# Current Affairs - 27 April 2025

## WHAT IS LINE OF CONTROL (LOC)?

- The LoC is the **de facto military boundary between India and Pakistan** in the region of Jammu and Kashmir.
- It is not an international boundary but a **ceasefire line** that was established after the **1947-48 India-Pakistan war** over Kashmir.
- Then called the Ceasefire Line (CFL), it was redesignated as the "Line of Control" following the **Simla Agreement,** which was signed on 3 July **1972**, following the 1971 Indo-Pakistan war.
- The LoC stretches about **740 kilometers,** from the region of Ladakh in the north down to the Poonch district in the south.
- It is **heavily militarized,** with frequent skirmishes and exchanges of fire between Indian and Pakistani forces.
- On the Indian side of the LoC comes a part of **Jammu and Kashmir and Ladakh**. On the Pakistani side comes the part of Pakistan Occupied Kashmir **(POK), Gilgit, and Baltistan**.
- The LoC is **different from the International Border (IB),** which is the officially recognized border between India and Pakistan elsewhere.

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## WHAT IS THE UNITED NATIONS HIGH SEAS TREATY?

- The **Biodiversity Beyond National Jurisdiction (BBNJ) Agreement** , or the 'High Seas Treaty', is an international treaty under the United Nations Convention on the Law of the Sea (**UNCLOS**).
- It is the **first-ever treaty to protect the world's oceans** that lie outside national boundaries.

- It is also known as the **'Paris Agreement for the Ocean.'**
- It is a **legally binding** treaty to protect marine life in international waters.
- It sets precise mechanisms for the sustainable use of marine biological diversity through international cooperation and coordination.
- It would also contribute to achieving several SDGs, particularly **SDG14 (Life Below Water).**
- The treaty will **enter into force 120 days after the 60th country formally ratifies** the agreement.

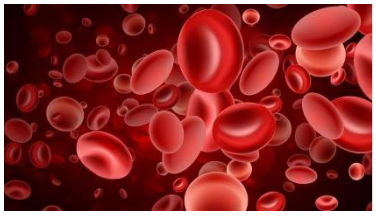
**Features:**

- It contains 75 articles that aim at protecting, caring for, and ensuring the **responsible use of the marine environment,** maintaining the integrity of ocean ecosystems, and conserving the inherent value of marine biological diversity.
- It **aims to place 30% of the seas into protected areas by 2030** (a pledge made by countries at the UN biodiversity conference in 2022).
- It also **covers environmental assessments** to evaluate the potential damage of commercial activities, such as deep-sea mining.

What are High Seas?

- The high seas **begin at the border of countries' exclusive economic zones**, which extend up to 370 km (200 nautical miles) from coastlines.
- Beyond that point, the seas are **under the jurisdiction of no country**, and all countries have a right to fish, ship, and do research.
- They make up **more than 60% of the world's oceans** by surface area.
- Activities on the high seas are often unregulated and insufficiently monitored, leaving them vulnerable to exploitation.

## KEY FACTS ABOUT ANAEMIA



- Anemia is a problem of **not having enough healthy red blood cells or hemoglobin** to carry oxygen to the body's tissues.
- **Hemoglobin** is a protein **found in red cells** that **carries oxygen from the lungs to all other organs** in the body.
- Having anemia can **cause tiredness, weakness, and shortness of breath.**
- There are many forms of anemia. Each has its own cause.
    - Some types of anemia are **inherited,** but people may also **acquire** or develop the condition **d**uring their lifetimes.
- WHO estimates that **40% of children 6–59 months** of age, **37% of pregnant women**, and **30% of women 15–49 years** of age worldwide are anaemic.
- Anaemia can be **short-term or long-term**. It can range from mild to severe.
- Severe anemia can be life-threatening. This condition may also be a symptom of serious conditions like
- A common type of anemia is **iron-deficiency anaemia**, which is usually caused by not eating or absorbing enough iron, or by losing blood.
- Treatments for anemia might involve **taking supplements** or having **medical procedures.**
- **Eating a healthy diet** might prevent some forms of anemia.

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## WHAT IS A 3D MICROSCOPE?

**For the first time, the Indian Army's Department of Ophthalmology at Army Hospital (Research and Referral), New Delhi, has successfully performed Minimally Invasive Glaucoma Surgery (MIGS) using a 3D Microscope.**

**What is a Microscope?**

- A microscope is an instrument that magnifies small objects, making them visible to the naked eye by **bending (refracting) light rays** through curved lenses.
- The most commonly used microscopes are optical microscopes, where visible light is focused through lenses to create an enlarged image.

**What is a 3D Microscope?**

- A 3D microscope produces images with depth information (X, Y, and Z axes), allowing researchers to visualize and measure the topography, volume, and internal structures of samples.
- Unlike traditional light microscopes, which provide flat, 2D images, 3D microscopes use **advanced optical, electron, or computational techniques** to capture and reconstruct three-dimensional data.
- This is particularly useful for studying complex biological or environmental samples, such as soil microbes, aquatic organisms, or

**Features of the 3D Microscope**

- The 3D Microscope uses advanced three-dimensional visualisation, **assisting in complex eye surgeries** such as treatment for squint, cataract, corneal diseases, glaucoma, and retinal conditions.
- It employs special 3D polarisation glasses for surgeons and a **55-inch 4K ultra-HD display**.
- **Key advantages** include:
    - **Reduced surgical time** and lower complication rates compared to conventional microscopes.
    - **Decreased endoilluminator power requirements**, thereby reducing photo-toxicity risks.
    - Ease of performing surgeries in complex and rare cases.

## KEY FACTS ABOUT NATIONAL INDUSTRIAL CORRIDOR DEVELOPMENT PROGRAMME (NICDP)

- **NICDP** is India's most ambitious infrastructure initiative aimed at developing new industrial cities as **"Smart Cities"**, integrating **next-generation technologies across infrastructure sectors**.
- National Industrial Corridor Development Corporation (**NICDC**) is the nodal agency managing the programme.
- NICDP is designed to **attract investments** from both large anchor industries and Micro, Small, and Medium Enterprises (MSMEs), acting as a catalyst for achieving the Government's goal of $2 trillion in exports by 2030.
- Newly sanctioned industrial areas under NICDP include: Khurpia (Uttarakhand), Rajpura-Patiala (Punjab), Dighi (Maharashtra), Palakkad (Kerala), Agra and Prayagraj (Uttar Pradesh), Gaya (Bihar), Zaheerabad (Telangana), Orvakal and Kopparthy (Andhra Pradesh), and Jodhpur-Pali (Rajasthan).
- These projects are closely **aligned with the PM GatiShakti National Master Plan**, ensuring integrated, seamless multi-modal connectivity across the country.

**Palakkad Industrial Smart City (Kerala)**

- The Palakkad Industrial Smart City, spanning 1,710 acres across Pudussery Central, Pudussery West, and Kannambra, is set to reshape Kerala's industrial landscape.
- **Strategic location advantages**:
  - 21 km from Palakkad city
  - 120 km from Cochin
  - 50 km from Coimbatore
  - Offering **seamless interstate connectivity** and strong logistical benefits.
- It ensures multimodal connectivity via road, rail, and air, making it attractive for high-quality investments, regional employment generation, and innovation.

## FREQUENT DOWNTIMES IN UPI SERVICES

- UPI is built on the Immediate Payment Service (IMPS) architecture.
- For UPI transactions, banks must join the UPI system and allow users to link their bank accounts via a mobile number on a Payment Service Provider (PSP) app like PhonePe or GPay.
- Almost all public and private banks are part of this network.
- **Interoperability**
    - UPI is designed to be interoperable, enabling users to access their bank accounts through any UPI-enabled app and even register on multiple apps simultaneously.
- **Role of NPCI**
    - While UPI appears to be a peer-to-peer system, nearly all transactions are routed through the NPCI.
    - NPCI encrypts the user's PIN and forwards payment information to the payer's bank, which then processes the transaction.
- **Single Point of Failure**
    - Since NPCI handles critical encryption and transaction routing, any downtime at NPCI results in complete disruption, as banks cannot independently process UPI transactions without it.

**Why NPCI Faced Several Outages**

- NPCI is a collective of banks, with public sector banks holding the majority stake, as required by the Payment and Settlement Systems Act, 2007.
- Being bank-led, much of the system's implementation is left to individual banks, though NPCI oversees the UPI design and management.
- **Cause of Outages**
    - Recently, individual banks overwhelmed the NPCI systems by sending excessive "check transaction" requests to verify completed payments.

- This stressed the system's single point of failure and caused brief outages.

- **Introduction of UPI Lite**
  - To reduce downtime impact, NPCI introduced UPI Lite, allowing users to make small payments (up to ₹2,000) without entering a PIN.
  - However, even UPI Lite transactions still pass through NPCI servers for device verification, meaning NPCI remains a critical intermediary.
- **Persistent Single Point of Failure**
  - Despite lighter processes like UPI Lite, NPCI continues to be at the center of all UPI activity, maintaining its position as a single point of vulnerability.

**Why Banks Are Displeased with UPI**

- **Lack of Significant Fees**
  - Although UPI has revolutionized payments in India, banks have limited opportunities to collect fees from transactions, despite the associated costs.
- **Impact on Bank Incentives**
  - Without the ability to charge MDR, banks have few incentives to maintain rigorous uptime standards, leading to more frequent outages compared to the NPCI.
  - These outages result in increased payment declines.
- **Comparison with Card Networks**
  - Commercial card networks like MasterCard and Visa experience fewer and shorter downtimes, thanks to better monitoring and enforceable service level agreements (SLAs).
- **Government's Incentive Programme**
  - To address the issue, the Ministry of Electronics and Information Technology (MeitY) has introduced a "carrot and stick" approach.
  - This includes an annual UPI incentive program that rewards banks based on their performance and penalizes those with poor uptime.

## SARVAM AI SELECTED TO BUILD INDIA'S FIRST HOMEGROWN SOVEREIGN AI MODEL

- The government chose Sarvam after a rigorous selection process involving 67 applicants. The start-up will receive extensive support, including access to **4,000 high-end GPUs** for six months to build the model from scratch.
- The GPUs will be provided through companies such as Yotta Data Services, Tata Communications, and E2E Networks, which were separately empanelled to create AI data centres in India.
- The model, to be built entirely using local talent and infrastructure, will have **70 billion parameters**, positioning it to compete with some of the best global AI models.
- According to Sarvam, the LLM will focus on **advanced reasoning**, **voice-based tasks**, and **fluency in Indian languages**, making it uniquely suited for India's diverse population.

**Model Variants Under Development**

- Sarvam AI plans to develop three key variants of its LLM:
  - **Sarvam-Large**: Designed for advanced reasoning and complex generation tasks.
  - **Sarvam-Small**: A lightweight model optimized for real-time interactive applications.
  - **Sarvam-Edge**: A compact model tailored for on-device processing, enabling AI capabilities on mobile and IoT devices.
- These variants aim to cater to a wide range of applications, from citizen services to enterprise solutions, ensuring adaptability across various use cases.

**The IndiaAI Mission and National AI Infrastructure**

- The **IndiaAI Mission**, approved by the Union Cabinet, is focused on scaling India's AI ecosystem by investing in compute capacity, skilled research talent, datasets, AI applications, and trusted AI practices.

- One of its key initiatives is the **IndiaAI Compute Capacity program**, which aims to deploy over 10,000 GPUs to democratize access to AI resources for startups, researchers, and institutions.
- To facilitate greater participation, especially by smaller companies, the government has also eased eligibility norms for accessing these resources, offering GPU services at globally competitive subsidized rates.
- Sarvam's selection to develop the first sovereign AI model exemplifies the mission's objective of nurturing homegrown champions capable of competing on the global stage.

**Challenges and Opportunities Ahead**

- While the opportunity is historic, building a population-scale LLM is a complex challenge.
- It **demands seamless integration of vast datasets**, engineering innovations to handle diverse languages and dialects, and fine-tuning for cultural and contextual understanding.
- Additionally, unlike some global LLMs that are open-sourced, **Sarvam's model is expected to be closely managed and fine-tuned specifically for Indian use cases**.
- This positions it as a secure and specialized alternative in an era where data privacy and localized solutions are paramount.

**Future Prospects**

Sarvam's success could unlock a universe of possibilities, from enabling AI-driven citizen services in rural areas to building enterprise-grade AI applications with localized intelligence. It sets the foundation for India to not merely consume global AI solutions but to become a **co-creator and leader** in AI innovation.

With investments from prominent venture capitalists, Sarvam is well-resourced to deliver on this ambitious national mission.