1.Genome-Edited Rice: Recently, India achieved a monumental milestone in agricultural science by becoming the first country in the world to develop genome-edited rice varieties. The new varieties, **DRR Rice 100 (Kamla)** and **Pusa DST Rice 1**, are set to revolutionize rice cultivation by boosting production, enhancing climate adaptability, and conserving water.

- **Key Highlights**: Developed using **CRISPR-Cas** genome-editing technology, ensuring precise genetic changes without foreign DNA.
- **Agricultural Benefits**: 19% increase in yield.
  - 20% reduction in greenhouse gas emissions.
  - Savings of 7,500 million cubic meters of irrigation water.
  - Improved resilience to climate stresses, including drought and salinity.
- **Economic Impacts**: It supports India's vision of food security and self-sufficiency while strengthening its role as a global food provider.

- **DRR Rice 100 (Kamla):** Developed by ICAR-IIRR, Hyderabad.
  - Based on Samba Mahsuri (BPT 5204).
  - High yield, earlier maturation (20 days), water and fertilizer savings, and reduced methane emissions.
  - Stronger stalks and similar rice quality to Samba Mahsuri.

- **Pusa DST Rice 1:** Developed by ICAR-IARI, New Delhi.
  - Based on MTU 1010.
  - Yield increase by 9.66% to 30.4% in saline and alkaline soils.

- **Target Regions:** Developed for states including Andhra Pradesh, Telangana, Karnataka, Tamil Nadu, Puducherry, Kerala, Chhattisgarh, Maharashtra, Madhya Pradesh, Odisha, Jharkhand, Bihar, Uttar Pradesh, and West Bengal.

2.Stratospheric Airship Platform : The Defence Research and Development Organisation (DRDO) achieved a significant milestone with the successful maiden flight-trial of its Stratospheric Airship Platform.

- **Highlights**: A high-altitude airship equipped with an instrumental payload ascended to approximately **17 km** into the **stratosphere**.



- The flight lasted **62 minutes** during which **critical onboard systems** were tested: Envelope pressure control and emergency deflation mechanisms
- **Onboard sensor data** will be analysed to: Develop advanced simulation models to aid future long-duration stratospheric missions.The airship was **successfully recovered** for **further technical examination**.

- **Strategic Significance**: Marks a key step in developing high-endurance, stratospheric airship platforms.
  - Enhances India's Intelligence, Surveillance , Reconnaissance and earth observation capabilities.
  - Positions India among nations with advanced indigenous high-altitude technologies.

3.Tissue culture : Tissue culture propagation has emerged as a promising solution for **teak (Tectona grandis)**, a highly valued tropical hardwood known for its strength, durability, and wide range of applications.

- **About Teak:** Is called the "**king" of timbers,** with applications in shipbuilding, furniture, and construction.
  - Asia holds over 95% of the world's teak resources, with India managing 35% of the planted teak forests. Madhya Pradesh and Maharashtra have the largest natural teak forests in India.
- **Tissue Culture:** A research technique involving the growth of cells or tissues in an artificial environment.
  - In plants, this process, also known as **micropropagation**, involves culturing seeds, organs, explants, tissues, cells, or protoplasts on a chemically defined nutrient medium under sterile and controlled conditions of light, temperature, and humidity.
- **Advantages of Plant Tissue Culture**: Enables rapid production of mature plants.
  - Minimizes the risk of transmitting diseases, pests, and pathogens during plant movement.
  - Facilitates the storage and conservation of genetic material to protect native plant species.
- **Effectiveness and Field Outcomes:** The performance of tissue-cultured teak plantations has been mixed, with some showing excellent growth up to 8–10 meters in 8 years, while others report poor growth and high mortality.
  - Success largely depends on plantation management, spacing, soil quality, and farming practices.

4. Agriphotovoltaics (APVs): The concept of agriphotovoltaics (APVs), the dual use of land for both agriculture and solar power generation, offers a transformative approach to addressing India's twin challenges of energy demand and agrarian distress.

- **About APVs :** These are systems that combine **solar panels** with **crop cultivation**. The solar panels are typically elevated around **2 meters** above the ground, allowing farming to continue beneath and between the panels.
  - **Dual-use**: Farmers can generate income from both **agriculture** (crop cultivation) and **solar energy** generation.
  - **Microclimatic benefits**: APVs help improve **microclimatic conditions**, **reduce heat stress** on crops, and **reduce evapotranspiration losses**.
  - Especially useful in **arid** or **semi-arid zones**, where water conservation is critical.
  - **Cost of APVs**: APV systems are approximately **11% more expensive** than standard solar plants.
  - **Viability**: The financial feasibility of APVs heavily depends on **attractive Feed-in Tariffs (FiTs)**.
  - **Current FiT**: Rs **3.04/unit**, offering a **15-year payback** period.
  - **Suggested FiT** (based on thermal averages): Rs **4.52/unit**, offering a **4-year payback** period.
  - **FiT Revision**: Revising the FiT is critical for scaling up APVs and attracting **private investment** in the sector.

5. Public Investment Fund (PIF): India is exploring significant tax breaks for Saudi Arabia's Public Investment Fund (PIF) to encourage its proposed $100 billion investment in India's infrastructure and energy sectors.

- **Key Highlights:**
  - **Tax Benefits**: India might give PIF a **10-year tax holiday**, which would help PIF avoid taxes on things like **dividends**, **interest**, and **long-term capital gains (LTCGs)** related to investments in infrastructure.
  - **Income Tax Act Provisions**:
    - ✓ **Section 10(23FE)**: This section already provides tax exemptions for sovereign wealth funds like PIF on investments in infrastructure assets.
    - ✓ **Section 80IA**: Could give PIF a **tax holiday** for up to **10 years** on profits from infrastructure projects.

- **Comparison with Other Funds**: The proposed tax treatment for PIF might be similar to what was given to the **Abu Dhabi Investment Authority (ADIA)**, which also enjoys special tax exemptions in India.
- **PIF's Current Investments**: PIF, which has assets of $925 billion, has invested in India before, such as $1.5 billion in Jio Platforms and $1.3 billion in Reliance Retail. They are interested in expanding into energy, infrastructure, technology, and healthcare.
- **High-Level Task Force (HLTF)**: Established in **2024**, the HLTF aims to increase investment between India and Saudi Arabia. They are working to remove tax-related barriers to make investments smoother.

6. ECINET : Recently, the **Election Commission of India (ECI)** announced plans to launch a new digital platform called **ECINET**.

- **About ECINET:** It will consolidate over 40 EC apps, like Voter Helpline, cVIGIL, and Suvidha 2.0, into one platform, simplifying election-related activities.
  - **User Experience**: Designed with a user-friendly interface and easy access for both voters and officials.
  - **Enhanced Accessibility**: Accessible on desktops and smartphones for easy access to electoral data and services.
  - **Accurate Data Handling**: Data entry will be authorized by EC officials, ensuring accuracy and resolving conflicts with primary statutory data.
  - **Cybersecurity**: Rigorous trials ensure secure data protection and election integrity.
- **Expected Benefits:**
  - **Voter Confidence**: ECINET aims to address concerns over voter roll manipulation, identity duplication, and data discrepancies, increasing public trust.
  - **Efficiency**: The platform will benefit nearly 100 crore electors and 10.5 lakh officials, streamlining the electoral process and simplifying access by eliminating the need for multiple apps.
  - **Improved Data Accuracy**: Authorized officials will handle data, minimizing errors and discrepancies, and enhancing transparency to boost trust in the electoral system.

7. Arctic Circle India Forum : Recently, at the Arctic Circle India Forum, India highlighted its balanced and strategic approach to global affairs, including talks on Arctic Ocean.

- **About Arctic Circle India Forum 2025**:
  - **About:** The India Forum is **co-hosted by Arctic Circle and the Observer Research Foundation (ORF),** in collaboration with the Ministry of External Affairs and the Ministry of Earth Sciences of India.
    - ✓ It offers a unique opportunity to align India's Arctic policy with regional and global interests.
    - ✓ The discussion could pave the way for appointing a 'Polar Ambassador', strengthening India's Arctic representation.
  - **Theme:** The Polar Order: The Arctic and Asia | Science – Geopolitics – Climate – Busines
  - **Arctic Shipping & Economic Opportunities**: Melting ice is opening Arctic sea routes, sparking discussions on sustainable trade, marine conservation, and resource-based economic prospects
  - **Geopolitical Dimensions**: India advocates for Arctic peace and cooperation, reflecting its strategic autonomy and balanced diplomatic stance amid global tensions.

8. Campi Flegrei: Recently, Scientists observed cyclical episodes of unrest, marked by land uplift, seismic activity, and rumbling sounds caused by underground fluid pressure at Campi Flegrei.

- **About Campi Flegrei:** Also known as the **Phlegraean Fields**, It is an active volcanic region situated near **Naples, Italy.**
  - It differs from traditional volcanoes like Mount Vesuvius, as it is not a single volcano but a volcanic system spread across a large caldera.
  - The caldera, or volcanic depression, spans approximately 12–15 km in diameter and was created due to a massive eruption around 39,000 years ago.

9. Abdali Missile: Pakistan recently claimed that it has conducted a 'successful' training launch of the Abdali Weapon System.

- **About:** It is a short-range, road-mobile, solid-fuel ballistic missile developed by Pakistan's Space and Upper Atmosphere Research Commission (SUPARCO).
  - Designed for tactical battlefield use and can deliver both conventional and nuclear warheads.
  - **Range:** 450 kilometers, doubling the previously reported operational range of 180–200 km.