

China successfully achieved the first-ever thorium to uranium fuel conversion in a Thorium Molten Salt Reactor (TMSR)

China's TMSR is currently the only operational molten-salt reactor in the world.

- The achievement of thorium-uranium conversion marks a milestone in TMSR development.

About Thorium Molten Salt Reactor (TMSR)

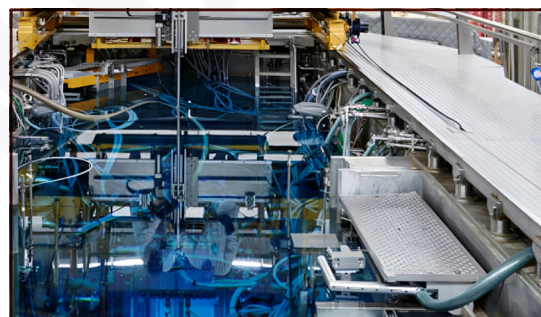
- It is **fourth-generation** advanced nuclear energy system that uses **high-temperature molten salt** as a **coolant**.
- **Key Features:** Cool without water, **run at atmospheric pressure**, deliver a **high-temperature output**, etc.
- **Key Advantages:**
 - ⊕ **Passive Safety Features:** If an MSR is too hot, a salt plug melts, stopping the reaction.
 - ⊕ **Small High-Level Nuclear Waste Footprint:** Thorium generates fewer long-lived minor actinides (radioactive metallic elements) than plutonium fuels.
 - ⊕ **Other:** Extract more energy from fuel, etc.

Thorium Fuel

- Thorium has to be converted to **Uranium-233** in a reactor before it can be used as fuel.
 - ⊕ Thorium-232 is the only naturally occurring isotope of thorium.
- It is three times more abundant in nature than uranium.
 - ⊕ Despite its widespread availability, the metal's utilisation is restricted by its high extraction cost.
- The **third stage of India's nuclear power program** envisages large scale power production from thorium.
 - ⊕ **Advanced Heavy Water Reactor**, currently under development with **Bhabha Atomic Research Centre (BARC)**, would serve as a technology demonstrator for thorium fuel cycle.
 - ⊕ Also, India is developing an **Indian Molten Salt Breeder Reactor (IMSBR)**.

Thorium reserves in India

- India has the world's largest reserves of thorium.
- Kerala and Odisha have rich reserves of **monazite**, which contains about 8 – 10% thorium.
- It is also found in Andhra Pradesh, Tamil Nadu, West Bengal and Jharkhand.



Survey of India (Sol) is developing a National Geo-Spatial Platform

Platform will help in implementing the vision of the **National Geospatial Policy, 2022**.

- Sol is overarching nodal agency for Geospatial Data.
- **Geospatial data** is time-based data that is related to a specific location on the Earth's surface.

About the National Geo-Spatial Platform (NGP)

- **Objective:** To serve as a robust and scalable system for standardizing, sharing, and managing foundational geospatial datasets, and
 - ⊕ It will facilitate seamless access to accurate and authoritative spatial data through web services, APIs, and mobile applications

Harnessing Geospatial Data for Inclusive and Sustainable Growth

- **Agriculture:** Enhancing **precision farming, soil health mapping** and irrigation management.
- **Logistics & Transportation:** Enables **integrated infrastructure planning**. E.g., PM Gati Shakti National Master Plan
- **Urban Planning and Infrastructure:** Drives advancements in **urban design** by supporting high-resolution topographical surveys (5-10 cm accuracy) and the future development of a **National Digital Twin** for major cities.
 - ⊕ E.g., Geographical Information System (GIS) based Master Plan for Atal Mission for Rejuvenation and Urban Transformation (AMRUT) cities
- **Other:** Environmental conservation (providing high-resolution location data and spatial intelligence), Disaster Management, etc.

National Geospatial Policy, 2022

- It outlines a **strategic roadmap** for the development of geospatial infrastructure, services, and platforms at both **national and sub-national levels**.
- It provided for constituting Geospatial Data Promotion and Development Committee (GDPDC) at the national level.
- **Operation Dronagiri** has been launched under it
 - ⊕ **Operation Dronagiri** is a pilot initiative aiming to demonstrate the real-world applications of geospatial technologies.
- **Other key Initiatives taken to promote Geospatial sector:** National Geospatial Mission, National Geospatial Data Repository, etc.

ISRO Launched India's Heaviest Communication Satellite for Indian Navy

GSAT-7R (CMS-03) was successfully launched aboard the **LVM3 (Launch Vehicle Mark-3)** from the Satish Dhawan Space Centre, Sriharikota.

- LVM3 is **India's heaviest operational rocket** for launching heavy communication satellites and deep-space missions. It is a **three-stage vehicle**, comprising
 - ⊕ **Solid Stage:** Two solid strap-on boosters at first stage (use of solid propellant)
 - ⊕ **Liquid State:** One liquid core stage (liquid propellant)
 - ⊕ **Cryogenic Stage:** One cryogenic upper stage (powered by the indigenous high-thrust CE-20 cryogenic engine, loaded with cryogenic propellant)

Key Features of GSAT-7R Satellite

- It is a part of **India's advanced defence communication satellite series GSAT-7**.
- **Weight:** ~4,400 kg
- **Orbit:** Launched into the **Geosynchronous Transfer Orbit (GTO)**, it will eventually settle into **Geostationary Orbit** (35,786 kilometers above Earth).
- **Coverage:** Provides **multi-band telecommunication** services across the **Indian Ocean Region** and **Indian landmass**.
- **Purpose:** Strengthens **space-based communication, maritime domain awareness, and secure links** among Navy ships, submarines, aircraft, and Maritime Operations Centres.

Significance

- Indigenous development marks India's growing **self-reliance (Aatmanirbharta)** in **defence-space communication**.
- Enhances **Navy's strategic capabilities** and **blue-water communication reach**.
- **Precision Warfare:** Navigation satellites vital for **missile accuracy and precision strikes**.

Other Military Satellites in the GSAT-7 Series

- **For Navy:**
 - ⊕ **GSAT-7 (Rukmini):** Operational **since 2013**; provides maritime communication and surveillance.
- **For Air Force:**
 - ⊕ **GSAT-7A (Angry Bird):** Launched in 2018; strengthens **network-centric operations and data link connectivity**.
 - ⊕ **GSAT-7C:** To be developed and includes ground hubs for **real-time, secure communication**.
- **For Army:**
 - ⊕ **GSAT-7B:** To be developed to enhance **surveillance and communication in border areas**.



Stampede Results in Loss of Lives in Andhra Pradesh's Venkateswara Swamy Temple

A stampede or crushing occurs when a **sudden crowd surge arises due to real or perceived danger** or loss of space.

- The **National Disaster Management Authority (NDMA)** categorizes stampedes as **man-made disasters**.
- In recent past **India is witnessing a rapid surge in stampedes**, such as: **Bengaluru** (RCB's IPL win celebrations), **New Delhi railway station** (rush for Kumbh Mela), **Prayagraj** (Kumbh Mela stampede), etc.

Why is India so susceptible to Stampedes?

- **Lack of Accountability and Enforcement:** Event venues often **exceed safe capacity limits, inadequate infrastructure** (E.g., **barricades**), reflecting weak administrative oversight and poor enforcement of safety norms.
- **Poor Planning and Coordination:** Absence of integrated planning **between local administration, police, and event organizers** leads to confusion.
- **Limited Use of Technology:** Minimal deployment of **real-time surveillance systems, crowd-density analytics**, etc.
- **Other factors:** Rising pilgrimage culture due to rise in prosperity, congested urban spaces clubbed with high population density, panic triggering, poorly trained personnel, delays in rescue, etc.

Way Forward

- **Use real-time monitoring** with **CCTV, Drones and digital tools** to track crowd flow and alert authorities quickly as recommended by NDMA.
- **Limit entry through registration and online passes** to manage crowd size at major gatherings.
- **Ensuring accountability of both organisers and administration** for not following safety norms and managing crowds responsibly.
- **Improve infrastructure** with wider pathways, clear exits, and better safety facilities.

NDMA Guidelines on Managing Crowd

- **Traffic Regulation:** Control vehicular movement around pandals and festive grounds to prevent congestion.
- **Clear Signage:** Display route maps for entry and emergency exits at prominent locations.
- **Crowd Control:** Use barricades to maintain orderly, queue-based movement of people.
- **Surveillance:** Install CCTV cameras and ensure adequate police presence for monitoring and safety.
- **Space Management:** Remove unauthorized parking and makeshift stalls encroaching on pedestrian areas.
- **Other:** Medical Preparedness; Public Awareness; Fire Prevention, etc.

Also In News



Advocates

Supreme Court has held that in-house counsels employed by corporate entities will not be entitled to client-attorney privilege under Section 132 of the **Bharatiya Sakshya Adhiniyam (BSA)**.

- SC held this because they are not considered advocates under the **Advocates Act, 1961**.
- Section 132 of BSA protects communications between an advocate and their client subject to exceptions.

Advocates

- Advocates are those rolled under the provisions of **Advocates Act, 1961** and **Bar Council of India Rules**, subject to qualifying Bar Council Exam post LL.B. degree.
 - ⊕ Advocates to be the only recognised class of persons **entitled to practise law in India**, according to section 29 of this Act.
- **Lawyer:** Any person who has completed a law degree can be called a lawyer. He may be a legal adviser, etc.



Coal India Limited (CIL)

Coal India Limited (CIL) has **completed 50 years** of its establishment.

About CIL (HQ: Kolkata)

- **Establishment:** **November 1975** as a holding company after nationalisation of coal mines.
- It is a **Maharatna CPSU** under the **Ministry of Coal**.
- **Workforce:** Over 2.20 lakh employees across 8 states.
- **Operations:** Manages 310 mines (129 underground, 168 opencast, 13 mixed).
- **Market Role:** Supplies **~80% of India's total domestic coal production**.



NCLAT

Recently, **National Company Law Appellate Tribunal (NCLAT)** said that Competition Commission of India (CCI) has no power to examine into the disputes related to patent matters.

- Tribunal held that **Patent Act, 1970** takes precedence over the **Competition Act, 2002**.
- **Patent Act, 1970** safeguards inventor's **exclusive rights** over their innovations, aiming to **reward innovation** while ensuring **public access** to new technologies.

About National Company Law Appellate Tribunal (NCLAT)

- **Established:** Under **Companies Act, 2013**.
- **Function:** Hears **appeals against orders** of the **National Company Law Tribunal (NCLT)**, **Insolvency and Bankruptcy Board of India** and **CCI**.

About Competition Commission of India (CCI)

- **Established** under the **Competition Act, 2002** to enforce it.
- **Purpose:** To eliminate anti-competitive practices, protect the interests of consumers and ensure freedom of trade, in Indian markets.

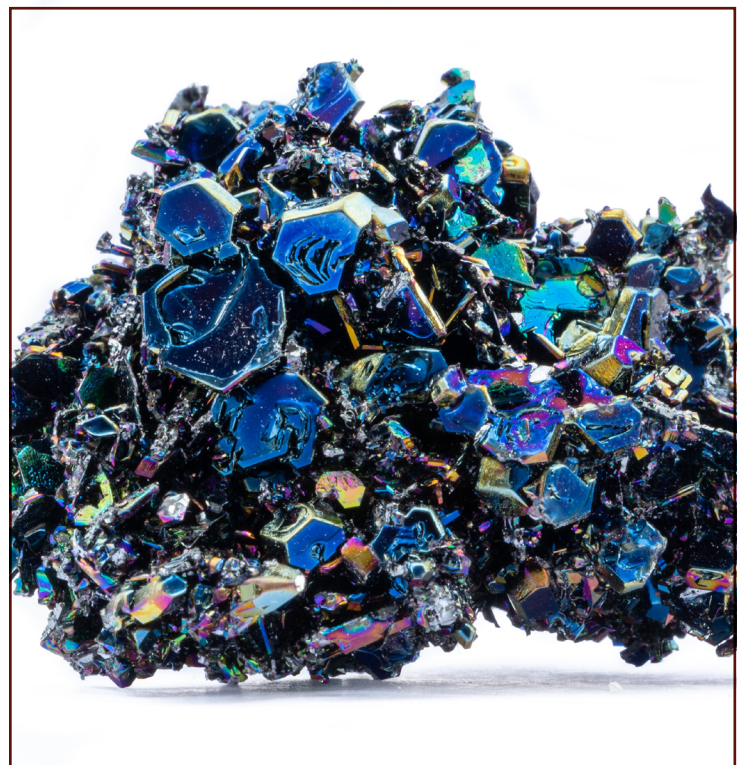


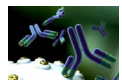
Silicon Carbide

Odisha's Chief Minister laid the foundation stone for India's first end-to-end silicon carbide semiconductor manufacturing facility in the state.

About Silicon Carbide (or SiC)

- A hard, **covalently bonded** ceramic made of silicon and carbon atoms.
- **Properties:** Exhibits **high thermal conductivity**, **low thermal expansion**, and exceptional hardness.
- **Applications:** Used in **semiconductors**, **aerospace components**, etc.





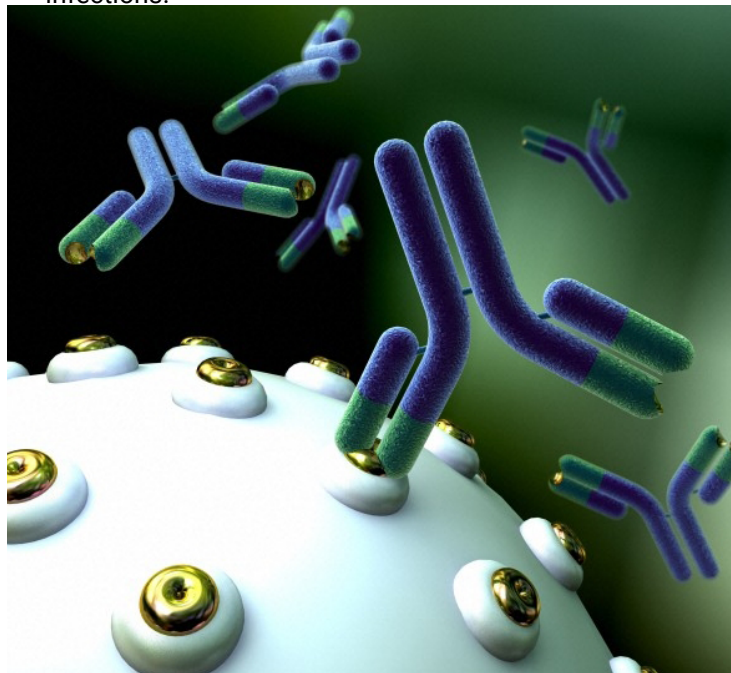
Monoclonal Antibodies (mAbs)

The Indian Council of Medical Research (ICMR) seeks partners to develop monoclonal antibodies (mAbs) against Nipah viral disease.

- Nipah virus is a zoonotic pathogen causing severe respiratory and neurological illness, transmitted from bats or infected animals to humans.

About Monoclonal Antibodies (mAbs)

- **Definition:** Monoclonal antibodies are laboratory-produced proteins, engineered to bind specific antigens, mimicking natural immune responses.
- **Origin:** Derived from identical immune cells cloned from a single parent B-cell.
- **Function:** Used to diagnose, prevent, and treat diseases including cancers, autoimmune disorders, and viral infections.



ICC Women's Cricket World Cup

In a historic feat, the **Indian women's Cricket Team clinched their first-ever ODI World Cup title** after defeating the South Africa in the final.

About ICC Women's Cricket World Cup 2025

- **First Edition:** 1973 (in England) and won by England.
- **2025 Host Country:** India hosted the current 13th edition.
- **Most number of titles won by:** Australia (7 times)
- It was India's 3rd final after 2005 & 2017.



Personality in News



Veer Narayan Singh (1795 – 1857)

PM inaugurated **Shaheed Veer Narayan Singh Memorial and Tribal Freedom Fighters Museum** in Chhattisgarh.

About Shaheed Veer Narayan Singh

- He was a **tribal leader and freedom fighter** from **Sonakhan, Chhattisgarh**, born in 1795 to Zamindar Ramasai of the **Binjwar tribe**.
- His father had earlier rebelled against the **British and the Bhosales** (1818–19).

Key Contributions

- Regarded as the **first freedom fighter of Chhattisgarh** and a **symbol of tribal resistance**.
- **Fought valiantly against the British during the 1857 Revolt**, but was captured and **executed on December 10, 1857**.
- During the **famine of 1856**, he **seized food grains** hoarded by a trader to feed the starving poor.

Values: Leader, benevolent and just ruler, respected for his fairness and service to his people.



AHMEDABAD



BENGALURU



BHOPAL



CHANDIGARH



DELHI



GUWAHATI



HYDERABAD



JAIPUR



JODHPUR



LUCKNOW



PRAYAGRAJ



PUNE



RANCHI