

1. **AMCA Fighter Jet** : Recently, the execution model for the Advanced Medium Combat Aircraft (AMCA) project was approved, marking a significant step towards fast-tracking the development of India's first fifth-generation stealth fighter jet.
 - **About AMCA**: AMCA is the **only fifth-generation fighter aircraft (FGFA)** currently under development in India.
 - It represents a major leap in indigenous defence aviation capabilities.
 - Designed by the Aeronautical Development Agency (ADA) and manufactured by Hindustan Aeronautics Limited (HAL), a state-owned enterprise.
 - **Aircraft Specifications**: Twin-engine, 25-tonne class aircraft.
 - ✓ Maximum speed: Approx. 2,600 km/h (Mach 2.15).
 - ✓ Combat range: 1,620 km.
 - ✓ Capable of carrying 6,500 kg of weapons (including 1.5 tonnes internally).
 - Designed for multi-role missions including: Air-to-air and air-to-ground operations, Suppression of Enemy Air Defences (SEAD) and Electronic warfare.
 - **Combat Edge – "First Look, First Kill"**: Designed on the principle of detecting and engaging the enemy first.
 - **Engine Variants**:
 - ✓ **AMCA Mk1**: Will use the 90 kN-class GE414 engine sourced from the US.
 - ✓ **AMCA Mk2**: Will be powered by an advanced 110 kN engine under development by DRDO's Gas Turbine Research Establishment in collaboration with a foreign defence partner.
2. **Remission of Duties and Taxes on Exported Products (RoDTEP) Scheme**: Recently, in a move to enhance India's export competitiveness, the Ministry of Commerce and Industry announced two key policy decisions: the restoration of the RoDTEP scheme for select exporters and the removal of port and certification restrictions on the export of leather products.
 - **About RoDTEP** : Introduced through an amendment to the Foreign Trade Policy (2015-20) and became effective from January 1, 2021.
 - It aims to reimburse taxes and duties embedded in exported goods that are not otherwise refunded, encouraging export growth by reducing the tax burden on exporters.

- Administered by the Department of Revenue, Ministry of Finance.
- RoDTEP is WTO-compliant and replaces the earlier Merchandise Export Incentive Scheme (MEIS), which was ruled against by the WTO following a US challenge.
- The scheme reimburses various central, state, and local taxes incurred during manufacture and distribution of exported goods, covering both direct and cumulative indirect taxes.
- It applies to all exporters of goods manufactured in India, including merchant and manufacturer exporters, Special Economic Zone (SEZ) units, Export-Oriented Units (EOUs), and exports via e-commerce platforms. However, re-exported products are excluded.

3. Poly Lactic Acid (PLA): Recently, Balrampur Chini Mills launched **India's first industrial-scale PLA** plant aimed at promoting eco-friendly alternatives to single-use plastics.

- **About PLA:** A bioplastic made from plant starches (corn starch, tapioca roots, and sugarcane) through ring-opening polymerization.
 - It is a thermoplastic polyester commonly used in medical devices, food packaging, injection molding, and 3D printing.
 - Biodegradable under suitable conditions, breaking down into non-toxic lactic acid.
 - Typically translucent or transparent but can be pigmented to produce various colors based on application needs.
- **What is a Polymer and Polymerization:** The term **polymer** refers to a large molecule composed of repeating structural units, typically with a high molecular mass (ranging from 10^3 to 10^7 u).
 - These large molecules, also known as **macromolecules**, are formed when many smaller units called **monomers** join together through **covalent bonds**.
 - The process by which monomers chemically combine to form a polymer is known as **polymerization**. The monomers involved are usually simple, reactive molecules that repeat in a chain to build the larger polymer structure.

4. India's First Gene-Edited Sheep: Recently, scientists at Sher-e-Kashmir University of Agricultural Sciences and Technology (SKUAST), Srinagar, developed India's first gene-edited sheep, marking a significant milestone in livestock genetics and biotechnology.



- **Key Highlights:** The research team, edited the **myostatin gene**, which regulates muscle growth in sheep.
 - The modification resulted in a **30% increase in muscle mass**; a trait typically absent in Indian sheep but found in high-yield European breeds like Texel.
 - The editing was done using **CRISPR-Cas9**, a Nobel Prize-winning gene-editing technique that allows **precise, foreign-DNA-free modifications**.
 - This is **not a transgenic animal**—**no foreign DNA** was introduced, increasing the likelihood of **regulatory approval** under India's evolving biotech guidelines.
- **Significance & Potential Applications:** Gene editing can be extended to introduce resistance to common livestock diseases.
 - Genetic modifications could improve twinning rates in sheep, enhancing productivity.
 - Since the animal does not carry foreign genes, it is likely to be more acceptable from both biosafety and consumer standpoints.
 - Offers an alternative to traditional crossbreeding, with faster and targeted results.
- **CRISPR-Cas9** is a revolutionary technology that allows geneticists and medical researchers to precisely edit the genome by removing, adding, or altering specific DNA segments. It is currently the most straightforward, versatile, and accurate tool for genetic modification, generating significant interest in the scientific community.

5. Foreign Contribution Regulation Act (FCRA): Recently, the Ministry of Home Affairs (MHA) amended the Foreign Contribution Regulation Act (FCRA) rules, tightening compliance requirements for NGOs engaged in publication activities and those receiving foreign contributions.

- **About FCRA:** Enacted in 1976 during the Emergency, it regulates the acceptance and use of foreign contributions by individuals, associations, and organizations in India to ensure they are used legitimately and do not threaten national interests.
 - The Act was amended in **2010** and again in **2020** to enhance transparency and curb the misuse of foreign funds.
 - FCRA registration is valid for **five years** and must be renewed **six months prior to expiry**.

- The Ministry of Home Affairs (MHA) can suspend an NGO's FCRA registration for up to 360 days if found in violation.
- Aadhaar has been made mandatory for all key functionaries, directors, or office-bearers of NGOs
- Public servants are prohibited from receiving foreign contributions
- NGOs can use only 20% of foreign funds for administrative purposes, reduced from the earlier 50%.
- NGOs are barred from transferring foreign funds to other organizations or entities.
- Foreign contributions are prohibited for candidates, journalists, media personnel, judges, public servants, politicians, and political parties.

6. **Devi Ahilyabai Holkar:** Recently, the Madhya Pradesh government launched one of the most extensive cultural celebrations in recent years to commemorate the 300th birth anniversary of the 18th-century Maratha queen Ahilyabai in May 2025.



• **About Devi Ahilyabai Holkar :** Maharani Ahilyabai Holkar (31 May 1725 – 13 August 1795) was the Holkar Queen of the Maratha-ruled Malwa kingdom in India.

- Under her rule, Malwa witnessed peace, prosperity, and stability. Her capital, Maheshwar, became a center of literary, musical, artistic, and industrial growth.
- She was **trained in military strategy** by her father-in-law, Malhar Rao Holkar, and personally led her armies into battle.
- Ahilyabai held daily public audiences to address the grievances of common people and earned a reputation for impartial justice.
- She **abolished the traditional law** that allowed the state to confiscate the property of childless widows.
- She was a prolific temple builder, constructing hundreds of Hindu temples and dharmashalas across India.
- British historian John Keay referred to her as **"The Philosopher Queen"** for her wisdom and enlightened rule.

7. **Dugong** : Recently, May 28 was observed as World Dugong Day, highlighting the vital role dugongs play in marine ecosystems and emphasizing the urgent need for their conservation.



- **About Dugong:** Also known as "sea cows," are herbivorous marine mammals that graze on seagrass in shallow coastal waters.
 - Resemble a cross between a seal and a whale and use their front flippers to move gracefully through seagrass beds in the Indo-Pacific region, including the Andaman and Nicobar Islands, Gulf of Mannar, Palk Bay, and Gulf of Kutch.
 - They **feed on seagrasses** like *Cymodocea* and *Halophila*, consuming up to 30 tonnes annually.
 - Dugongs live up to 70 years, reproduce slowly (once every 3–5 years), and are usually solitary or in mother-calf pairs.
 - Globally Vulnerable (IUCN) and Regionally **Endangered in India**, with only ~200 remaining in Indian waters.
 - Protected under **Schedule I of India's Wildlife Protection Act**.
 - India signed the CMS in 1983 and the Dugong MoU in 2008.
 - In 2022, India set up its first Dugong Conservation Reserve in Palk Bay, Tamil Nadu (448.3 sq. km).

8. **Quantum Technology Research Centre** : Recently, the Defence Research and Development Organisation (DRDO) inaugurated the Quantum Technology Research Centre (QTRC) at Metcalfe House, New Delhi, marking a major step towards enhancing India's quantum technology capabilities for national security and strategic purposes.

- **Key Highlights:** It supports characterisation of lasers, including Vertical-Cavity Surface-Emitting Lasers (VCSEL) and Distributed Feedback (DFB) lasers.
- Facilities include test-beds for photonics research to evaluate single-photon sources and capabilities for vapour cell characterisation of micro-fabricated alkali vapour cells.
- Led by the Solid State Physics Laboratory (SSPL), it focuses on ultra-small atomic clocks based on Coherent Population Trapping for precise timekeeping in GNSS-denied environments.