

XPoSat

❖ Context

- ISRO is collaborating with the **Raman Research Institute (RRI)**, Bengaluru, an autonomous research institute, to build the **X-Ray Polarimeter Satellite (XPoSat)** that is scheduled to be launched later this year.

❖ About XPoSat

- It has been built as **India's first, and only the world's second polarimetry mission** that is meant to study various dynamics of bright astronomical X-ray sources in extreme conditions.
- The other such major mission is NASA's Imaging X-ray Polarimetry Explorer (IXPE) that was launched in 2021.
- The spacecraft **will carry two scientific payloads** in a low earth orbit.
- The primary payload POLIX (Polarimeter Instrument in X-rays) will measure the polarimetry parameters (degree and angle of polarisation).
 - The payload is **being developed by RRI in collaboration with ISRO's U R Rao Satellite Centre (URSC)** in Bengaluru.
 - POLIX is expected to observe about 40 bright astronomical sources of different categories during the planned lifetime of XPoSat mission of about 5 years.
- The XSPECT (X-ray Spectroscopy and Timing) payload will give spectroscopic information (on how light is absorbed and emitted by objects).
 - It would **observe several types of sources**, such as X-ray pulsars, blackhole binaries, low-magnetic field neutron star, etc.

❖ IXPE

- It was launched on 9 December 2021.
- It is an international collaboration between NASA and the Italian Space Agency (ASI).
- IXPE carries three state-of-the-art space telescopes.
- Each of the three identical telescopes hosts one light-weight X-ray mirror and one detector unit.
- These will help observe polarized X-rays from neutron stars and supermassive black holes.
- By measuring the polarisation of these X-rays, we can study where the light came from and understand the geometry and inner workings of the light source.

❖ X-Rays

- X-rays have **much higher energy & much shorter wavelengths**, between 0.03 & 3 nanometers.
- It is so small that some x-rays are no bigger than a single atom of many elements.
- The physical temperature of an object determines the wavelength of the radiation it emits.
- The **hotter the object, the shorter the wavelength** of peak emission.
- X-rays come from objects that are millions of degrees Celsius — such as pulsars, galactic supernova remnants, and black holes.

India Sees Reduction in Stunting

❖ Context

- According to the Joint Malnutrition Estimates (JME) released by UNICEF, WHO, and the World Bank, India has seen a reduction in stunting.
- However, wasting and obesity remain concerns in India.



❖ Key Highlights:

- The prevalence of stunting among children under five decreased from **41.6% in 2012 to 31.7% in 2022**, with the number of stunted children dropping from 52 lakh to 36 lakh.
- India's share of the global burden of stunting also decreased from **30% to 25%** over the past decade.
- The overall prevalence of wasting in India in 2022 was **18.7%**, accounting for 49% of the global burden of this malnutrition indicator.
- The prevalence of obesity in India marginally increased from **2.2% in 2012 to 2.8%** in 2022, with the number of obese individuals growing to **31.8 lakh from 27.5 lakh**.
- Globally, stunting declined from **26.3% in 2012 to 22.3%** in 2022, with South Asia experiencing a sharper decline from 40.3% to 30.5%.
- The prevalence of underweight children worldwide did not improve remaining at **5.6%** with a global prevalence of 6.8% in 2022.

- The JME report highlights **insufficient progress towards achieving the global nutrition targets** set by the **2025 World Health Assembly (WHA)** and the 2030 Sustainable Development Goal (SDG) 2 targets.
- The decline in stunting in India aligns with the **National Family Health Survey (NFHS)-5** data, which estimated a prevalence of **35.5% compared to 38% in NFHS-4 and 48% in NFHS-3**.
- Wasting poses a unique challenge, particularly in **South Asia and India**, where **two-thirds of children at 12 or 24 months** show signs of wasting at birth or one month of age, suggesting a significant contribution from maternal malnutrition.
- The JME estimates for stunting and obesity are based on country-level modelled estimates derived from primary sources, while estimates for wasting rely on national-level country prevalence data.

Persisting challenges

The Joint Malnutrition Estimates underscore India's mixed progress in battling malnutrition



- India saw 1.6 crore fewer stunted children under five years in 2022 compared with 2012
- Despite reduced stunting, wasting remains an issue with a prevalence rate of 18.7% in 2022 in India
- Prevalence of overweight children increased from 2.2% in 2012 to 2.8% in 2022 in India
- Global stunting declined from 26.3% in 2012 to 22.3% in 2022, but obesity prevalence increased from 5.5% to 5.6%

❖ Side Note:

- **Wasting:** Wasting is defined as low weight-for-height ratio.
- **Stunting:** Stunting is a condition where children have a low height-for-age ratio.

Face to Face Centres

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New NavIC Satellite

❖ Context

- The **Indian Space Research Organisation (ISRO)** will launch the first of the second-generation satellites for its navigation constellation on 29th May 2023.

❖ Key Highlights:

- The 2,232 kg satellite, the heaviest in the constellation, will be **launched by a GSLV rocket that will lift off from Sriharikota**.
- The Indian Regional Navigation Satellite System (IRNSS) constellation is operationally named NavIC.
- The last IRNSS satellite, **IRNSS-1I** was launched in April 2018 to replace an older, partially defunct satellite in the constellation.
- The second-generation satellite — christened NVS-01, the first of ISRO's NVS series of payloads — is heavier. Other **features are as follows**.
 - **Atomic Clock**
 - The satellite will have a Rubidium atomic clock onboard, a significant technology developed by India.
 - **L1 Signal for Better Use in Wearable Devices**
 - The second generation satellites will send signals in a third frequency, L1.
 - Existing satellites provide- the L5 and S frequency signals.
 - It will increase interoperability with other satellite-based navigation systems.
 - The L2 frequency is faster than L1. It can travel through obstacles such as cloud cover, trees, and buildings.
 - **Longer Mission Life**
 - The second-generation satellites will also have a longer mission life of **more than 12 years**.
 - The existing satellites have a mission life of 10 years.

❖ NavIC

- NavIC, or Navigation with Indian Constellation, is an independent stand-alone navigation satellite system developed by the Indian Space Research Organisation (ISRO).
- NavIC was originally **approved in 2006** at a cost of \$174 million.
- It was expected to be completed by late 2011, but only became operational in 2018.
- NavIC consists of eight satellites and covers the whole of India's landmass and up to 1,500 km (930 miles) from its boundaries.
- Currently, NavIC's use is limited. It is being used in **public vehicle tracking in India**, for providing emergency warning alerts to fishermen venturing into the deep sea where there is no terrestrial network connectivity, and for tracking and providing information related to natural disasters.
- Enabling it in smartphones is the next step India is pushing for.
- **NavIC vis-a-vis GPS**
 - GPS caters to users across the globe and **its satellites circle the earth twice a day**, while NavIC is currently for use in India and adjacent areas.
- **Side Note**
 - Like GPS, there are three more navigation systems that have global coverage – Galileo from the European Union, Russia-owned GLONASS and China's Beidou.
 - **QZSS, operated by Japan, is another regional navigation system covering the Asia-Oceania region, with a focus on Japan.**

News in Between the Lines

Kheer Bhawani Melas



❖ Context

- Thousands of migrant Pandits are traveling to Kashmir for the annual pilgrimage to the **Mata Kheer Bhawani temple** and other shrines during **Jyeshtha Ashtami**.

❖ Key Highlights:

- The temple is dedicated to the goddess **Ragnya Devi**. Situated 30 km from Srinagar city.
- The temple gets its name from **kheer, or milk and rice pudding**, that pilgrims pour into the spring inside the temple complex as an offering to the goddess.
- Legend has it that the water of the temple's **spring changes colour** from white to red and black.
- The colour of the water is said to predict the **impending future**. If it changes to **black**, it is seen as inauspicious or an impending disaster.
- The Kheer Bhawani Mela represents the unity of spirituality, culture, and communal harmony, fostering a platform for the exchange of traditions and customs between **Kashmiri Pandits and Muslims**.
- The Kheer Bhawani melas are held **annually at five shrines**: Tulmulla in Ganderbal, Manzgam and Devsar in Kulgam, Logripora in Anantnag, and Tikkar in Kupwara.

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Rare Diseases



❖ Context

- The Delhi High Court has formed a **five-member panel** to ensure efficient implementation of the Centre's rare diseases policy and provide benefits to patients.

❖ Key Highlights:

- The panel, known as the **National Rare Diseases Committee**, will focus on patients enrolled with **AIIMS, Delhi, and their treatment initiation**.
- The court recognizes the need for **coordination among the medical community**, therapy providers, and government agencies to address the lack of timely and adequate therapies for rare diseases.
- The panel's tasks **include exploring procurement of therapies, drugs**, and creating a logistical framework for treatment administration.
- The court's intervention aims to address the **high costs of medicines and therapies**, which have left many rare disease patients without access to essential treatments.

❖ What are Rare Diseases?

- Rare diseases, also known as **orphan diseases**, are medical conditions that affect a relatively small number of people in the population.
- Many rare diseases are **genetic in nature**, resulting from mutations or **abnormalities in genes**.
- Due to their rarity and complexity, rare diseases often pose **significant challenges** in terms of diagnosis, treatment, and support for affected individuals and their families.
- According to Ministry of health and family welfare, cumulatively, **approximately 70 million** Indians suffer from some form of rare disease.
- These include **haemophilia, thalassemia**, sickle-cell anaemia certain forms of muscular dystrophies etc.

NITI Ayog Governing Council



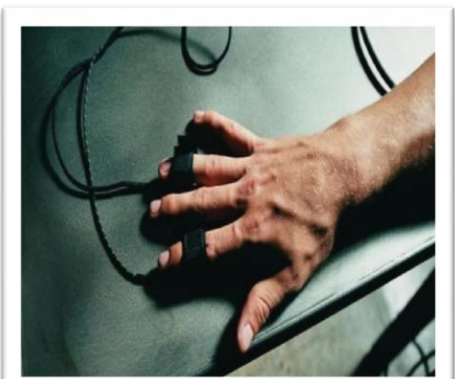
❖ Context:

- The Eighth meeting of the NITI Ayog Governing Council is underway at the new Convention Centre in Pragati Maidan in New Delhi.

❖ Key Highlights:

- The meeting will focus on the theme of **Viksit Bharat @ 2047: Role of Team India**.
- The Governing Council is chaired by the Prime Minister of India and comprises the Chief Ministers of all states and union territories, as well as the **Lieutenant Governors of union territories**.
- It serves as a platform for **cooperative federalism**, where the central government and states **collaborate on policy formulation and implementation**.

Narco Test



❖ Context

- Protesting wrestlers at Jantar Mantar recently said they were willing to undergo a narco analysis test, provided it was monitored by the Supreme Court.

❖ About Narco Analysis Test:

- In a '**narco**' or **narco analysis test**, a drug called **sodium pentothal** is injected into the body of the accused.
- It transports them to a **hypnotic or sedated state**, in which their imagination is neutralized.
- In this hypnotic state, the accused is understood as being incapable of lying, and is expected to divulge information that is true.
- **Sodium Pentothal**
 - Sodium pentothal or sodium thiopental is a fast-acting, short duration anesthetic.
 - It is **used in larger doses** to sedate patients during surgery.
 - It belongs to the barbiturate class of drugs that act on the central nervous system as depressants.
- **Polygraph Test**
 - A polygraph test is **based on the assumption that physiological responses** that are triggered when a person is lying are different from what they would be otherwise.
 - A polygraph test **does not involve injecting drugs** into the body.
 - It involves measuring variables such as blood pressure, pulse rate, etc.

Face to Face Centres

Dengue Spreads Nationwide: ICMR



❖ Context:

- The Indian Council of Medical Research (ICMR) has confirmed that the infection geography of dengue has expanded from eight states in **2001 to encompass** the entire country, ahead of the monsoon season.

❖ Key Highlights:

- Dengue is transmitted by female mosquitoes, primarily **Aedes aegypti** and to a lesser extent, **Aedes albopictus**, which are also vectors for other viruses like **chikungunya, yellow fever, and Zika**.
- **Zika**, initially reported in **Gujarat and Tamil Nadu**, has now been detected in 11 states across India, including Punjab, Rajasthan, Gujarat, Madhya Pradesh, Uttar Pradesh, Delhi, Maharashtra, Kerala, Jharkhand, Telangana, and Tamil Nadu.

❖ About ICMR:

- The Indian Council of Medical Research (ICMR) is a **premier medical research organization in India**.
- It is funded and governed by the **Department of Health Research, Ministry of Health and Family Welfare**, Government of India.
- The ICMR is responsible for **promoting and coordinating biomedical research** in the country, setting standards for ethical research practices, and providing guidance and support for various health-related programs.

The Power of Government to Design and Mint Coins



❖ Context

- To mark the inauguration of the new Parliament building, Prime Minister of India **released a commemorative coin of Rs 75 denomination on May 28**.

❖ Key Highlights:

- India has been issuing **commemorative coins since the 1960s** for several reasons such as paying homage to notable personalities, spreading awareness about government schemes, or remembering key historic events.
- The latest Rs 75 coin is circular in shape with a diameter of 44mm.
- The composition of the coin is of a quaternary alloy — 50 per cent silver, 40 per cent copper, 5 per cent nickel and 5 per cent zinc.

❖ Power to Design and Mint Coins:

- The **Coinage Act, 2011** gives the central government the power to design and mint coins in various denominations.
- In the case of coins, the role of the RBI is limited to the distribution of coins that are supplied by the central government.
- All coins are minted in the four mints owned by the Government of India in Mumbai, Hyderabad, Kolkata and Noida.
- Speaking about commemorative coins, the central government regularly releases them according to its choice, but it also mints such coins at the request of third parties.
- India released its first commemorative coin in 1964 in honour of Jawaharlal Nehru, who had passed away that year.

Volt Typhoon



❖ Context

- Recently, **Western intelligence agencies** and **Microsoft** said that **Volt Typhoon**, a Chinese hacking group, had been spying on a range of US critical infrastructure organisations from telecommunications to transportation hubs.

❖ Volt Typhoon:

- Volt Typhoon appears to be **focused on stealing information from "organizations that hold data that relates to the military or government in the United States"**.
- Officials said that the group's activities suggested that **it was being used "primarily for espionage purposes"**.
- Such groups become more dangerous when they turn their attention from intelligence gathering to digital sabotage.
- Microsoft said in a blog post this week that Volt Typhoon was "pursuing development of capabilities that could disrupt critical communications infrastructure between the United States and Asia region during future crises."