1. **QUAD at Sea Ship Observer Mission:** Recently, in a significant move to strengthen maritime cooperation and regional security in the Indo-Pacific, the QUAD nations jointly launched the inaugural **'QUAD at Sea Ship Observer Mission**'.
    - Implemented under the Wilmington Declaration, this initiative represents a new phase of operational collaboration among the member countries.
    - **About the Quad (Quadrilateral Security Dialogue)**: Formalized in 2007 under the leadership of then Japanese Prime Minister Shinzo Abe.
        - Comprises four major Indo-Pacific democracies: **Australia, India, Japan, and the United States**.
        - **Purpose**: Functions as an **informal strategic partnership** among maritime democracies.
            - ✓ Aims to promote a **free, open, stable, and inclusive Indo-Pacific**.
            - ✓ Seeks to act as a **force for global good** by delivering positive and lasting impact.
        - **Represents: 24% of the** world's population, **35% of** global GDP and **18% of** global trade.
    - **Wilmington Declaration :** A statement jointly issued by the leaders of the Quad countries, their meeting in Wilmington, Delaware, in September 2023.
        - **Key Highlights**: Urged peaceful resolution of maritime disputes based on international law.
            - ✓ Announced new initiatives for maritime training, legal dialogues, and joint naval exercises.
            - ✓ Committed to improving Indo-Pacific connectivity through quality infrastructure.
            - ✓ Introduced initiatives to improve public health under the "Four Dimensions" of Quad cooperation.
            - ✓ Pledged joint efforts in space exploration, cybersecurity, clean energy, and semiconductor development.
2. **Altermagnets :** Recently, scientists identified a unique electrical behavior in **altermagnets**, an emerging class of magnetic materials, marking a significant breakthrough that could transform the design of electronic devices.
    - **About Altermagnets:** A newly discovered class that merges the best traits of **ferromagnets** and **antiferromagnets**. Despite showing **no net external magnetism**, their internal electron behavior opens up exciting possibilities for advanced technologies.

- **Ideal for Spintronics**: A futuristic field that manipulates **electron spin** instead of charge—paving the way for faster, energy-efficient electronics.
- **Dual Magnetic Nature**: Exhibit the **zero magnetization** of antiferromagnets while displaying **non-relativistic spin splitting** like ferromagnets.
  - ✓ This duality arises from complex atomic interactions within their **crystal structure**.

- **Revolutionizing Spin Caloritronics**: Altermagnets could drive breakthroughs in **spin caloritronics**—a field exploring how **spin and heat** flow interact.
  - These capabilities surpass those of traditional ferromagnets or antiferromagnets.
- **Future Applications**: Their novel properties may power **next-gen data storage**, **information processing**, and **low-energy electronic systems**.
- **Chromium Antimonide (CrSb)** is a unique altermagnet with metallic properties, exceptional thermal stability, and the highest known spin-splitting among its kind.

3. **GOSAT-GW Satellite :** Recently, Japan successfully launched the **Global Observing Satellite for Greenhouse Gases and Water Cycle (GOSAT-GW) satellite** aboard its **H-2A rocket**, marking a major advancement in climate science and space technology, as well as the final mission of the H-2A before its retirement.

- **About GOSAT-GW Satellite :** Designed to improve global monitoring of **greenhouse gases** and **water cycle dynamics**. Aimed at supporting **global climate change mitigation efforts**.
  - **Data Capabilities**: Will provide **high-resolution data** on: Carbon dioxide (CO_2), Methane (CH_4), Sea surface temperatures and Precipitation patterns.
  - **International Collaboration**: Data will be shared worldwide, including with the **U.S. National Oceanic and Atmospheric Administration (NOAA)**.
- **About H-2A rocket :** This launch marked the 50th and final mission of Japan's H-2A rocket, which has been in service since 2001 with an impressive 98% success rate across 49 successful missions.
  - Carried notable payloads such as the SLIM lunar lander (2024), the Hayabusa2 asteroid mission (2014), and various weather, defense, and communication satellites.
  - Succeeded by the **H3 rocket**, designed to carry larger payloads, cut launch costs by up to 50%, and compete globally in the satellite launch market.

4. **National Turmeric Board :** Recently, the Union Home Minister inaugurated the headquarters of the **National Turmeric Board** in Nizamabad, Telangana, marking a significant step in strengthening support for turmeric farmers in India.
   - **About National Turmeric Board :** Established to promote the **cultivation, production, processing, branding, and marketing** of **turmeric** in India (under the **Ministry of Commerce & Industry**)
     - **Board Composition :** Chairperson , Secretary and other representatives from:
       - ✓ Ministry of AYUSH
       - ✓ Departments of Pharmaceuticals, Agriculture & Farmers Welfare, Commerce & Industry
       - ✓ Senior officials from three turmeric-producing states (on a rotational basis).
       - ✓ Members from leading national and state-level research institutions.
       - ✓ Turmeric farmers and exporters to ensure grassroots-level representation.
   - **About Turmeric : Underground stem (rhizome)** of the **Curcuma longa** plant, belonging to the **ginger family (Zingiberaceae)**.
     - Its **active compound, curcumin**, gives it a bright yellow color and provides **anti-inflammatory, antioxidant, and antimicrobial** properties.
     - **Cultivation in India:** Grown in **over 20 states** with **30+ varieties**. Major turmeric-producing states: **Maharashtra, Telangana, Karnataka, and Tamil Nadu**.
     - India is the **world's largest producer, consumer, and exporter** of turmeric.
     - Several regional varieties of turmeric have received **Geographical Indication (GI) tags**, including: **Lakadong** (Meghalaya), **Kandhamal** (Odisha), **Erode** (Tamil Nadu) and **Armoor** (Nizamabad, Telangana)
5. **India's Biodiversity Wealth :** Recently, India reinforced its status as one of the world's most biodiverse countries by adding 683 species to its fauna and 433 taxa to its flora in 2024—an important milestone in biodiversity documentation and conservation.
   - **Key Highlights: Top States for Faunal Discoveries: Kerala**: 101 species (highest in India*)* , **Karnataka**: 82 species and **Tamil Nadu**: 63 species.
     - **Top States for Floral Discoveries: Kerala**: 58 species (highest floral discoveries), **Maharashtra**: 45 species and **Uttarakhand**: 40 species

- Notable discoveries fauna and flora :
  - ✓ **Dravidoseps gouensis** – a new genus of lizard
  - ✓ **Anguiculus dicaprioi** – a newly discovered snake named after actor Leonardo DiCaprio
  - ✓ Rare **orchids** like Bulbophyllum gopalianum, Coelogyne tripurensis, Gastrodia indica, and Gastrodia sikkimensis.
- **Institutional Contributions: Zoological Survey of India (ZSI)** — publishes Animal Discoveries annually and **Botanical Survey of India (BSI)** — publishes Plant Discoveries annually.
- India is home to **~8% of global biodiversity**, despite occupying only **2.4% of the Earth's land area**. It remains one of the **17 megadiverse countries globally**, highlighting its global conservation responsibility.

6. **Financial Stability Report (FSR):** Recently, the Reserve Bank of India released its biannual **Financial Stability Report (FSR),** highlighting that India continues to serve as a strong pillar of global economic growth.
   - **Key Highlights of Report :** As of **March 2025**, the **Gross Non-Performing Asset (GNPA) ratio** stands at **2.3%**, and under a baseline scenario, it is projected to rise to **2.5%**.
     - For **46 scheduled commercial banks**, which together represent **98% of the sector's total assets**, the GNPA ratio may increase to **2.6% by March 2027**.
     - **Capital adequacy** across the banking sector remains **comfortably above the regulatory minimum**, ensuring sufficient resilience to absorb adverse shocks.
     - **India's growth trajectory is largely driven by domestic demand**, and the **outlook for food inflation is optimistic**, aided by **softening prices** and **record crop production**.
     - **Non-Banking Financial Companies (NBFCs)** are also performing well, maintaining **strong capital positions**, **robust profitability**, and **improving asset quality**.
   - **About FSR :** A **biannual publication** released by the **Reserve Bank of India (RBI)**.
     - It reflects the **collective assessment** of the **Sub-Committee of the Financial Stability and Development Council (FSDC)**.
     - The report provides insights into the **resilience of the Indian financial system** and highlights **risks to financial stability**.
     - It is prepared in consultation with **all financial sector regulators** (e.g. SEBI, IRDAI, PFRDA).

- The **FSR also includes the Systemic Risk Survey (SRS)**, which gathers expert and market participant views on: Global **risks**, **Financial risks**, **Macroeconomic risks**, **Institutional risks** and **General risks**

7. **Space-Based Surveillance–III (SBS-III) Programme:** Recently, the Union government sanctioned the fast-tracked launch of 52 dedicated surveillance satellites to enhance 24x7 monitoring of India's land borders and expansive coastline under the **Space-Based Surveillance–III (SBS-III) programme.**
   - **About SBS-III Programme:** It was approved in October 2023 by the Cabinet Committee on Security, chaired by the Prime Minister. It aims to develop advanced surveillance satellites over the next decade.
     - **Implementation Plan**: A total of 52 satellites will be launched — 21 by ISRO and 31 by three selected private companies.
     - **Strategic Coverage**: The system is designed to provide broader surveillance over regions including China, Pakistan, and the Indian Ocean Region. It will offer shorter revisit times and higher-resolution imaging capabilities.
     - **Military Utility**: The satellites will support the Indian Army, Navy, and Air Force by tracking enemy activity deep within hostile territories, such as airfields, military bases, and troop staging zones.
     - **Technological Advancements**: These next-generation satellites will be AI-enabled and capable of inter-satellite communication for more efficient collection of geospatial intelligence (GeoInt).
     - **Orbital Deployment**: The satellite constellation will function in both low Earth orbit (LEO) and geostationary orbit (GEO), ensuring wide-area surveillance and resilience against China's anti-satellite technologies, including kinetic and electronic warfare threats.
   - **Leadership and Coordination**: The Defence Space Agency (DSA), operating under the Integrated Defence Staff (IDS) of the Ministry of Defence, is spearheading the project.
     - Established in 2019 to replace the Integrated Space Cell, the DSA collaborates with ISRO, DRDO, and the armed forces to devise military space strategies and protect India's space-based assets.