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 **SAMYAK IAS, NEAR RIDDHI-SIDDHI, JAIPUR**

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Geography

1. Mount Kilimanjaro - Indian Express

Relevance: Distribution of Key Natural Resources across the world

Context

A team of climbers from the Himalayan Mountaineering Institute (HMI) in Darjeeling scaled the highest peak of Mt Kilimanjaro in Tanzania recently.

Mount Kilimanjaro

- **About:** Africa's tallest mountain and the world's largest free-standing mountain (not a part of a mountain range).
- **Location:** Northeastern Tanzania, near the Kenya border.
- **Extension:** Extends approximately east-west for 50 miles (80 km).
- **Type:** A stratovolcano made up of three cones: Kibo, Mawenzi, and Shira.
- **5 main vegetation zones:** Lower slopes, montane forest, heath and moorland, alpine desert, and summit.
- **Conservation reserve:** Kilimanjaro National Park, a UNESCO World Heritage Site in 1987.



Consider the following statements: (2018)

1. The Barren Island volcano is an active volcano located in the Indian territory.
2. Barren Island lies about 140 km east of Great Nicobar.
3. The last time the Barren Island volcano erupted was in 1991 and it has remained inactive since then.

Which of the statements given above is/are correct?

- A. 1 only
- B. 2 and 3
- C. 3 only
- D. 1 and 3

2. Yamuna River - The Hindu

Relevance: Distribution of Key Natural Resources across the world and India

Context

National Green Tribunal (NGT) has sought explanations from DDA, National Mission for Clean Ganga (NMCG), and several other agencies regarding construction on the Yamuna floodplain. NGT also granted them time to file their responses.

Yamuna River

- **About:** A major tributary of the Ganges River.
- **Origin:** Yamunotri Glacier at a height of 4,421 meters.
- **Length:** 1,376 km
- **Course:** Crosses three states - Uttarakhand, Uttar Pradesh and Haryana.
- **Confluence:** Near Prayagraj (Allahabad), after a course of about 855 miles (1,376 km), the Yamuna joins the Ganges River.
- **Religious significance:** The confluence of the two rivers is an especially sacred place to Hindus and is the site of annual festivals as well as the Kumbh Mela, which is held every 12 years.
- **Tributaries:**
 - **Biggest tributary:** Tons River.
 - **Biggest right bank tributary:** Chambal River
 - **Other tributaries:** Hindon, Sarada, and Giri rivers on the right and Betwa and Sindh on the left.



Consider the following pairs: (2019)

Glacier	River
1. Bandarpunch:	Yamuna
2. Bara Shigri:	Chenab
3. Milam:	Mandakini
4. Siachen:	Nubra
5. Zemu:	Manas

Which of the pairs given above are correctly matched?

- A. 1, 2 and 4 only
- B. 1, 3 and 4 only
- C. 2 and 5 only
- D. 3 and 5 only

3. Great Barrier Reef - Indian Express

Relevance: Distribution of Key Natural Resources across the world

Context

Water temperatures in and around Australia's Great Barrier Reef have risen to their warmest in 400 years over the past decade, placing the world's largest coral reef under threat, according to a new study.



Great Barrier Reef

- **About:** A complex of coral reefs, shoals and islets in the Pacific Ocean located off the northeastern coast of Australia in the Coral Sea.
- **Significance:** Longest and largest reef complex in the world & the largest living structure on Earth.
- **Area:** 350,000 square km.
- **Reef diversity:** It is made up of nearly 3,000 individual reefs and over 900 islands.
- **Designation:** Declared a UNESCO World Heritage Site in 1981.
- **Conservation:** A marine protected area managed by the Great Barrier Reef Marine Park Authority of Australia.
- **Biodiversity:** ~ 2000 species of fish and around 600 different coral species are found here. It is home to 4,000 mollusk species and over 250 different shrimp species.

Consider the following statements: (2018)

1. Most of the world's coral reefs are in tropical waters.
2. More than one-third of the world's coral reefs are located in territories of Australia, Indonesia and Philippines.
3. Coral reefs host far more number of animal phyla than those hosted by tropical rainforests.

Which of the statements given above is/are correct?

- A. 1 and 2 only
- B. 3 only
- C. 1 and 3 only
- D. 1, 2 and 3

4. Lake Bolsena - Indian Express

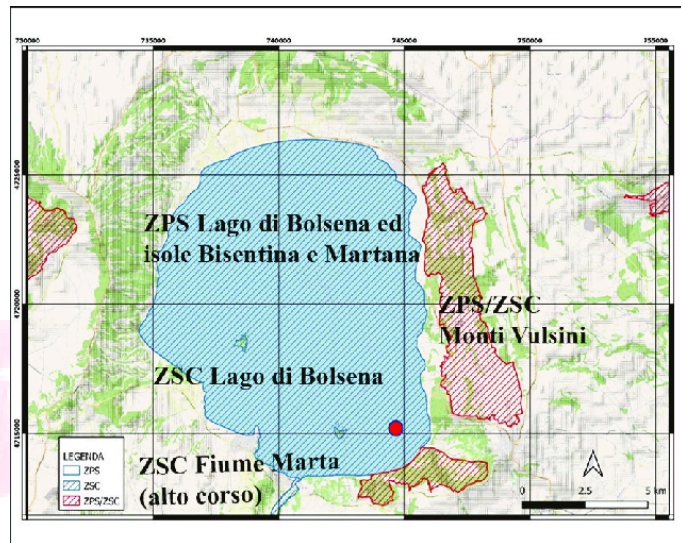
Relevance: Distribution of Key Natural Resources across the world

Context

An ancient clay figurine dating to the Iron Age has been found in Lake Bolsena, Italy.

Lake Bolsena

- **About:** A volcanic lake located in the province of Viterbo in Lazio region, Italy.
- **Area:** Largest volcanic lake in Europe (113.5 sq. km).
- **Formation:** It was formed 370,000 years ago following the collapse of a caldera of the Vulsini volcano, which stayed active until 104 BC.
- **Significance:** Known for a strange phenomenon, known locally as “sessa”, which causes tidal-like movements in the lake.
- **Major islands in the lake:** Martana and Bisentina formed by underwater eruptions.



Volcanic Lake

- **About:** A body of water that forms within a volcanic crater, caldera, or a volcanic depression.
- **Formation:** Developed after a volcanic eruption when the crater or caldera left behind fills with water, either from precipitation, groundwater, or melting ice and snow.

Which one of the lakes of West Africa has become dry and turned into a desert? (2022)

- A. Lake Victoria
- B. Lake Faguibine
- C. Lake Oguta
- D. Lake Volta

Polity

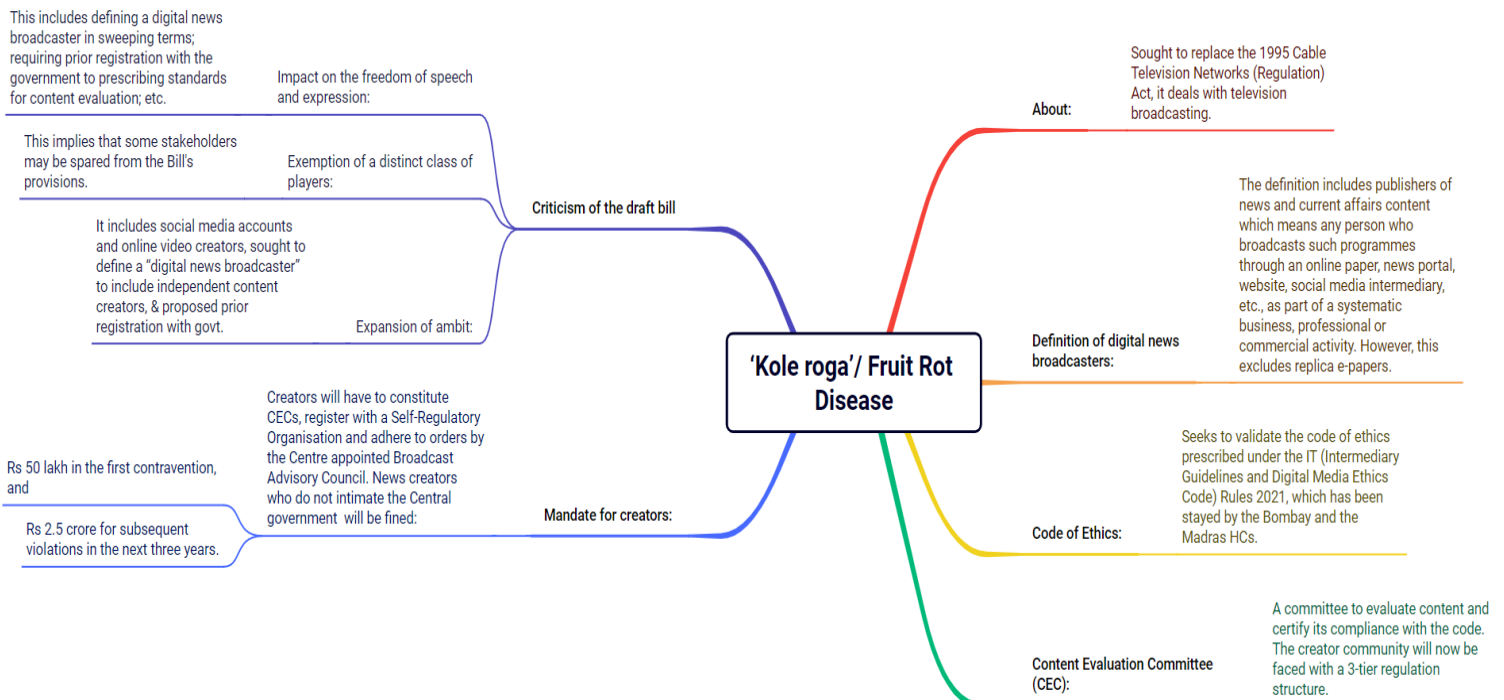
5. Facing criticism, Govt withdraws new draft of broadcast Bill - Indian Express

Relevance: Parliament and State Legislatures—Structure, Functioning, Conduct of Business, Powers & Privileges and Issues Arising out of these

Context

The Ministry of Information and Broadcasting is learnt to have withdrawn the new draft Broadcasting Services (Regulation) Bill, 2024, which triggered a controversy and criticism over fears that the government was trying to exert greater control over online content. The draft Bill had raised several questions on the freedom of speech and expression, and the government's powers to regulate it.

Draft Broadcasting Services (Regulation) Bill 2024



Economy

6. How Tungabhadra dam gate was swept away, why farmers are fearful - Indian Express

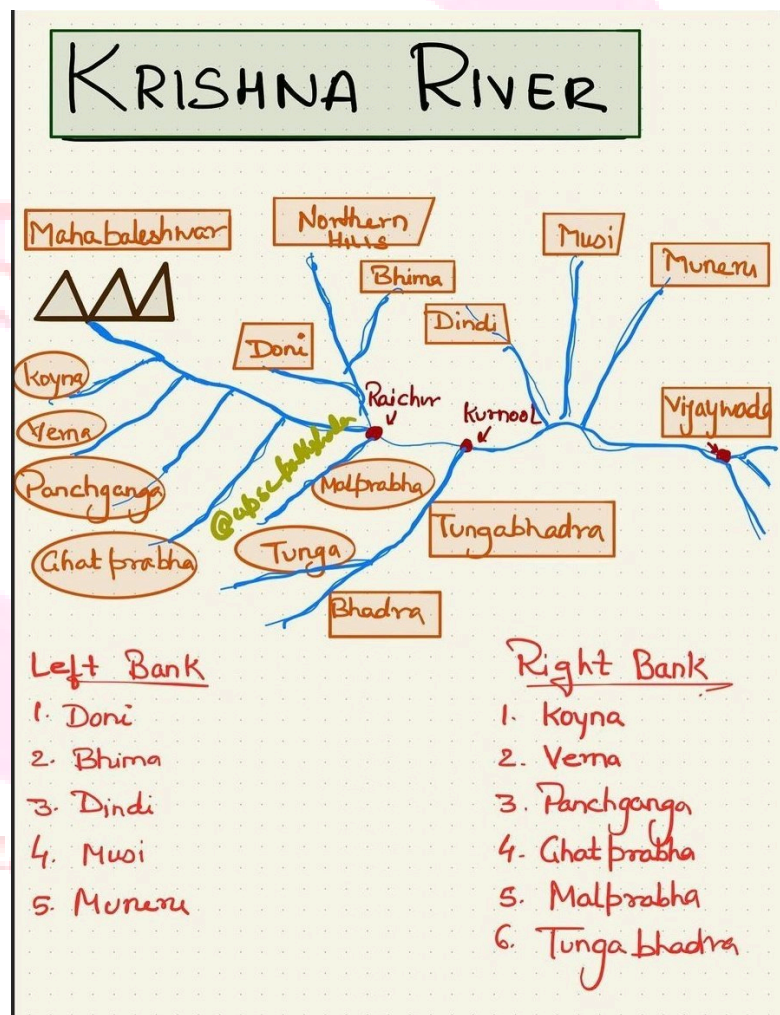
Relevance: Infrastructure

Context

A flood alert has been sounded downstream of the Tungabhadra dam in Karnataka's Koppal district after one of the 33 crest gates of the massive stone masonry dam across the Tungabhadra river was washed away recently.

Tungabhadra River

- **About:** A major river in the south Indian peninsula, a tributary of the Krishna River.
- **Formation:** Formed by the union of Tunga and Bhadra rivers and hence the name.
- **Origin:** Both Tunga and Bhadra Rivers originate on the eastern slopes of the Western Ghats.
- **Confluence:** The two rivers merge at Koodli in the Shimoga district of Karnataka, giving birth to the Tungabhadra River.
- **Course:** It joins the Krishna River at Sangamaleshwaram in Andhra Pradesh.
- **Mouth:** The Krishna River finally ends in the Bay of Bengal.
- **Length:** ~ 531 km
- **Catchment area:** 28,000 sq km
- **States:** Karnataka and Andhra Pradesh.
- **Major Tributaries:** Varada and Hagari (Vedathy) River.



- **Major Dams:** Tunga Anicut Dam, Bhadra Dam, Hemavathy Dam, Tungabhadra Dam.

Tungabhadra reservoir

- **Area:** 378 sq km primarily in Karnataka's Vijayanagar district.
- **Aim:** One of the major reservoirs in South India that supplies water for irrigation and industrial use, as well as drinking water to Karnataka and Andhra Pradesh.
- **Conception:** First conceived of in 1860 to mitigate the impact of recurrent famine in Rayalaseema.
- **Construction:** Begun by the erstwhile governments of Hyderabad and Madras in 1945, and the project was completed in 1953.



7. Mullaperiyar Dam - The Hindu

Relevance: Infrastructure

- **Location:** Situated at the confluence of the Mullayar and Periyar rivers located in Kerala.
- **Construction:** Built in the late 1800s in the princely state of Travancore (present-day Kerala) and given to British-ruled Madras Presidency on a 999-year lease in 1886.
- **Aim:** Built to divert eastwards a part of the west-flowing Periyar river, to feed the arid areas of Tamil Nadu.



Consider the following pairs:

Reservoirs	States
1. Ghataprabha	Telangana
2. Gandhi Sagar	Madhya Pradesh
3. Indira Sagar	Andhra Pradesh
4. Maithon	Chhattisgarh

How many pairs given above are not correctly matched?

- Only one pair
- Only two pairs
- Only three pairs
- All four pairs

Environment

8. Smithophis mizoramensis - Indian Express

Relevance: Conservation, Environmental Pollution and Degradation, Environmental Impact Assessment

Context

Scientists from Mizoram University and Max Planck Institute have identified a new snake species in the northeastern Indian state of Mizoram. The reptile, named *Smithophis mizoramensis* after its place of discovery, is also known locally as "Tuithiangrul" or "Mizo Brook Snake."

Smithophis mizoramensis

- **About:** A new species of snake identified from Mizoram.
- **Other names:** A Mizo name "Tuithiangrul" or "Mizo Brook Snake."
- **Appearance:** The snake also exhibits unique colouration and scale patterns.
- **Distribution:** It inhabits both lowland and highland areas of Mizoram, particularly near rivers and their surroundings.

9. New ground-dwelling spider species discovered in Western Ghats - The Hindu

Relevance: Conservation, Environmental Pollution and Degradation, Environmental Impact Assessment

Context

A new species of ground-dwelling spider, *Asceua tertia*, has been discovered in the verdant terrain of Shendurney Wildlife Sanctuary, which forms part of the Western Ghats.

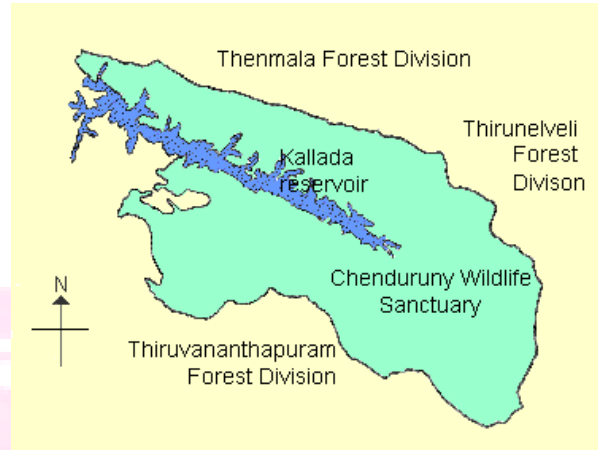
Asceua tertia

- **About:** A new species of ground-dwelling spider discovered in the Shendurney Wildlife Sanctuary, which forms part of the Western Ghats.
- **Significance:** Third species of genus *Asceua* to be documented in India after *Asceua cingulata* and *Asceua thrippalurensis*.
- **Characteristics:** Small size, laterally compressed bulbs, well-developed cymbial folds, long and convoluted copulatory ducts, and dual femoral glands.



Shendurney Wildlife Sanctuary

- **About:** A protected area located in the Western Ghats of India, in the Kollam district of Kerala.
- **Naming:** Named after Chenkurinji (*Gluta travancorica*), a tree species endemic to this region.
- **Conservation reserve:** It comes under the control of the Agasthyamalai Biosphere Reserve.
- **Vegetation:** Tropical evergreen and semi-evergreen forests.
- **Fauna:** Tigers, gaurs, elephants, sambar deers, sloth bears, Malabar Raven, Malabar banded swallowtail, Red-disc Bushbrown, etc.



10. Ceropogia Shivrayiana - Indian Express

Relevance: Conservation, Environmental Pollution and Degradation, Environmental Impact Assessment

Context

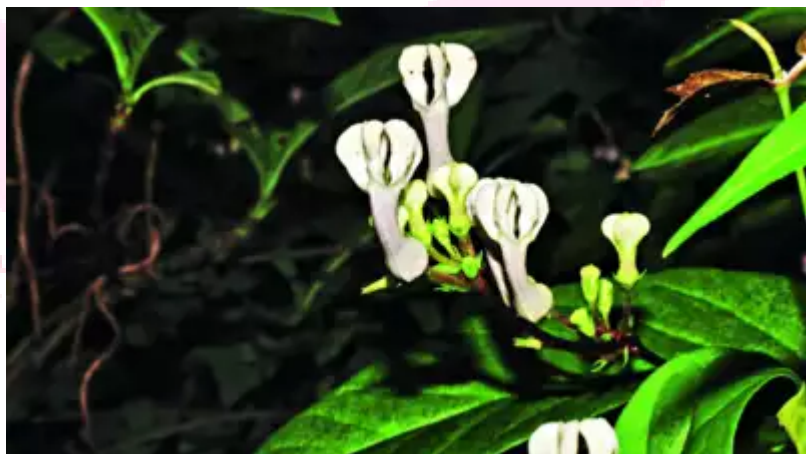
A new flowering plant species from 'ceropogia' genus has been discovered recently inside the Vishalgad premises in Maharashtra and named it as Ceropogia Shivrayiana.

Ceropogia Shivrayiana

- **About:** A flowering plant species named after Chhatrapati Shivaji Maharaj discovered on one of his renowned forts, Vishalgad.
- **Feature:** It has a unique, tubular flowers, which are specially adapted to attract moths for pollination.
- **Habitat:** Rocky terrains & capable of growing in less nutrient-or poor soils.
- **Threats:** Habitat loss.

Vishalgad Fort (Khelna or Khilna)

- **About:** An ancient fort situated at Vishalgad village in Kolhapur, Maharashtra.
- **Construction:** Built in 1058 by Shilahara king Marsinh
- **Original name:** Khilgil.



● **Architecture:**

- Dargah of Hazrat Sayed Malik Rehan Meera Saheb
- Amruteshwar Temple, Shri Nrusinha Temple, and Sati`s Vrindavan.

Which of the following organisms perform a waggle dance for others of their kin to indicate the direction and the distance to a source of their food? [2023]

- A. Butterflies
- B. Dragonflies
- C. Honey Bees
- D. Wasps

Consider the following statements: [2023]

1. Some mushrooms have medicinal properties.
2. Some mushrooms have psycho-active properties.
3. Some mushrooms have insecticidal properties.
4. Some mushrooms have bioluminescent properties.

How many of the above statements are correct?

- A. Only one
- B. Only two
- C. Only three
- D. All four

Consider the following statements regarding the Indian squirrels: [2023]

1. They build nests by making burrows in the ground.
2. They store their food materials like nuts and seeds in the ground.
3. They are omnivorous.

How many of the above statements are correct?

- A. Only one
- B. Only two
- C. All three
- D. None

Consider the following fauna: [2023]

1. Lion-tailed Macaque
2. Malabar Civet
3. Sambar Deer

How many of the above are generally nocturnal or most active after sunset?

- A. Only one
- B. Only two
- C. All three
- D. None

Sci and Tech

11. The tech that helps vehicles from bumping into each other - The Hindu

Relevance: Achievements of Indians in Science & Technology

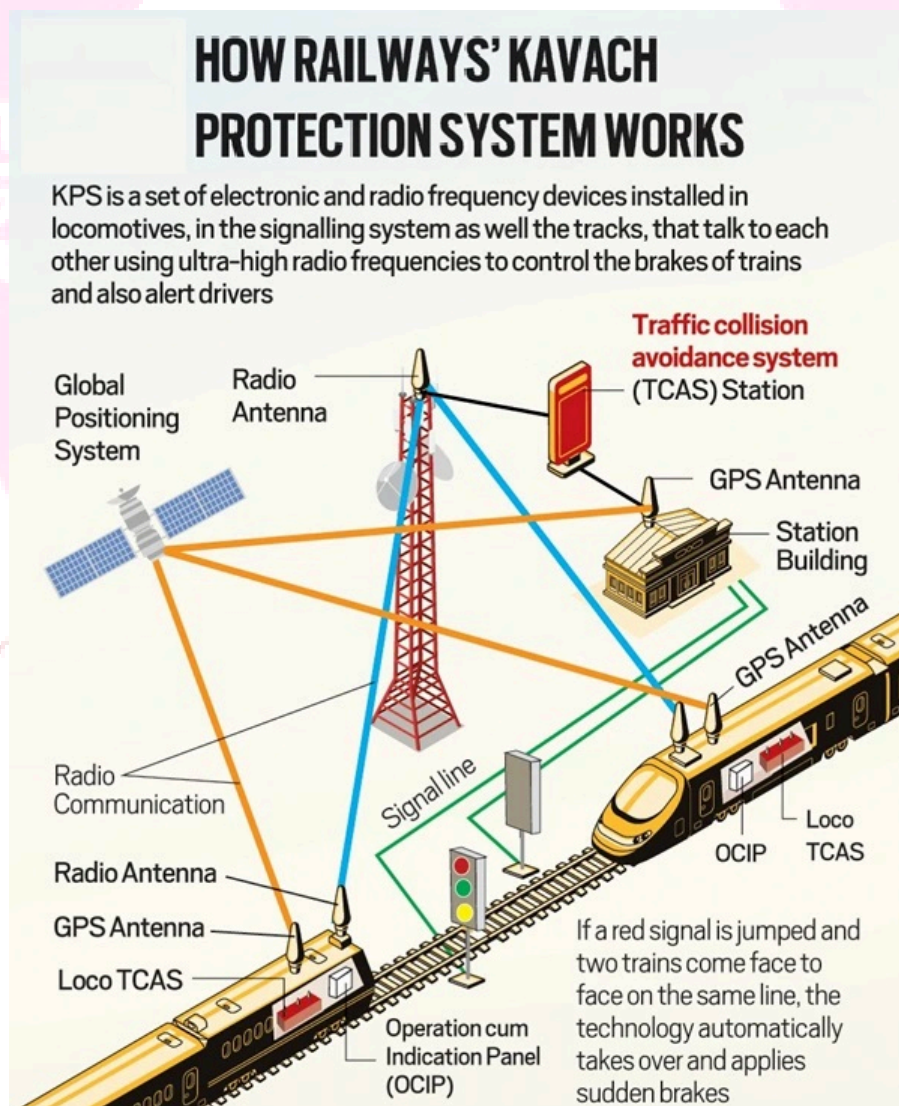
Context

Today, thus, we have traffic on the road, in the air, across various water bodies, and – in a dubitable sign of progress – in space. For better or for worse, we can't roll this traffic back very much, so we have collision avoidance systems instead.

Collision avoidance system

- **Meaning:** A collection of technologies to help a vehicle steer clear of another vehicle or obstacles.
- **Require 2 pieces of real-time information:** The locations of all the other vehicles and the location of this vehicle relative to those vehicles.

Kavach



- **About:** A homegrown CAS for the Indian Railways whose components perform the same functions that CAS does in cars, but the railway system is also more complicated.

3 main components:

- **Computers:** A computer onboard the train plus two other computers for station masters.
 - **Master computer:** It collates and processes information from signals and interlocking points and sends its output to the locomotive computer.
 - **Remote interface unit:** It collates and processes information from various points on the railway network, and eventually transmits its data to the master computer; it doesn't communicate directly with the locomotive computer.
 - **Locomotive computer:** It receives information from two other sources:
 - **Locomotive to have 2 radio-frequency identification (RFID)** readers mounted on its underside. The tracks will be fit with RFID cards at fixed intervals.
 - **When the locomotive passes over the cards,** the readers will scan the cards and retrieve the train's location and a track ID number, and send them to the onboard computer.
- **Communication:** The master computer communicates with the locomotive computer via ultra-high frequency radio. The onboard computer uses GSM-Railway to communicate with the overall network management system.
- **Control:** While operating the locomotive, pilots will use a bespoke interface – like a digital screen – that relays information from the computer and receives inputs from the pilots. The station master will have a similar interface, with the ability to send SOS messages as well.

Working of CAS in ships and aircraft

- **Transponder:** A device that, when it receives a radio-frequency ping, produces a response. Using the transponders of various other aircraft, the host aircraft can build up a 3D view of the air traffic around itself.
- **Alerts:** If another aircraft is within 48 seconds away on a potential collision course, the computer sounds a traffic advisory that requires the pilots to visually identify the other aircraft. If the aircraft is less than 30 seconds away, the computer requires the pilots to report the alert to air traffic control and manoeuvre the aircraft.
- **Radar altimeters:** Aimed to sense the distance to the ground and another system to alert pilots to 'tall' features like towers and ground antennae.

How have satellites changed CAS?

- **Automatic Dependent Surveillance-Broadcast (ADS-B) system:** It collects and processes information shared actively by each aircraft via satellites to understand the relative location, bearing, and speed of a group of aircraft.

- **Global Positioning System (GPS):** It had a transformative effect on navigation and collision avoidance worldwide, and which some countries have augmented with systems of their own to cater to specific national needs.

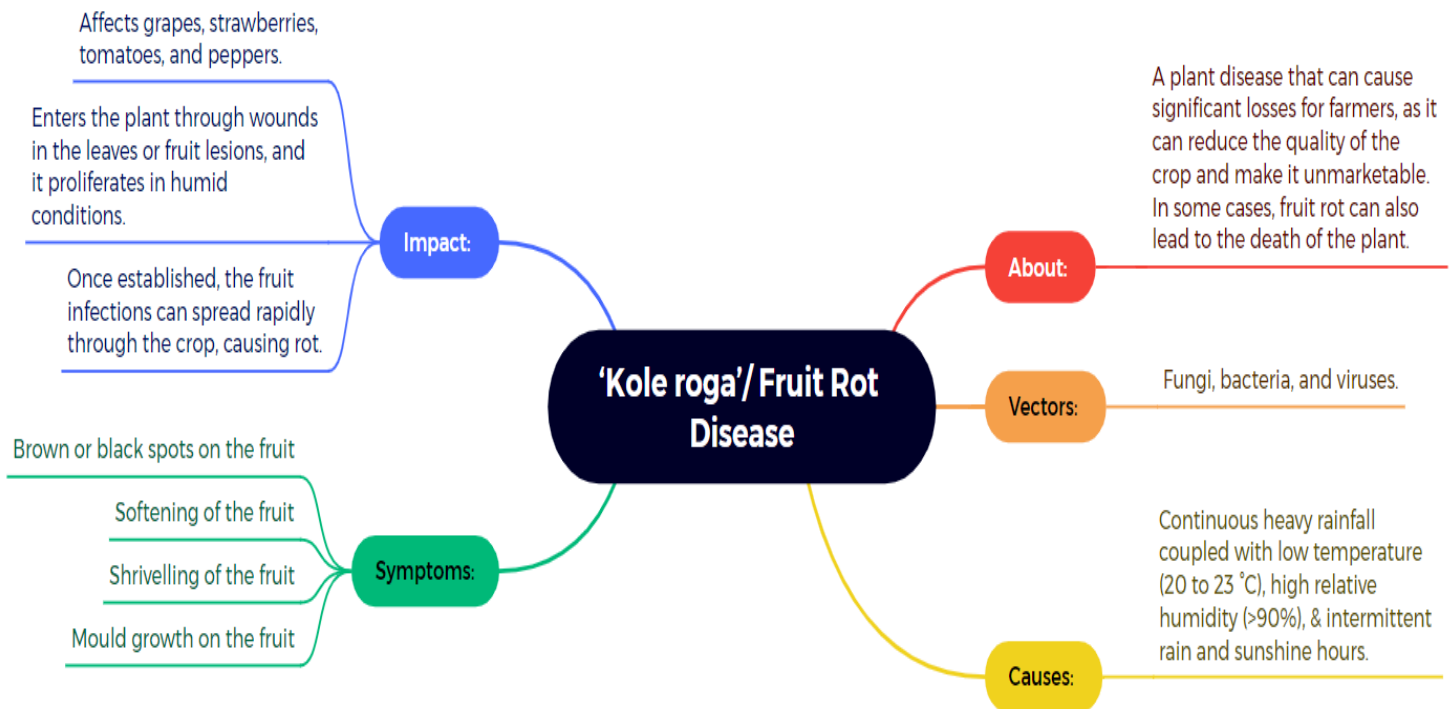
12. CPCRI issues advisory to control koleroga disease in arecanut plantations - The Hindu

Relevance: Science and Technology

Context

The Central Plantation Crops Research Institute (CPCRI), Kasaragod, has issued an advisory to farmers to control 'kole roga' (fruit rot disease) in arecanut plantations.

'Kole roga'/ Fruit Rot Disease



13. Trichophyton indotineae - The Hindu

Relevance: Science and Technology

Context

The rise of drug-resistant fungal infections, notably *Trichophyton indotineae*, is emerging as a significant health concern in India.

Trichophyton indotineae

For infections resistant to standard antifungal medications, alternative treatments such as itraconazole are available but will require close monitoring by healthcare providers.

In addition to antifungal medications, integrating comprehensive skin care regimens can enhance treatment efficacy.

Treatment:

**Trichophyton
indotinea**

About:

A dermatophyte commonly known as ringworm or jock itch first identified in India.

Patients often present with persistent, treatment-resistant rashes that can easily be mistaken for eczema or other skin conditions.

Challenges:

Misdiagnosis of infections often leads to the use of ineffective treatments, which not only prolongs patient suffering but also allows the infection to worsen.

Misdiagnosis and delayed treatment can lead to the spread of the infection, worsening the individual's condition & increasing the risk of transmission within the community.



Defence

14. INDIAN AIR FORCE TEAM RETURNS AFTER SUCCESSFUL PARTICIPATION IN EXERCISE UDARA SHAKTI 2024 AT MALAYSIA - PIB

Relevance: Indigenization of Technology and Developing New Technology

Context

After successful participation in Exercise Udara Shakti 2024 at Malaysia, the Indian Air Force (IAF) contingent returned to India recently.

Exercise Udara Shakti

- **About:** Joint air exercise was conducted in collaboration with the Royal Malaysian Air Force (RMAF) at Kuantan, Malaysia.
- **Aim:** Bolstering operational efficiency, technical experts of both Air Forces engaged in exchange of their maintenance practices.
- **Indian equipments:** IAF's Su-30MKI fighter jets engaged in air combat missions alongside the RMAF's Su-30MKM fighters.

Sukhoi Su-30MKI



- **About:** A multirole combat fighter aircraft jointly developed by the Sukhoi Design Bureau and Hindustan Aeronautics Limited (HAL) for the Indian Air Force (IAF).

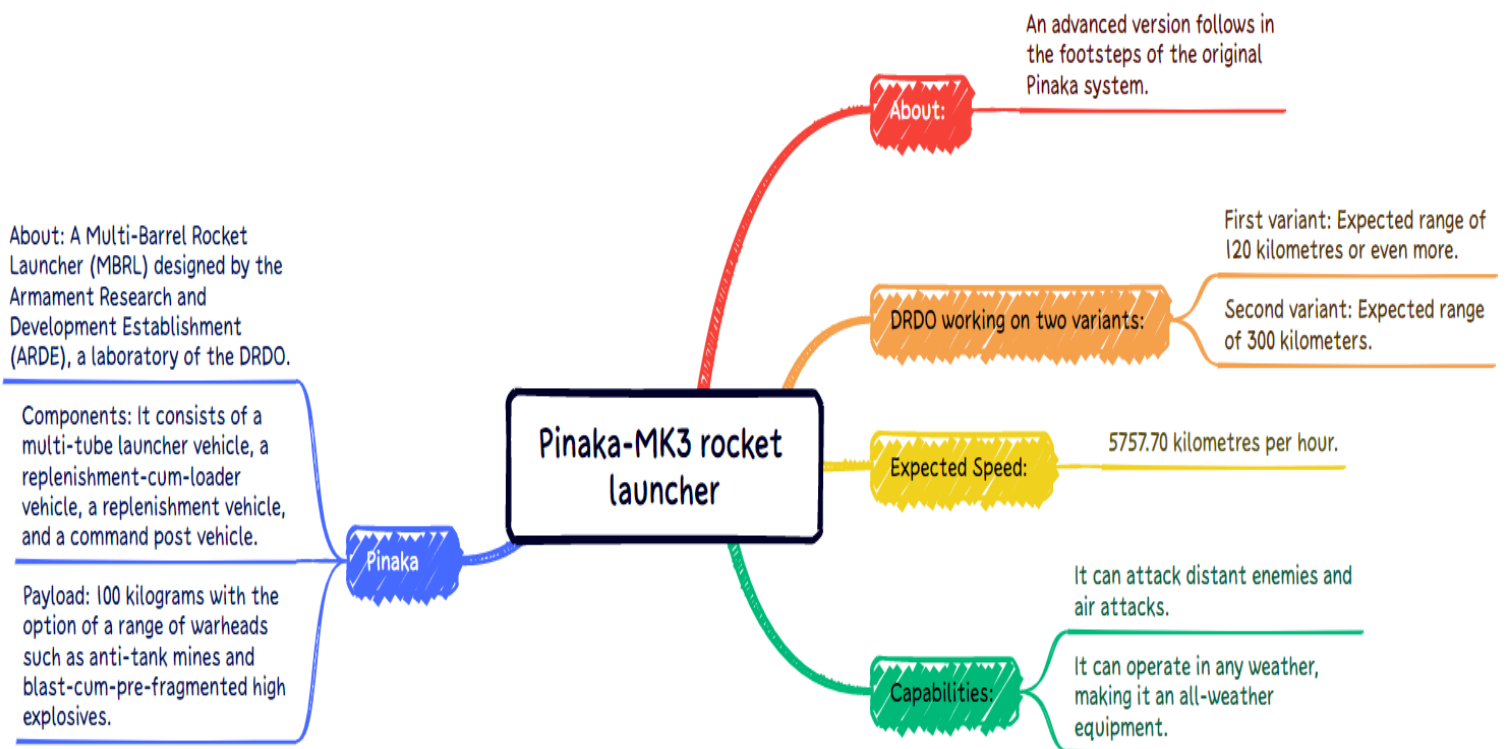
15. DRDO developing Pinaka-MK3, long-range rocket launcher - The Hindu

Relevance: Indigenization of Technology and Developing New Technology

Context

The Defence Research and Development Organisation (DRDO) is equipping India with a formidable new weapon: the Pinaka-MK3, which is currently under development. It is the third iteration of India's indigenous air defence system.

Pinaka-MK3 rocket launcher



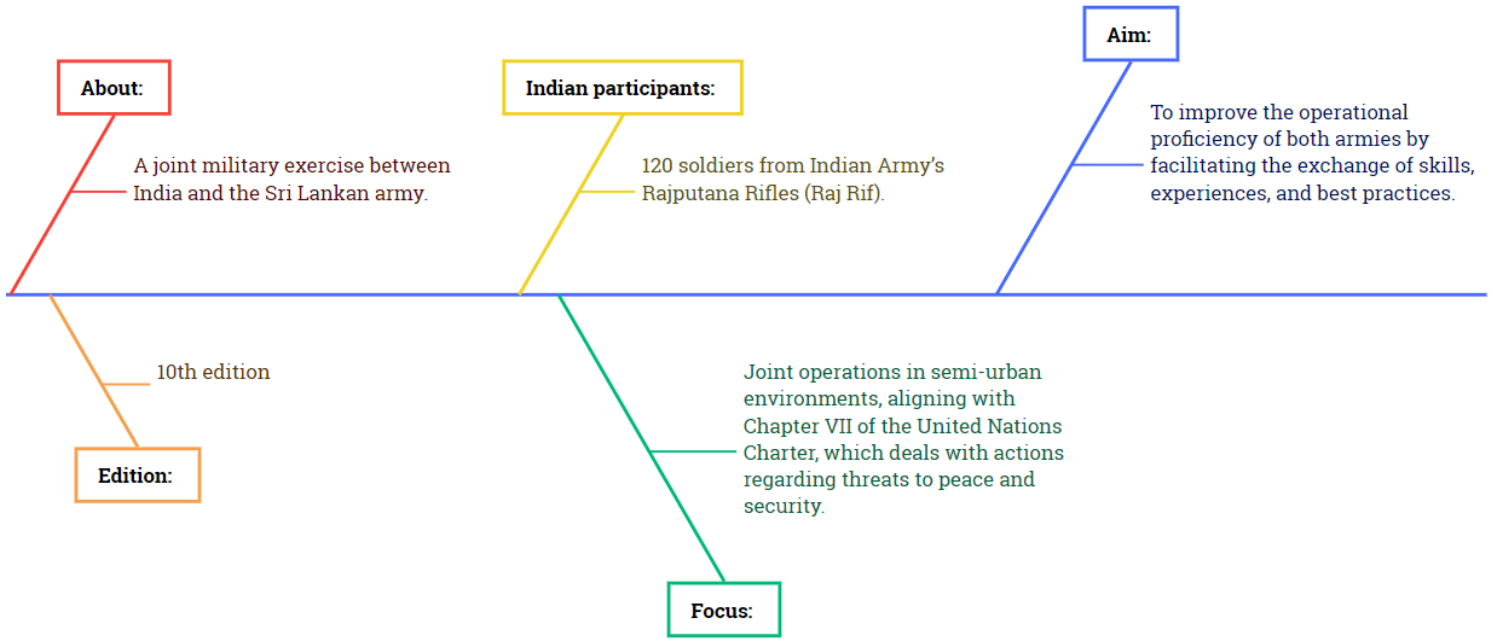
16. Exercise Mitra Shakti - PIB

Relevance: Indigenization of Technology and Developing New Technology

Context

Next week the Indian Army and the Sri Lankan Army will kick off the 10th edition of their joint exercise, "Mitra Shakti," at Maduruoya in Sri Lanka's Southern Province.

Exercise Mitra Shakti



Miscellaneous

17.NIRF rankings out: IIT Madras at top for 6th year, IISc best university for 9th time - Indian Express

Context

The IITs continue to dominate the top 10 ranks in the National Institute Ranking Framework (NIRF), with IIT Madras retaining the first spot for the sixth consecutive year, according to the latest edition released by the Government recently.

2024 rankings

Top institutions in India

The table shows the top 10 overall institutions and Central and State universities, according to India Rankings, 2024. IIT-Madras secured the top spot in overall category

Ranks	Overall	Top universities	State universities
1	IIT-Madras	IISc, Bengaluru	Anna University
2	IISc, Bengaluru	Jawaharlal Nehru University	Jadavpur University
3	IIT-Bombay	Jamia Millia Islamia	Savitribai Phule University
4	IIT-Delhi	MAHE, Manipal	Calcutta University
5	IIT-Kanpur	Banaras Hindu University	Punjab University
6	IIT-Kharagpur	University of Delhi	Osmania University
7	AIIMS, Delhi	Amrita Vishwa Vidyapeetham	Andhra University
8	IIT-Roorkee	Aligarh Muslim University	Bharathiar University
9	IIT-Guwahati	Jadavpur University	Kerala University
10	JNU	Vellore Institute of Technology	CUSAT



Open universities, state public universities and skill universities. For the rankings, 10,845 applications were received from 6,517 institutions.

New categories added:

IIT Madras has retained its position as the top all through the nine NIRF editions, in the list of research institutions this year, it stands second after IISc.

Engineering colleges:

2024 rankings

Overall top 10 list:

Seven IITs, IISc Bengaluru, AIIMS Delhi and Jawaharlal Nehru University (JNU).

Universities list:

IISc has emerged at the top again - a position it has held since 2016, when the first edition of the NIRF rankings was released.

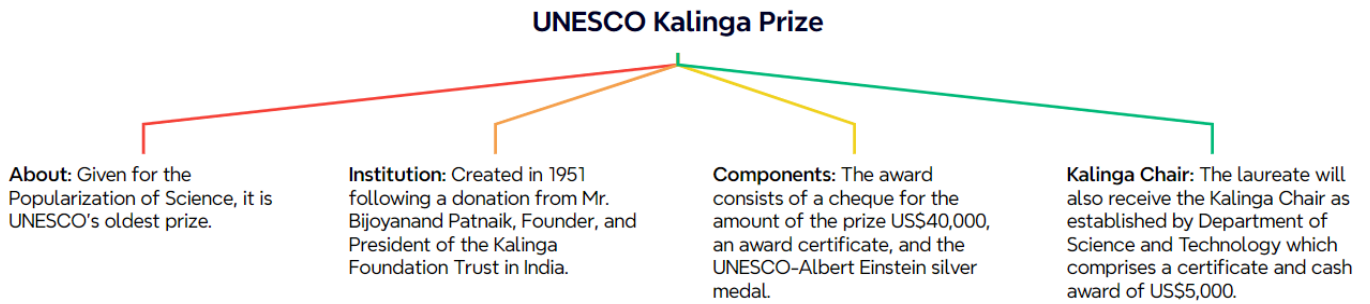
Private institutions in the ranking:

Only 3 private institutions - Manipal Academy of Higher Education, Amrita Vishwa Vidyapeetham, & Vellore Institute of Technology are among top 10 universities.

National Institute Ranking Framework (NIRF)

- **About:** A methodology adopted by the Ministry of Education, to rank institutions of higher education in India.

18. UNESCO Kalinga Prize - Indian Express



19. District Level Committee in Odisha's Keonjhar district approves habitat right of Juanga tribe - The Hindu

Context

The District Level Committee of Keonjhar in Odisha cleared the hurdle for according habitats right under the Forest Rights Act (FRA) to the Juanga, a particularly vulnerable tribal group, by approving the claim recently.

Juanga/ Juang Tribe

