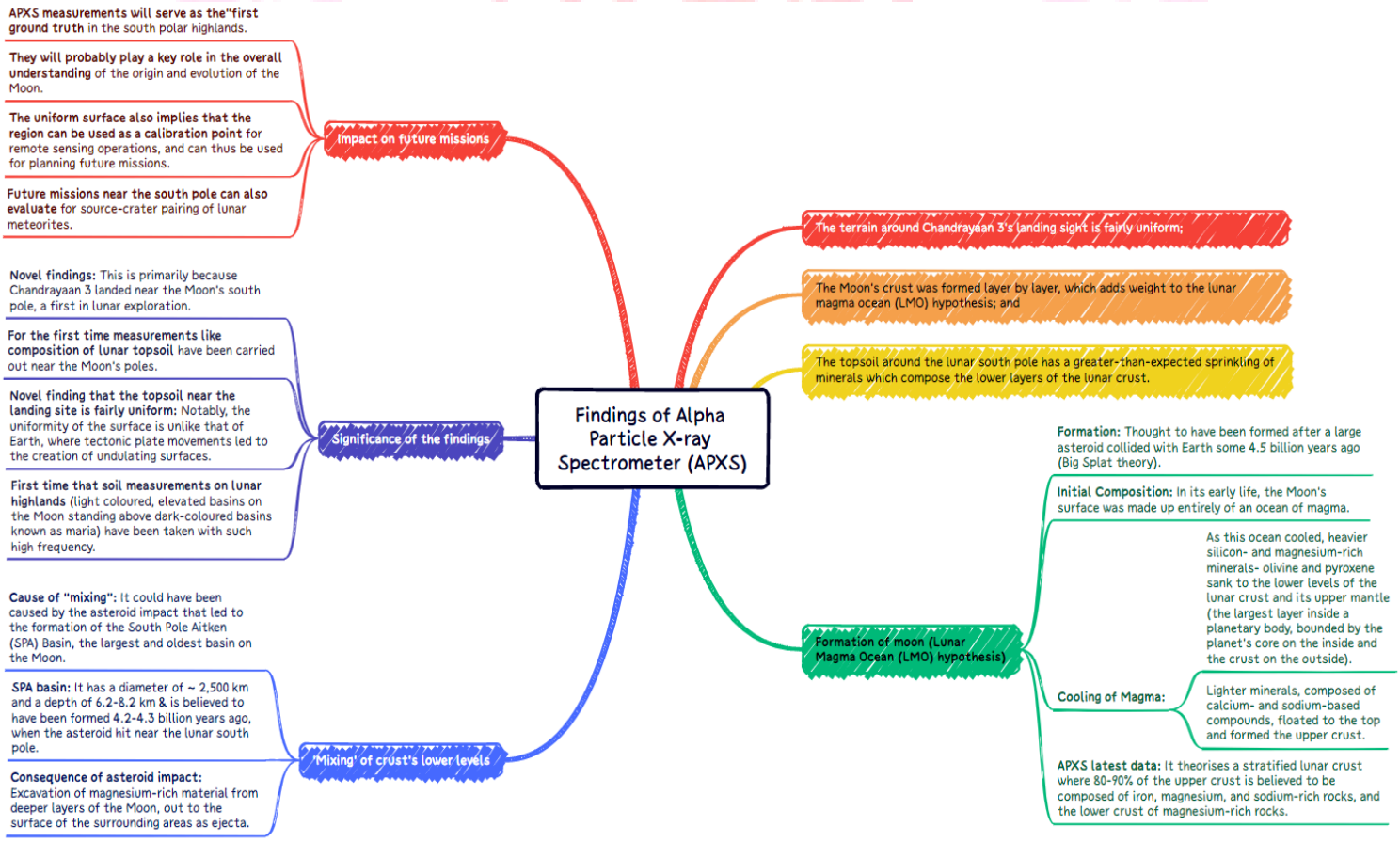
IT BOMBARDS a sample with alpha particles (helium nuclei stripped of electrons), and the energy briefly 'excites' atoms of the sample. The atoms return to stable state by emitting x-rays.

X-RAYS emitted from the sample carry a specific amount of energy that is unique to the element it originated from. APXS reads these characteristic emission signatures to determine the composition of the sample.

EMISSION RATE of x-rays provides clues about the concentration of a particular element in the sample. Computers on APXS process the data from the sample (which most often contains multiple elements) to identify the elements present and to quantify their concentration.



(Top) Chandrayaan lander as seen by rover; the APXS instrument. *ISRO*



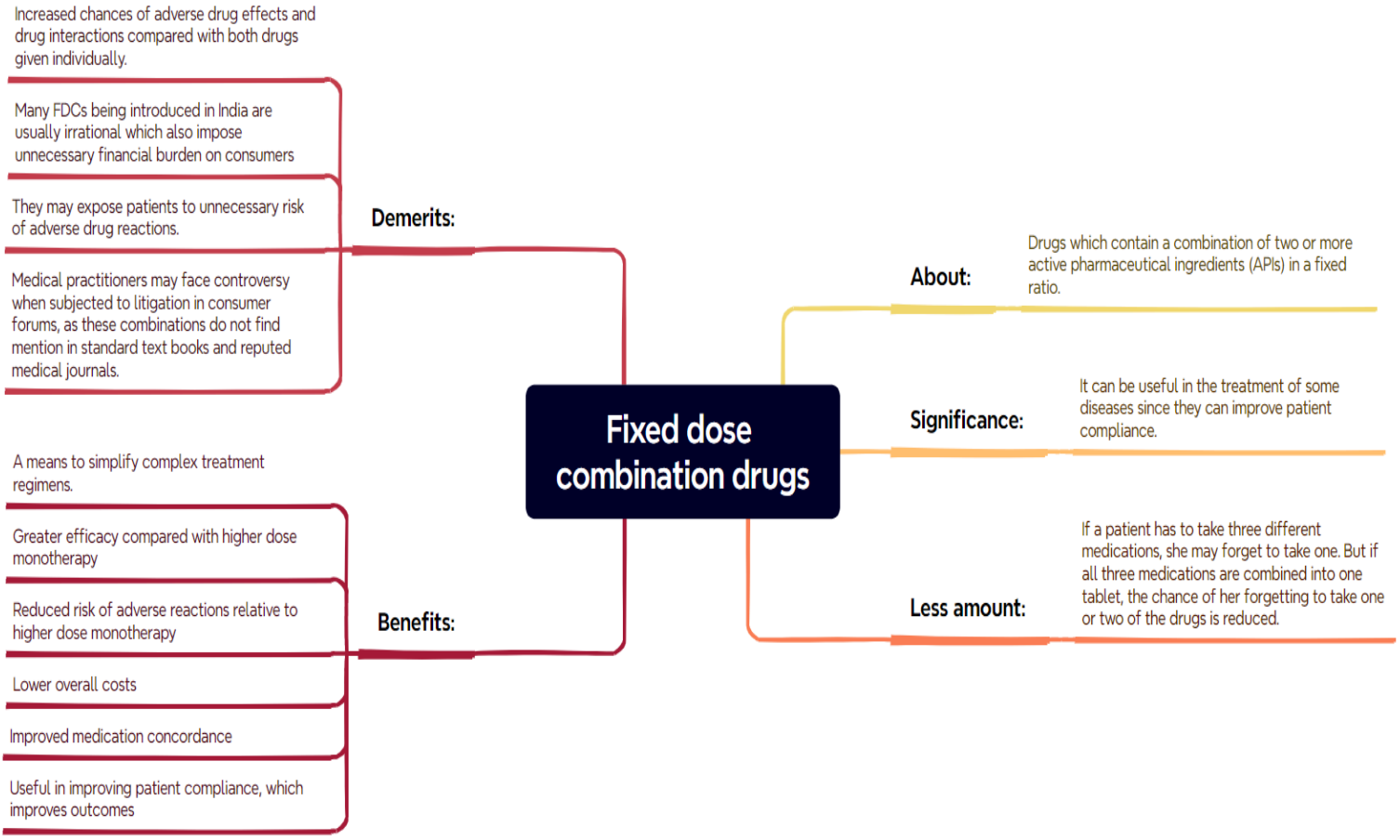
15. Ministry bans 156 'irrational' fixed dose combination drugs with immediate effect - Indian Express

Relevance: Science and Technology- Developments

Context

The Union Health Ministry has banned 156 “irrational” fixed dose combination (FDC) medicines with immediate effect, with the notification stating that an expert committee had found “no therapeutic justification” for these combinations and they may pose risk to the patients.

Fixed dose combination drugs



16. Why has an international astronomical group joined calls for creating time standard for the Moon? - Indian Express

Relevance: Science and Technology- Developments

Context

The International Astronomical Union last week proposed the establishment of a timekeeping standard for the Moon. The development came after the US White House officially directed the NASA to create a time standard for the Moon.