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SAMYAK IAS, NEAR RIDDHI-SIDDHI, JAIPUR

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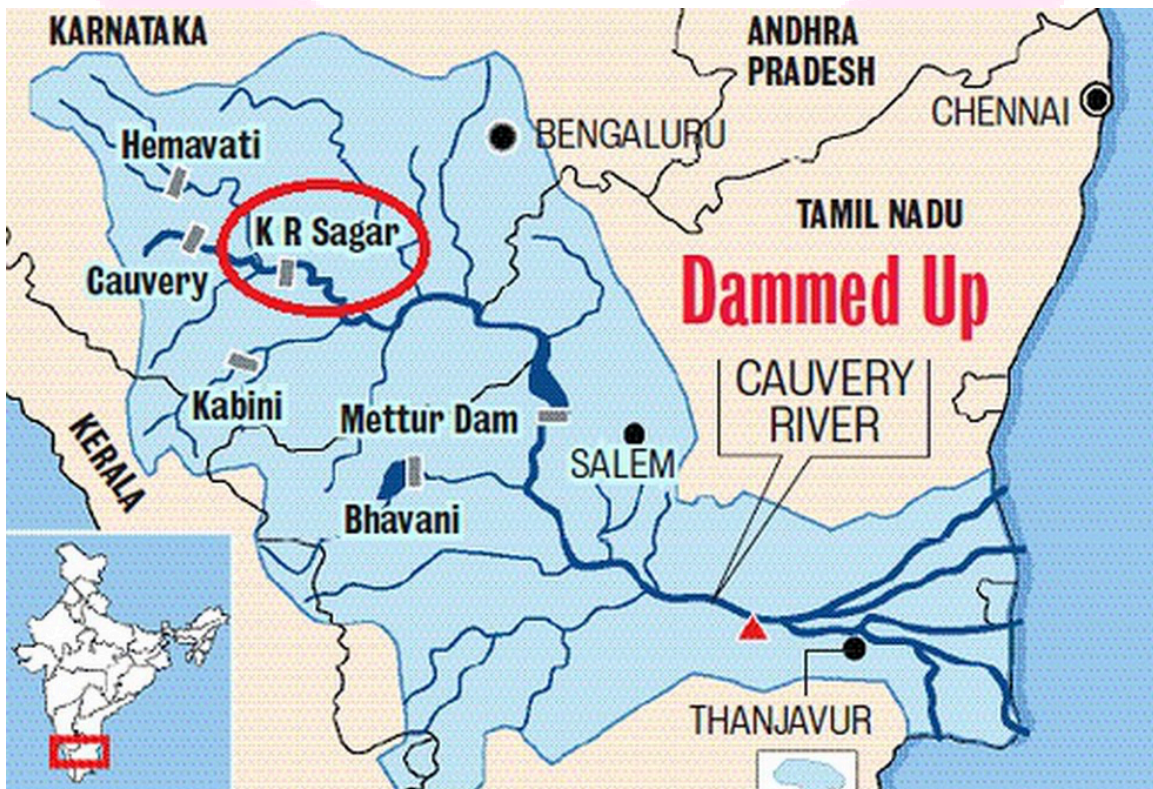
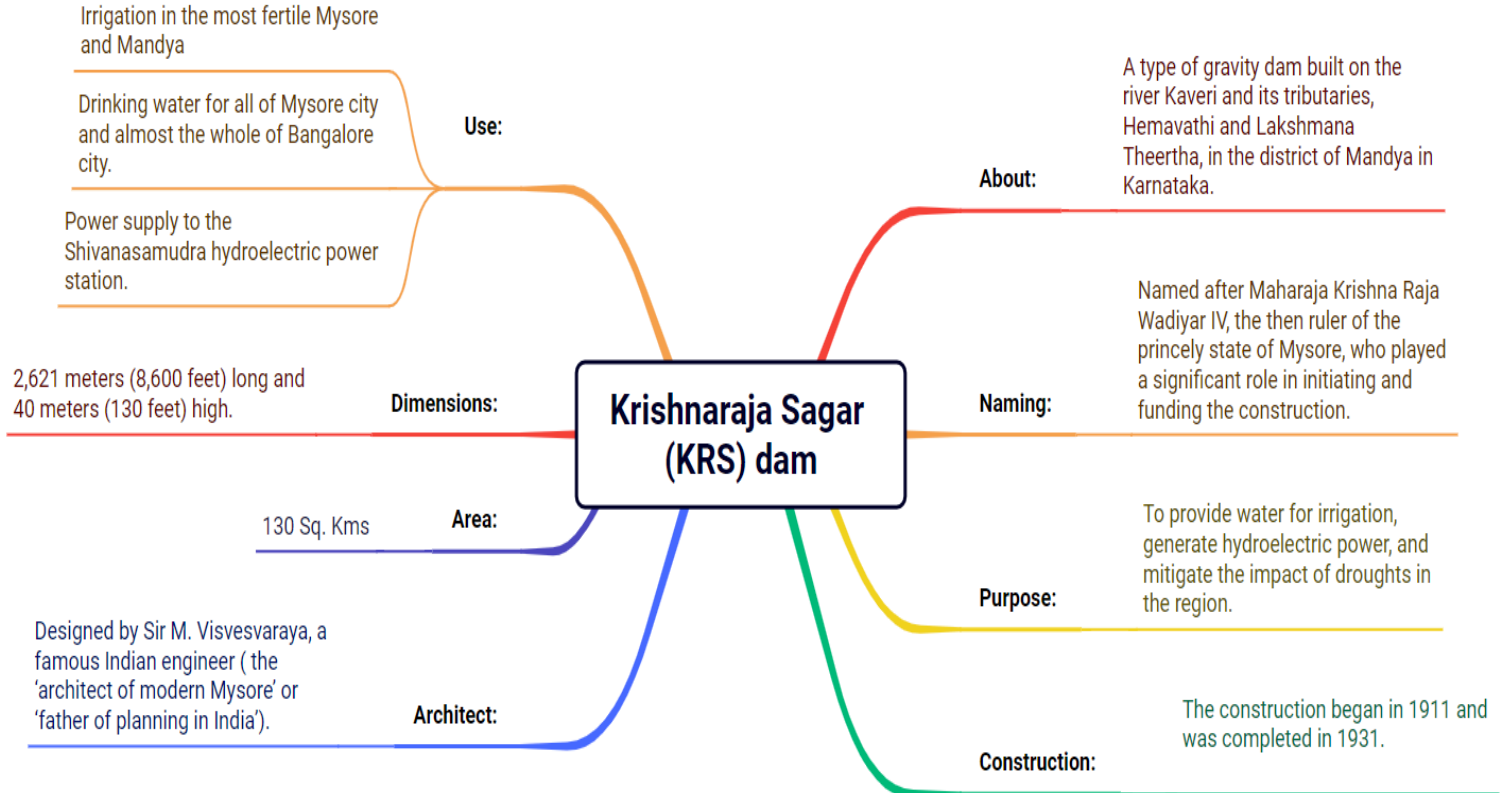
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Geography

1. Krishnaraja Sagar (KRS) dam - The Hindu



2. Pampa/ Pamba River - The Hindu

Sabarigiri Hydroelectric Project, which harnesses the river's water for electricity production.

Hydroelectric Project:

Used for irrigation & drinking water for local communities.

Economic Use:

It faces challenges such as pollution from agricultural runoff, industrial effluents, and solid waste, which threaten its water quality and the health of the ecosystem it supports.

Threats:

The Pamba River holds religious significance, particularly for devotees of Lord Ayyappa, a Hindu deity worshiped at the Sabarimala temple situated along its banks.

The river plays a crucial role in the annual pilgrimage to Sabarimala, known as the "Makaravilakku pilgrimage," during which millions of devotees visit the temple.

Religious Significance:

Origin:

From the Pulachimalai hills in the Peerumedu taluk of the Idukki district in Kerala.

Course:

Flowing in a southerly direction, it traverses through the districts of Pathanamthitta and Alappuzha before finally draining into the Vembanad Lake, the largest lake in Kerala.

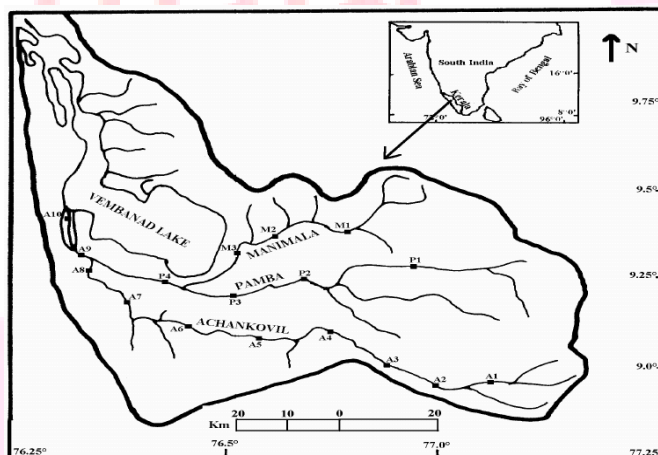
Length:

~ 176 kilometers.

Tributaries:

Kakki, Achankovil, and Manimala Rivers.

Pampa/ Pamba River



3. LAC and LOC - The Hindu

Comparison	LOC	LAC
Full form	Line of Control	Line of Actual Control
Location	Three areas of Kashmir (Azad Kashmir, Gilgit and Baltistan) occupied by Pakistan and two-thirds, Jammu, Ladakh, and the Kashmir Valley, administered by India. (although whole Kashmir is an integral part of India)	It is scattered in three areas of northern Indian states: eastern (Sikkim, Arunachal Pradesh), western (Ladakh, Kashmir), and middle (Uttarakhand, Himachal Pradesh).
Appearance	It is clearly demarcated by the militaries and a lot of activities (face to face confrontation, firings, etc) take place. Indian and Pakistan army is present here.	These are big empty regions and nearly 50 to 100 km distance is maintained between Indian and Chinese armies.
Area (Length)	776 kilometer (unofficial)	4,057 kilometer (unofficial)
Between	India and Pakistan	India and China



Economy

4. India's illegal coal mining problem - The Hindu/ Mining and power of states - Indian Express

Context

Recently, three workers died of asphyxiation inside an illegal coal mine in Gujarat's Surendranagar district. The first information report (FIR) indicated that the accused failed to provide essential safety gear to the labourers, who died after inhaling toxic gas in the mine.

Nationalisation of coal

- **Nationalised in two phases:**
 - Coking coal (used for the production of coke in the steel industry) in 1971-72;
 - Non-coking coal mines in 1973
- **Coal Mines (Nationalisation) Act, 1973:** Central legislation that determines eligibility for coal mining in India. Illegal mining constitutes a law and order problem, which is a State list subject.

Reasons for rampant illegal coal mining in India

- **High demand for power in India:** It translates into a high demand for coal, which often outstrips the legal supply, prompting illegal supply.
- **Poverty and unemployment:** Areas rich in coal are situated close to homes for populations struggling with poverty and unemployment, which contributes to illegal mining in these areas.
- **Weak mining regulations in remote areas:** Because of inadequate monitoring and lack of resources there is a weaker enforcement which can result in the rise of "coal mafias".
- **Support from political leaders** in areas where it is prevalent
- **Minimal operational costs:** It can turn into significant profits, making illegal mining lucrative.

Reasons for death of workers in illegal coal mines

- **Lack of safety equipment and protocols:** Miners face increased respiratory risks due to inhaling coal dust, and the lack of safety equipment significantly increases this risk.
- **Lack of proper structural support in illegal mines to extract coal:** It makes working conditions hazardous and vulnerable to cave-ins, landslides, and explosions.
- **Exposure to high levels of toxic substances:** Workers may also be exposed to lead and mercury, which can cause acute poisoning or long-term chronic medical conditions.
- **Lack of training:** There is a lack of proper training, quick response facilities, and knowledge in case of emergencies.
- **Rampant operator negligence** and worker exploitation

Issues faced by governments to cut down illegal coal mining in India

- **A long term practice:** It has existed since before coal was nationalised and continues to exist in pockets in coal-rich areas or near abandoned mines.
- **High demand for coal as a fuel** makes illegal mining rampant and challenging to control.
- **Dependence of local economies on mining:** Once official operations run their course, illegal mining takes its place to support the local community.
- **Complex legal framework :** It can possibly lead to bureaucratic hurdles and inefficiency in governance, allowing illegal mining to exist.

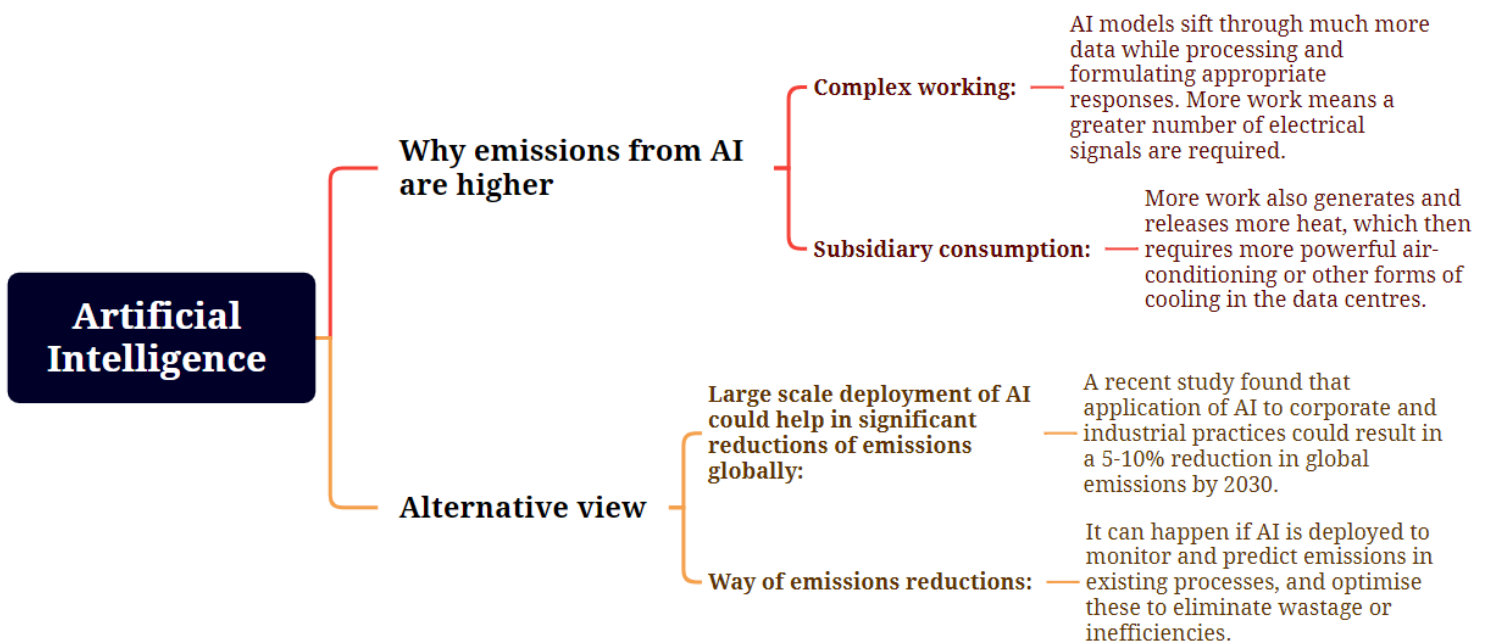


Environment

5. Why AI's present and future bring some serious environmental concerns - Indian Express

Context

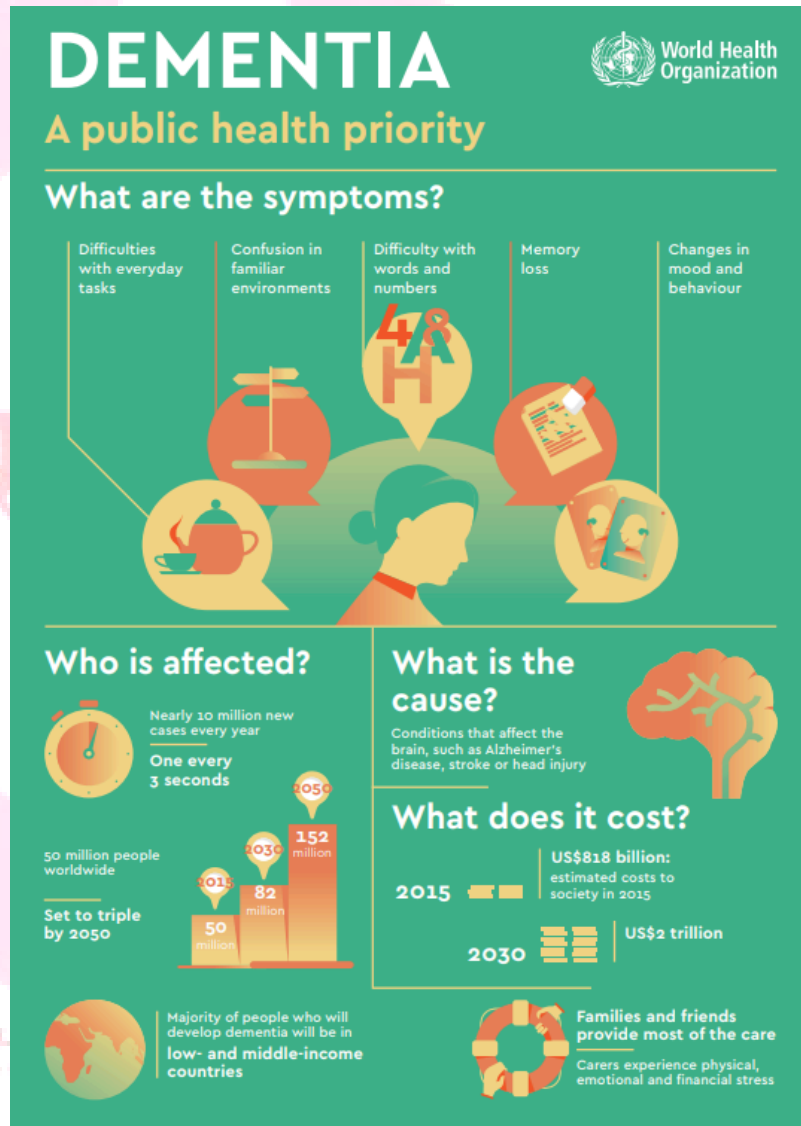
In its annual environment report released earlier this month, Google reported a 13% increase in its emissions footprint in 2023 compared with the previous year. The rise was attributed mainly to the increased electricity consumption in its data centres and supply chains.

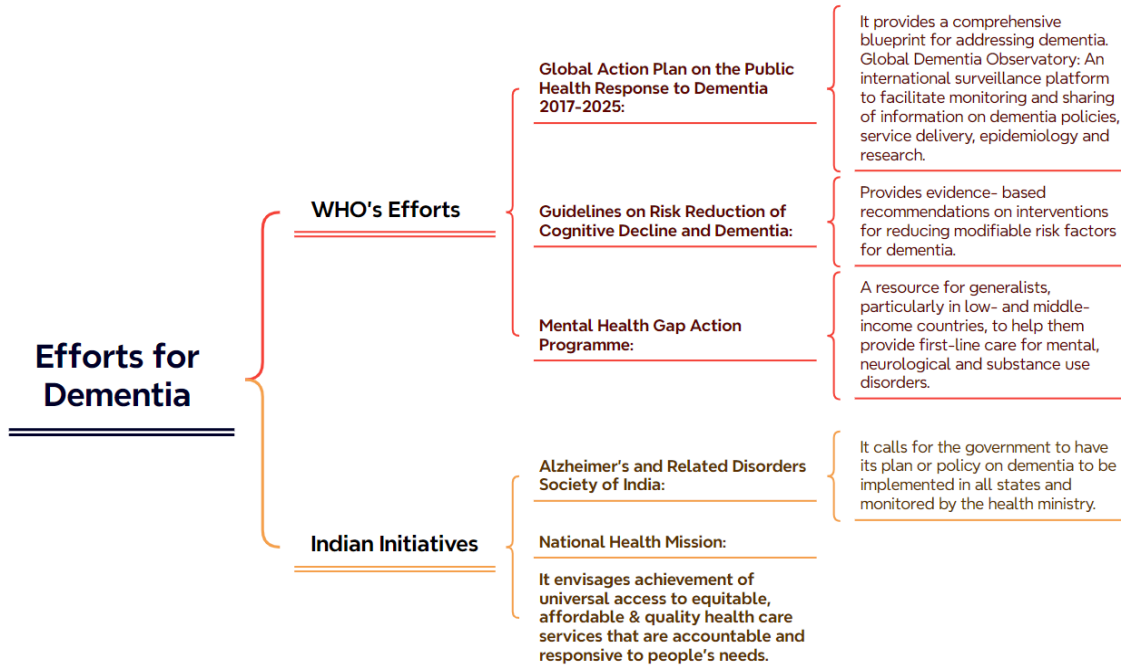


Sci and Tech

6. Dementia - The Hindu

- About:** A syndrome – usually of a chronic or progressive nature – that leads to deterioration in cognitive function (i.e. the ability to process thought) beyond what might be expected from the usual consequences of biological ageing.
- Impact:** It affects memory, thinking, orientation, comprehension, calculation, learning capacity, language, and judgement. But, the consciousness is not affected.
- Symptoms:** Memory loss, Difficulties with thinking, Visual perception, Self-management, Problem solving or language and the ability to focus and pay attention.
- Causes:** When brain cells are damaged then dementia may occur. It can be caused by a head injury, a stroke, a brain tumour or due to HIV infection.
- Treatment:** Currently no treatment available to cure dementia, though numerous new treatments are being investigated.
- Incidence:** The seventh leading cause of death among all diseases and one of the major causes of disability among older people worldwide.



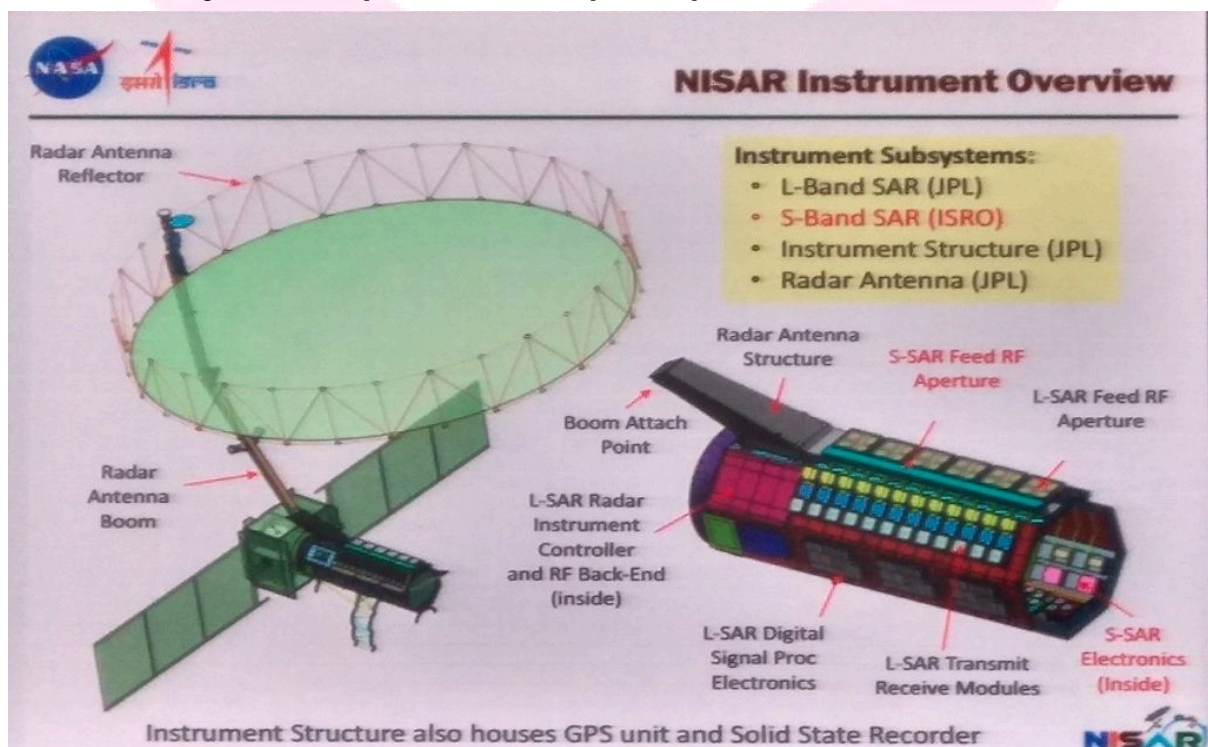


7. NISAR missing from ISRO's plan, mission unlikely this year - Indian Express

Context

The keenly-awaited NISAR space mission, a first of its kind collaborative exercise between the space agencies of India and the United States, it seems, will not happen this year. NISAR did not figure in the list of missions the ISRO submitted to the Lok Sabha recently.

NASA-ISRO Synthetic Aperture Radar (NISAR)



- **About:** A Low Earth Orbit (LEO) observatory jointly developed by NASA and ISRO. It is an SUV-size satellite weighing 2,800 kilograms.
- **Components:** It consists of both L-band and S-band synthetic aperture radar (SAR) instruments, which makes it a dual-frequency imaging radar satellite.
- **Significance:** It will be the first satellite mission to use 2 different radar frequencies to measure changes in our planet's surface.
- **SAR:** Can penetrate clouds and can collect data day and night regardless of the weather conditions.
- **NASA's contribution:** It has provided the L-band radar, GPS, a high-capacity solid-state recorder to store data, and a payload data subsystem. ISRO has provided the S-band radar, the GSLV launch system, and spacecraft.
- **Objectives:**
 - To measure Earth's changing ecosystems, dynamic surfaces, and ice masses
 - To observe Earth's land and ice-covered surfaces globally with 12-day regularity on ascending and descending passes.

8. Listeriosis - Indian Express



9. Ladakh's rock varnish may help identify habitable environments in space - PIB

Context

Magnetofossils-- fossil remains of magnetic particles produced by magnetotactic bacteria have been spotted in rock varnish layers in Ladakh. The study suggesting biotic processes in the formation of rock varnish indicates how life can exist in extreme environments, providing valuable insights for astrobiology as well as for planning future space missions targeting to identify habitable environments in space.

Magnetotactic bacteria

These bacteria create tiny crystals made of the iron-rich minerals magnetite or greigite. The crystals help them navigate the changing oxygen levels in the water body they reside in.

Significance:

About:

Mostly prokaryotic organisms that arrange themselves along the earth's magnetic field.

These organisms were believed to follow the magnetic field to reach places that had optimal oxygen concentration.

Mobility:

Magnetotactic bacteria

Presence:

Freshwater and marine habitats.

10. Drug used to treat clots can protect against cobra venom damage - The Hindu

Context

Researchers found tinzaparin significantly reduced damage to human cells due to spitting cobra venom; they plan to start human trials soon

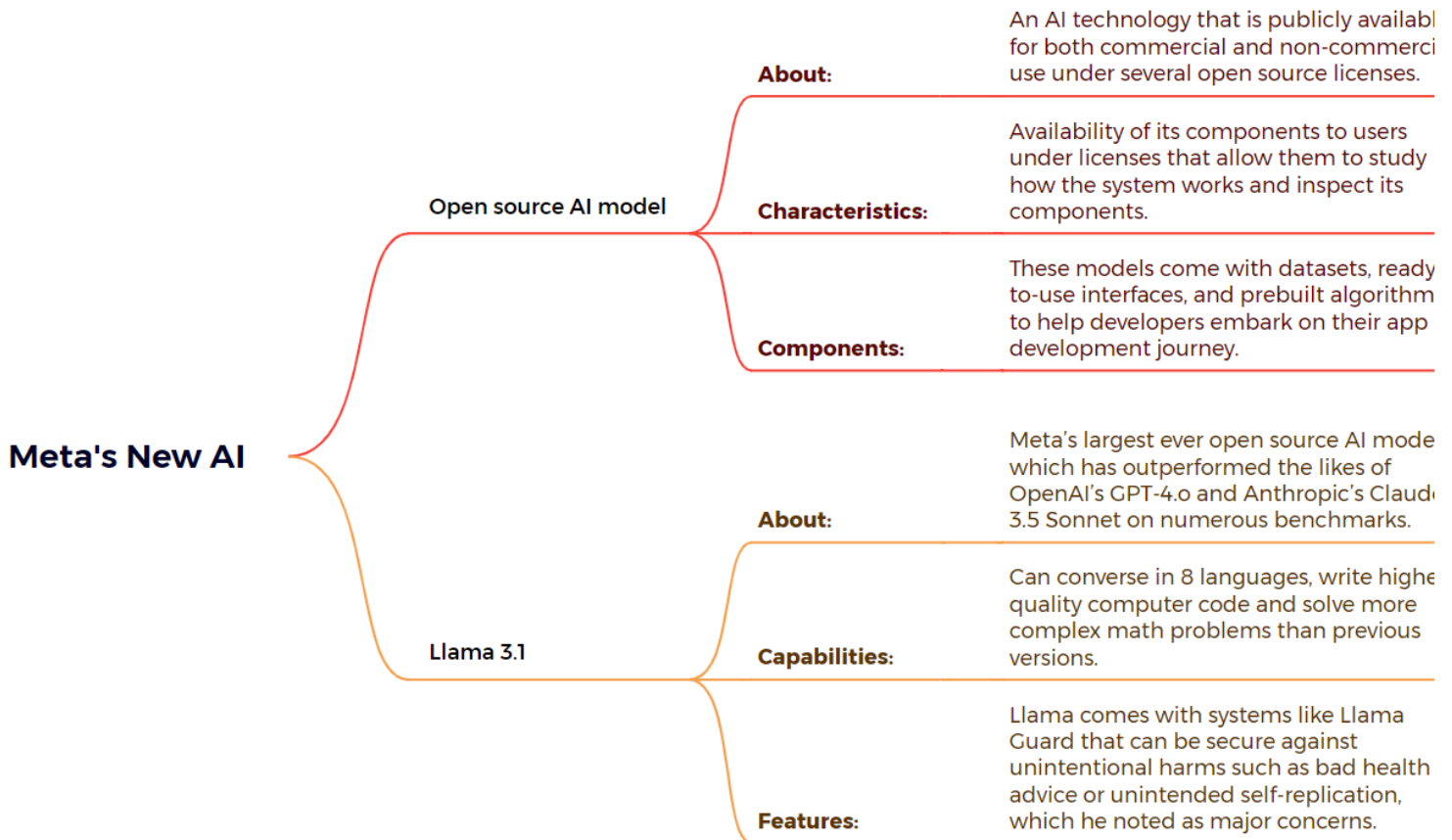
Tinzaparin

- **About:** A drug used to treat serious blood clots, can reduced damage to cells due to spitting cobra venom.
- **Characteristic:** A low-molecular-weight heparin (LMWH) with antithrombotic properties.
- **Usage:** For the treatment of deep venous thrombosis, a condition in which harmful blood clots form in the blood vessels of the legs.

11. Meta introduces Llama 3.1: What is an open-source AI model? How can it change the world? - Indian Express

Context

Meta has unveiled its new open source AI model Llama 3.1 overtaking its peers. The latest AI model from Meta is said to have outperformed OpenAI and other key rivals in certain performance benchmarks.



Miscellaneous

12. Christopher Thomas Kurien - The Hindu

- Christopher Thomas Kurien (2 July 1931 – 23 July 2024), popularly known as CTK, was an Indian professor of economics based in Bangalore, Karnataka.
- He wrote many books on economics and was defined as having centre-left politics ideology.



13. Kargil Vijay Diwas - Indian Express

- **It is celebrated on July 26** every year.
- **The day commemorates the victory of the Indian armed forces** in the Kargil War fought against Pakistan.
- **The day is observed to pay tribute and honour** the bravery and sacrifice of the soldiers in the war of 1999.

Kargil War

- **About:** Last war fought between India and Pakistan at the Line of Control (LoC) in the Kargil district of Jammu and Kashmir.
- **Codename Operation Vijay:** The Indian Army fought bravely and recaptured the famous 'Tiger Hill' and other important posts by evicting the Pakistani troops in the 1999 Kargil War.
- **Duration:** ~ 3 months.
- **Armaments:** Heavy artillery, air power, major infantry operations.
- **End:** July 26, 1999, when India successfully pushed back the Pakistani forces from the occupied positions.



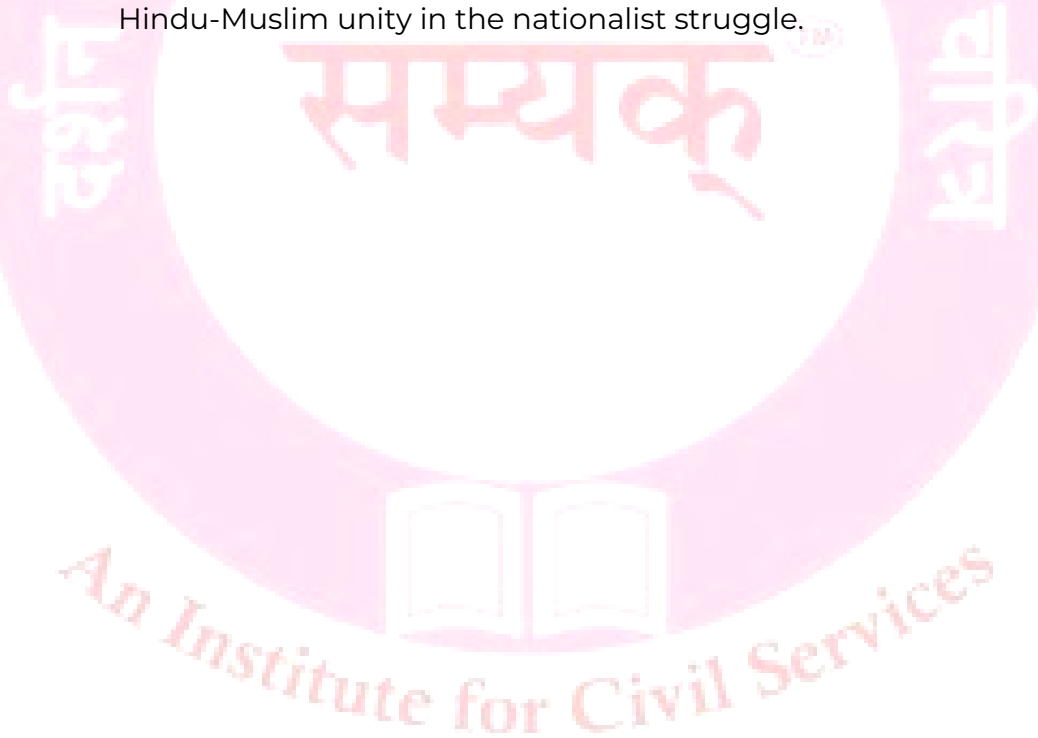
- **Casualties:** As per official figures, around 500 Indian soldiers laid down their lives while at least 1,000 Pakistani troops were also killed.

14. PM Modi pays tribute to Lokmanya Tilak on birth anniversary - PIB

- **About:**
 - Prominent Indian nationalist, freedom fighter, social reformer, and political leader.
 - Key architect of modern India; strong advocate of Swaraj (Self Rule).
 - Famous slogan: "Swaraj is my birthright, and I shall have it."
- **Early Life:**
 - Born as Keshav Gangadhar Tilak.
 - Title 'Lokmanya' means revered by the people.
- **Political Stance:**
 - Considered a radical nationalist.
 - Termed "Father of Indian Unrest" by the British.
- **Organisations:**
 - Joined Indian National Congress in 1890.
 - Co-founded All India Home Rule League (1916-18) with G. S. Khaparde and Annie Besant.
 - Tilak's League: Active in Maharashtra, Central Provinces, Karnataka, Berar.
 - Besant's League: Active in the rest of India.
 - Aimed to advocate for self-rule and raise public awareness.
- **Literary Works:**
 - Prolific writer and journalist.
 - Newspapers: "Kesari" (Marathi), "Maratha" (English).
- **Notable works:**
 - "The Arctic Home in the Vedas" - Vedas originated in the Arctic.



- "Shrimad Bhagavad Gita Rahasya" - Nationalist interpretation of the Bhagavad Gita.
- **Educationist:**
 - Founded Deccan Education Society in Pune (1884).
 - Established Fergusson College and New English School.
 - Taught mathematics at Fergusson College.
- **Social Reforms:**
 - Advocated eradication of untouchability and child marriage.
 - Promoted women's education.
- **Lal-Bal-Pal:**
 - Political companions: Bipin Chandra Pal, Lala Lajpat Rai.
 - Known as the 'Lal-Bal-Pal triumvirate.'
- **Imprisonments:**
 - Arrested for sedition multiple times.
 - Longest imprisonment (1908-1914) - wrote "Gita Rahasya."
 - Concluded the Lucknow Pact (1916) with Mohammed Ali Jinnah for Hindu-Muslim unity in the nationalist struggle.



Rajasthan Current Affairs

1. Integrated Control and Command Center

- These centers have been established in Smart Cities on the lines of Abhay Command.
 - Note: 4 smart cities being developed in Rajasthan are Ajmer, Jaipur, Udaipur and Kota.
- Its main objective is to work on the lines of Abhay Command Center for the prevention of increasing crime in the city.
- This center has been built in Smart City Headquarters at a cost of 36 crores.
- Under this, 184 cameras have been installed in each city, for which 10 work stations have been built.

2. Begum Batool performed in Paris Olympic Games

- In the Paris Olympic Games which started in France from 26th July, Jaipur's Mand, Bhajan and folk singer Begum Batool performed with her group 'Basant'.
- Along with Begum Batool, Anwar Hussain, Sahil Bagarwa, Manwar, Farhan, Senu Sapera also performed.
- 117 players from India are participating in the Paris Olympics.
- 'India House' is being organized in the Olympics with the support of Reliance Foundation and Indian Olympic Association.

3. Survey to set up 2 nuclear power plants of 700 MW each in Rawatbhata

- In view of increasing demand for energy in the country, a survey will be done for two nuclear power plant units of 700 MW each in Rawatbhata.
- Work on four nuclear reactors will also be started in Banswara, Rajasthan.
 - Apart from Rawatbhata, Banswara in Rajasthan will be the second state to have nuclear reactors.
 - Work will soon start on four nuclear reactors of 700 MW each.
- If two more nuclear power plant units are set up in Rawatbhata, then there will be 10 nuclear power plant units here. There is a possibility of an investment of Rs 25,000 crore.
- Right now, six nuclear power plant units are already set up here. The current capacity is 1100 MW.
- Rawatbhata will produce 1400 MW by the year 2025. And by 2025, the capacity will be 2500 MW. If 2 more units are established after the survey then Rawatbhata will generate 3900 MW of nuclear energy which will

make Rawatbhata the city having the maximum number of nuclear reactors in India.

4. 400 MW solar project inaugurated in Jaisalmer

- Renewable energy company ReNew's 400 MW solar project has started in 2,000 acres in Pokhran and Bhaniyana in Jaisalmer district of Rajasthan. It was inaugurated by Chief Minister Bhajanlal Sharma.
- It will produce 133.1 crore units of electricity annually.
- The company has started this project under a 25-year PPA for 600 MW with Solar Energy Corporation of India Limited.
- The remaining 200 MW will be produced from October 2024.

