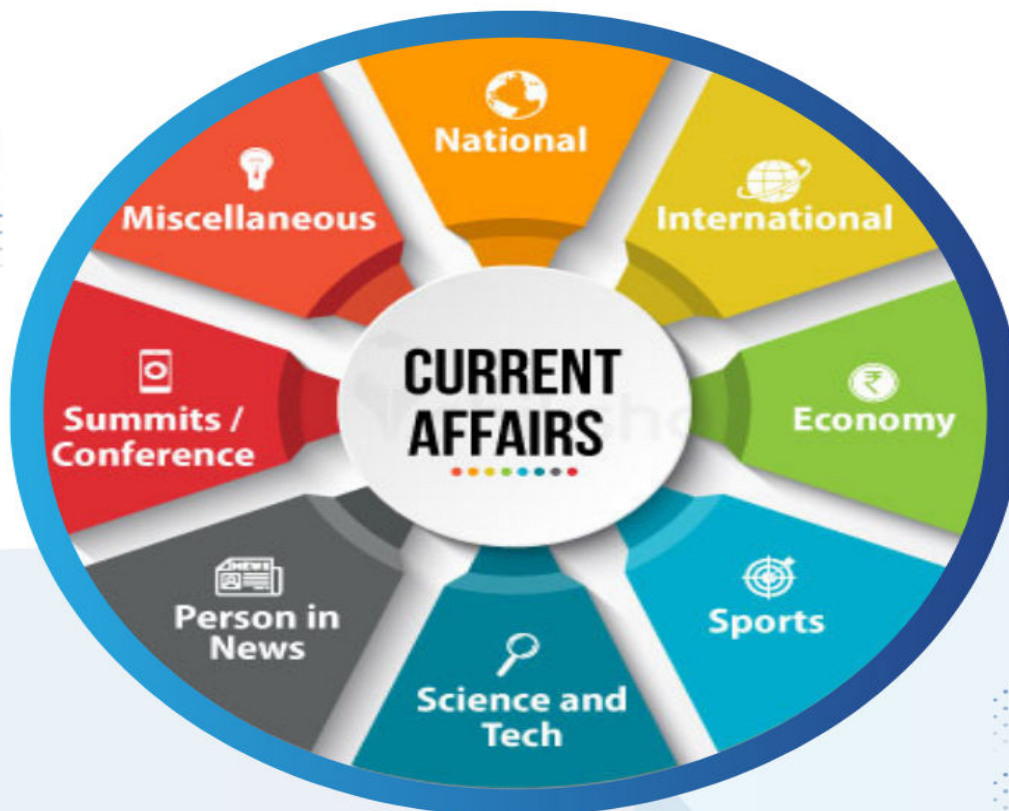"We help you reach for the star"

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Table of Contents

1. Pan-India E-Waste Recycling Drive under Special Campaign 5.0

- **Overview of the Initiative**

    o Launched under the guidance of **Prime Minister Narendra Modi** and leadership of **Union Minister of Coal & Mines Shri G. Kishan Reddy**.

    o Part of **Special Campaign 5.0** (2nd–31st October 2025), focusing on **Swachhata in government offices** and **scientific disposal of e-waste**.

    o **Secretary (Mines) Shri Piyush Goyal** inaugurated the drive at Shastri Bhawan, New Delhi.

- **Objectives of the Drive**

    o **Systematic disposal** of obsolete electronic devices: computers, laptops, printers, LED displays, mobile phones, etc.

    o Facilitation for **government employees** to deposit devices or pre-book home pick-up.

    o Promotion of **resource recovery** and **sustainable management** of e-waste.

- **Implementation & Partners**

    o Coordinated by **JNARDDC** (Jawaharlal Nehru Aluminium Research Development & Design Centre), an autonomous body under the Ministry of Mines.

    o Collaboration with **Attero**, a leading e-waste recycling company in India, establishing 20 collection stalls nationwide.

    o Use of **globally patented advanced recycling technologies** to recover critical materials from e-waste and lithium-ion batteries.

- **Environmental and Strategic Significance**

    o Recovery of **valuable minerals**: lithium, cobalt, nickel, manganese, graphite, and rare earth elements (neodymium, praseodymium, dysprosium).

    o Supports **defence, clean energy systems, and battery production**.

    o Reintegration of recovered materials into **domestic manufacturing**, aligning with the **National Critical Minerals Mission**.

- **Key Legal & Policy Context**

    o Supports principles of **Sustainable Development Goals (SDG 12: Responsible Consumption and Production)**.

    o Aligns with **E-Waste (Management) Rules, 2016** under the **Environment Protection Act, 1986** for safe disposal and recycling of electronic waste.

    o Promotes **self-reliance (Aatmanirbhar Bharat)** by reducing import dependency for strategic minerals.

- **Conclusion & UPSC Relevance**

- The campaign combines **Swachhata with sustainability**, turning e-waste into a **strategic national resource**.

- UPSC Relevance: Important for questions related to **environmental governance, sustainable development, resource management, e-waste regulations, and national strategic initiatives**.

2. NHAI to Install QR Code Sign Boards with Project Information on National Highways

- **Overview of the Initiative**

    - Launched by **National Highways Authority of India (NHAI)** to enhance **transparency** and **ease of commuting** on National Highways.

    - Introduction of **Project Information Sign Boards with Quick Response (QR) Codes** along highway stretches to provide **project-specific information** and **emergency helpline numbers**.

- **Objectives of the QR Code Sign Boards**

    - Facilitate **easy access to project details**: National Highway number, highway chainage, project length, construction/maintenance periods.

    - Provide **contact details**: Highway Patrol, Toll Manager, Project Manager, Resident Engineer, NHAI field offices, and emergency helpline **1033**.

    - Inform commuters about **nearby facilities**: hospitals, petrol pumps, toilets, police stations, restaurants, toll plazas, truck lay-byes, puncture repair shops, vehicle service stations, and e-charging stations.

- **Implementation & Placement**

    - QR Code boards will be installed near **wayside amenities, rest areas, toll plazas, highway start/end points, and truck lay-byes**.

    - Designed for **enhanced visibility** and easy scanning by commuters.

    - Ensures **real-time accessibility** of project and safety information to users.

- **Significance and Benefits**

    - Enhances **road safety** by providing timely access to emergency contacts and local support facilities.

    - Improves **user experience, awareness, and accountability** regarding highway projects.

    - Promotes **digital integration** in infrastructure management, in line with the **Digital India initiative**.

- **Key Legal & Policy Context**

    - Supports **Article 14** (Right to Information and transparency in public services).

- o Aligns with **Ministry of Road Transport and Highways (MORTH) guidelines** for highway safety and maintenance.

- o Encourages compliance with **National Highway Act, 1956**, and **National Highways and Infrastructure Development Policy** for better monitoring and governance.

- **Conclusion & UPSC Relevance**

  - o QR Code signboards represent a **tech-enabled step toward transparency, safety, and commuter convenience** on National Highways.

  - o UPSC Relevance: Important for topics related to **transport infrastructure, digital governance, road safety, public accountability, and Smart Cities/Smart Highways initiatives**.

3. TRAI Recommendations on Formulating Digital Radio Broadcast Policy for Private Broadcasters

- **Overview of the Initiative**

  - o Issued by **Telecom Regulatory Authority of India (TRAI)** at the request of **Ministry of Information and Broadcasting (MIB)** under **Section 11(1)(a)(i) of TRAI Act, 1997**.

  - o Applies to **four 'A+' cities** (Delhi, Mumbai, Kolkata, Chennai) and **nine 'A' cities** (Hyderabad, Bengaluru, Ahmedabad, Surat, Pune, Jaipur, Lucknow, Kanpur, Nagpur).

  - o Seeks to **transition private radio broadcasters to digital broadcasting**, improving service quality, transparency, and market efficiency.

- **Key Features of Digital Radio Policy**

  - o **Simulcast Mode**: Broadcasting one analog, three digital, and one data channel on the assigned frequency; existing FM broadcasters can migrate voluntarily.

  - o **Technology Standardisation**: Single digital radio technology to be selected via stakeholder consultations or spectrum auction process.

  - o **Frequency Assignment**: Auction-based under **Section 4(4) of Telecommunication Act, 2023**; frequency planning to be public.

  - o **Migration & Timelines**: Broadcasters given **6 months to opt for migration**; simulcast operations to commence within **2 years**; sunset date for analog to be decided later.

- **Revenue and Authorisation Framework**

  - o **Authorisation Period**: 15 years; minimum net worth criteria same as for digital broadcasting services.

  - o **Gross Revenue (GR) & Adjusted GR (AGR)**: Revenue from streaming included; AGR = GR minus GST and non-broadcast-related items.

  - o **Annual Authorisation Fee**: 4% of AGR for A+/A/B/C/D cities; 2% for border/hilly/NE regions for initial 3 years.

- o **Ownership Limit**: No entity can own more than **40% of spot frequencies** in a city, ensuring at least **three operators per city**.

- **Infrastructure and Implementation**

  - o Private broadcasters can access **Prasar Bharati's land and tower infrastructure** at concessional rental rates.

  - o **Co-location** of transmission infrastructure made voluntary; sharing allowed with telecom/infrastructure providers.

  - o **'Radio Broadcasting Infrastructure Provider'** category introduced to provide digital infrastructure on lease.

- **Compliance, Monitoring, and Market Dynamics**

  - o High-level **steering committee** under MIB to oversee digital radio rollout, receiver proliferation, and market trends.

  - o Non-operationalisation within **24 months** leads to **frequency withdrawal** and 5-year bar on re-allotment.

  - o Choice of genres left to **market forces**; separate **Programme Code & Advertisement Code** for terrestrial digital radio to be notified.

- **Conclusion & UPSC Relevance**

  - o Digital radio policy represents **technology-enabled transformation** of radio broadcasting, promoting efficiency, transparency, and spectrum optimisation.

  - o UPSC Relevance: Important for topics on **telecom regulations, broadcasting policies, digital governance, spectrum management, public-private collaboration, and media infrastructure**.

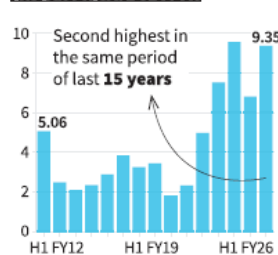## 4. Private Sector Leads New Project Announcements at 15-Year High

- **Overview of Trends**

  - o In **H1 FY 2025-26 (April–September 2025)**, Indian private sector new project announcements reached **₹9.95 lakh crore**, marking a **15-year high**.

  - o Government and foreign investment proposals, in contrast, **declined significantly**, with government projects hitting a **15-year low** and foreign investments a **five-year low**.

- **Contribution of Indian Private Sector**

  - o Indian private firms accounted for **94% of total new projects**, amounting to **₹9.35 lakh crore**, up **37.5%** compared to H1 FY 2024-25.

  - o Highest contribution in recent years; only second to **H1 FY 2023-24 (₹9.54 lakh crore)**.

Domestic **enthusiasm**

Indian private sector's new project announcements in first half of 2025-26 was up 37.5% over the corresponding period of 2024-25. Announcements by foreign companies fell nearly 28%

In ₹ lakh crore

INDIAN PRIVATE SECTOR — Second highest in the same period of last **15 years** — 9.35 — 5.06

FOREIGN PRIVATE SECTOR — Third consecutive annual slump in the first half of the year and a five-year low — 0.36 — 0.6

H1 FY12   H1 FY19   H1 FY26   H1 FY12   H1 FY19   H1 FY26
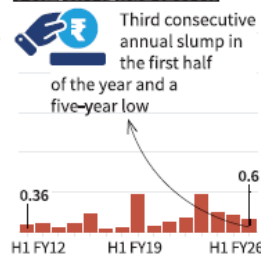
Source: CMIE

o Highlights growing role of **domestic private sector** in driving industrial and infrastructure expansion.

- **Foreign Investment Trends**

  o New project announcements by foreign companies fell to **₹0.6 lakh crore**, a decline of **28% YoY**, marking the **third consecutive year of decline**.

  o Decline contrasts with **global FDI trends**, where UNCTAD data shows **11% growth in FDI in 2024** over 2023 levels.

  o Suggests **diminishing attractiveness of India for foreign investors** despite robust domestic private sector growth.

- **Government Investment Trends**

  o New project announcements by Union and State governments fell to **₹1.51 lakh crore**, down **71% YoY**, the lowest in at least **15 years**.

  o Indicates **slowing public sector project initiation** despite policy emphasis on infrastructure and capital projects.

- **Key Economic Implications**

  o **Private sector-led growth** may increase capital formation, industrial output, and employment.

  o **Reduced foreign investment** may impact technology transfer, global competitiveness, and capital inflow.

  o **Policy attention** needed to incentivize government and foreign investments to balance private sector dominance.

  o Relevant legal provisions include **Companies Act, 2013**, **Industrial Policy Guidelines**, and **FDI Policy under FEMA, 1999**.

- **Conclusion & UPSC Relevance**

  o The data underscores **India's strong domestic private sector dynamism** while highlighting challenges in attracting foreign investment and reviving public investment.

  o UPSC Relevance: Important for topics on **economic growth, investment trends, private vs public sector roles, FDI, industrial policy, and capital formation in India**.

5. Mysuru Dasara Festival 2025 – Grand Finale of Nada Habba

- **Overview of the Festival**

  o **Nada Habba**, Karnataka's **state festival**, celebrated annually in **Mysuru**, is a 10-day cultural extravaganza culminating in the **jumbo savari** (grand elephant procession) on **Vijayadashami**.

  o Mysuru is historically known as the **"City of Palaces"**, and the festival showcases the **rich cultural heritage, traditional rituals, and folk arts** of the region.

  o Festival attracts **thousands of visitors**, boosting **tourism and local economy**.

- **Security and Crowd Management**

  - District administration and city police implemented **tight security**: restricted seating at palace premises and Chamaraja Circle, "**no pass, no entry**" rule, and prevention of people climbing old buildings.

  - Special measures included **commando security for lead elephants**, reflecting **risk mitigation during mass gatherings**.

  - Police managed a **5-km procession route** from Palace to Bannimantap.

- **Cultural and Ceremonial Highlights**

  - Procession included **59 tableaux** and nearly **90 cultural and folk troupes**, representing **districts and departments**.

  - Led by **caparisoned elephants**; the lead elephant **Abhimanyu (59 years old)** carried the **750-kg golden howdah** with the **idol of Goddess Chamundeshwari**.

  - Rituals included **Nandi Dwaja Puja**, showering of **flower petals by dignitaries**, and a **21-gun salute** at palace forecourt.

- **Key Dignitaries and Participants**

  - Chief Minister **Siddaramaiah**, Deputy Chief Minister **D.K. Shivakumar**, **Justice Vibhu Bakhru**, **Mysuru MP Yaduveer Krishnadatta Chamaraja Wadiyar**, and other ministers participated.

  - Highlights the **integration of political, cultural, and traditional leadership** in state ceremonies.

- **Significance of Elephants and Rituals**

  - Elephants symbolize **royalty, tradition, and ceremonial grandeur** in Mysuru Dasara.

  - The festival reinforces **cultural identity, preservation of folk arts, and continuity of royal heritage**.

- **Conclusion & UPSC Relevance**

  - Mysuru Dasara exemplifies **India's rich cultural diversity, heritage tourism, and traditional governance-linked ceremonies**.

  - UPSC Relevance: Important for **Culture (GS-1), Indian Festivals, State Traditions, Tourism & Economic Impacts, and Heritage Management**.

6. Historic Kathakali Performance by Muslim Girl at Kerala Kalamandalam

- **Overview of the Event**

  - **16-year-old Sabri** became the **first Muslim girl** to perform Kathakali at **Kerala Kalamandalam**, Cheruthuruthy, since its establishment in **1930**.

o Performed in **Krishna 'vesham'**, marking a **historic milestone** for inclusivity in traditional performing arts.

- **Significance of Kathakali**

  o **Kathakali**: A classical dance-drama of Kerala known for **elaborate costumes, vivid facial makeup, hand gestures (mudras), and storytelling from epics like Mahabharata and Ramayana**.

  o Traditionally, Kathakali was **male-dominated**, with women and girls excluded until recent reforms.

- **Journey and Training of Sabri**

  o Joined **Kalamandalam in 2023** as an **eighth-grade student**, after clearing entrance test and interview.

  o Trained under **maestro Kalamandalam Gopi, Anil Kumar, and other veteran teachers**.

  o Admission represented the **first-ever enrolment of a Muslim girl** in the Thekkan Kathakali division.

- **Policy Change Enabling Inclusion**

  o **2020–21 academic year**: Kalamandalam officially **allowed girls to perform Kathakali roles**, breaking a **90+ year gender barrier**.

  o Reflects broader **constitutional values of equality (Article 15) and non-discrimination**, enabling participation irrespective of **gender or religion**.

- **Cultural and Social Impact**

  o Sabri's performance symbolizes **progressive transformation in traditional arts**, promoting **gender inclusivity and social integration**.

  o Highlights Kerala's **rich cultural heritage** and the **evolution of classical art forms** to accommodate contemporary societal values.

- **Conclusion & UPSC Relevance**

  o Sabri's debut represents the **intersection of gender equality, religious inclusivity, and preservation of cultural heritage** in India.

  o UPSC Relevance: Important for **Culture (GS-1), Art and Heritage, Gender Rights, Social Reform Movements, and Constitutional Values**.

7. Taliban Foreign Minister Amir Khan Muttaqi to Visit India

- **Overview of the Visit**

  o **Amir Khan Muttaqi**, the **Foreign Minister of the Taliban administration**, is scheduled to visit India on **October 10, 2025**, four years after the Taliban took control of Afghanistan (15 August 2021).

o The visit aims to focus on **developmental assistance**, particularly in **essential medicines, agriculture, and humanitarian support**.

- **Context and Background**

  o Taliban assumed power in **Kabul in August 2021**, leading to **political instability and humanitarian crises**, including scarcity of food, medicines, and basic services.

  o India has maintained a **pragmatic approach**, providing **humanitarian aid and developmental assistance** without granting **formal diplomatic recognition (de jure recognition)** to the Taliban regime.

- **Diplomatic Considerations**

  o Muttaqi's visit was delayed due to **international sanctions** imposed on Taliban leaders.

  o A **temporary exemption by the UN Security Council's sanctions committee (30 September 2025)** cleared the way for the visit.

  o India continues to engage **de facto**, balancing humanitarian support with **concerns over human rights and women's education/employment restrictions**.

- **Challenges and Sensitivities**

  o Taliban's **inflexible stance on women's rights** and other **human rights issues** remains a key hurdle in normalising formal diplomatic relations.

  o India seeks to maintain **strategic and security interests in Afghanistan**, including **counter-terrorism cooperation and regional stability**, while promoting **developmental aid**.

- **Legal & Policy Framework**

  o India's engagement aligns with **UN Security Council resolutions on Afghanistan** and **India's foreign policy principles** of **non-interference, humanitarian assistance, and strategic interest protection**.

  o The visit exemplifies **de facto diplomatic engagement**, distinct from **de jure recognition**, a concept under international law where recognition of a regime is either formal (legal) or informal (practical).

- **Conclusion & UPSC Relevance**

  o The visit reflects India's **balanced foreign policy** in South Asia: providing **humanitarian aid, promoting regional stability**, and cautiously engaging with regimes under international sanctions.

  o UPSC Relevance: Important for **International Relations (GS-2), India-Afghanistan relations, foreign policy strategies, humanitarian diplomacy, and UN sanctions framework**.

8. Russian President Vladimir Putin's Upcoming Visit to India

- **Overview of the Visit**

- o Russian President **Vladimir Putin** is scheduled to visit India on **December 5, 2025** to hold the **23rd annual India-Russia Summit** with Prime Minister **Narendra Modi**.

- o This will be **Putin's first visit since 2021** and after the **Russian invasion of Ukraine in February 2022**.

- **Bilateral Agenda**

  - o Discussions expected on **strategic and defence cooperation**, **connectivity projects**, **trade agreements including Free Trade Agreement**, and **agricultural trade**.

  - o Energy security, particularly **import of Russian oil**, is a key point amid **U.S. sanctions and EU restrictions**.

  - o Indian defence purchases from Russia and coordination on **global geopolitical issues** (e.g., Ukraine conflict) likely on the agenda.

- **Oil Imports and Energy Security**

  - o India's **Russian oil imports declined 16% in September 2025** compared to September 2024.

  - o India is balancing **energy security** with **U.S. penalty tariffs** and **global sanctions**, while exploring **diversification of oil sources**.

  - o Past precedent: India reduced oil imports from **Iran and Venezuela in 2018** under U.S. pressure, compensating via **U.S. oil imports**.

Key visit amid global churn

VISIT LIKELY IN 1ST WEEK OF DEC
Putin is expected to arrive around Dec 5 for an annual summit with PM Modi; dates yet to be finalised

AMID AMERICAN PRESSURE
Meeting aimed at shoring up strategic and economic cooperation in the face of US pressure on India to reduce Russian oil purchase

INDIA TO HOST RUSSIAN FM, DEFENCE MINISTER
Russia's Sergey Lavrov is also expected to travel to India a month before Putin; defence minister Andrey Belousov will also travel to New Delhi this month for military talks

- **Recent Diplomatic Interactions**

  - o Russian **Deputy PM Dmitry Patrushev** recently visited Delhi to discuss economic and trade issues.

  - o PM Modi and President Putin have communicated multiple times, including **SCO Summit meeting in Tianjin (Sept 1, 2025)** and telephonic discussions.

  - o Russian Foreign Minister **Sergey Lavrov** may visit ahead of the summit to finalize agreements.

- **Legal and Policy Context**

  - o Engagement reflects **India's strategic autonomy** in foreign policy, balancing **bilateral relations** with **multilateral sanctions frameworks**.

  - o **Energy security** aligns with India's **National Energy Policy** and constitutional mandate under **Article 253** (international treaties and cooperation).

  - o Bilateral agreements may include **defence procurement contracts**, subject to **Defence Procurement Procedure (DPP 2020)** and FDI guidelines under **FEMA, 1999**.

- **Conclusion & UPSC Relevance**

  - o The visit underscores India's **strategic balancing act**: maintaining **longstanding ties with Russia**, securing **energy and defence needs**, while navigating **Western sanctions regime**.

- o UPSC Relevance: Important for **International Relations (GS-2), India-Russia strategic partnership, energy security, defence procurement, foreign policy autonomy, and global geopolitics**.

9. India Conferred ISSA Award 2025 for Outstanding Achievement in Social Security

- **Overview of the Recognition**

  - o India received the **International Social Security Association (ISSA) Award 2025** for **'Outstanding Achievement in Social Security'** at the **World Social Security Forum (WSSF) 2025**, Kuala Lumpur, Malaysia.

  - o Award acknowledges India's **exceptional progress in expanding social protection coverage** from **19% in 2015 to 64.3% in 2025**, benefiting over **940 million citizens**.

- **Government Initiatives and Digital Infrastructure**

  - o The **e-Shram portal**, a **national digital database**, connects over **310 million unorganised sector workers** with social welfare schemes via a **multilingual, seamless interface**.

  - o **National Career Service (NCS) portal** integrates with e-Shram, enabling **skilled youth to access global employment opportunities** while retaining social security benefits.

  - o India leverages **technology, digital innovation, financial inclusion, and skilling** to strengthen social protection systems.

- **Key Social Security Organisations**

  - o **Employees' Provident Fund Organisation (EPFO)** and **Employees' State Insurance Corporation (ESIC)** play a pivotal role in delivering **healthcare, pension, and insurance schemes**.

  - o Focus is on **inclusive and universal social protection**, aligning with **PM Modi's vision of Antyodaya**, which emphasizes **empowering the last person in the social line**.

- **Global Significance and Voting Power**

  - o India became the **fifth recipient of this triennial ISSA award**, joining leading nations in social security excellence.

  - o India now holds **30 seats in the ISSA General Assembly**, the **highest vote share globally**, reflecting its **increased influence in international social security policymaking**.

- **Policy and Legal Context**

  - o The expansion of social security aligns with **International Labour Organisation (ILO) guidelines** on **social protection floors**.

  - o Constitutional basis: **Article 41** (Right to work, education, and public assistance) under **Directive Principles of State Policy (DPSP)**; **Article 21** (Right to life) as interpreted to include **social security and welfare**.

- o Legal frameworks: **Employees' Provident Funds & Miscellaneous Provisions Act, 1952**; **Employees' State Insurance Act, 1948**; and **Social Security Code, 2020**.

- **Conclusion & UPSC Relevance**

  - o India's ISSA recognition underscores **successful integration of technology, policy reform, and inclusive governance** to achieve **universal social security**.

  - o UPSC Relevance: Important for **GS-2 (Governance, Social Justice, Welfare Schemes), GS-3 (Economic Development, Labour & Employment, Digital India initiatives), and Current Affairs**.

10. ANRF Launches SARAL to Simplify Scientific Research

- **Overview of ANRF and SARAL**

  - o The **Anusandhan National Research Foundation (ANRF)**, India's newest science funding agency, has developed **SARAL (Simplified and Automated Research Amplification and Learning)**.

  - o **SARAL** uses **Artificial Intelligence (AI)** to generate **layperson-friendly summaries** of complex scientific research, including **videos, podcasts, posters, and presentations**.

  - o Objective: **Enhance accessibility and outreach of scientific knowledge** to the public and facilitate innovation.

- **Focus Areas and Applications**

  - o ANRF aims to leverage **deep science and engineering** to create **deep tech products and start-ups**.

  - o SARAL and ANRF's initiatives target key sectors like **drug and chemical discovery, aerospace design, climate and weather studies, and advanced materials**.

  - o Plans to develop an **AI Science and Engineering Open India Stack**, promoting integration of AI in research and innovation ecosystems.

- **Funding and Policy Support**

  - o Union Cabinet approved a **₹1 lakh crore Research, Development and Innovation Scheme (July 2025)** to provide **low-interest, long-tenure loans** for private companies investing in core R&D.

  - o ANRF will act as a **single-window clearance mechanism** for funding universities, academic institutions, and private sector research.

  - o Expected to receive **~70% of its budget from private sources**, promoting **public-private partnership in R&D**.

- **Institutional Significance**

- o ANRF absorbs the role previously played by the **Science and Engineering Research Board (SERB)** in funding scientific research.

  - o The Foundation's **Governing Council** evaluates sectors for fund allocation, ensuring **strategic and impact-oriented research investments**.

- **Legal and Policy Context**

  - o AI-based research tools like SARAL align with **National Science and Technology Policy (2020)**, emphasizing **innovation, commercialization, and knowledge accessibility**.

  - o Promotes **scientific temper** under **Article 51A(h) of the Constitution**, which directs citizens to develop a **scientific outlook**.

  - o Supports **Make in India** and **Digital India** initiatives by fostering **indigenous research and technological self-reliance**.

- **Conclusion & UPSC Relevance**

  - o SARAL and ANRF mark a **significant step in democratizing science and promoting R&D-led innovation** in India.

  - o UPSC Relevance: Important for **GS-3 (Science & Technology, Innovation, R&D policies), GS-2 (Government Policies & Initiatives), and Current Affairs**, reflecting India's emphasis on **technology-driven inclusive growth and research ecosystem**.

11. Indian-Made H125 Helicopters to Roll Out from Kolar in 2027

- **Overview of the Project**

  - o **Tata Advanced Systems Ltd. (TASL)** will establish **India's first private-sector helicopter final assembly line** at **Vemagal, Kolar district, Karnataka**.

  - o The assembly line will produce **Airbus H125 helicopters** under the **"Made in India" initiative**, marking a significant step in domestic aerospace manufacturing.

- **Purpose and Applications**

  - o The **H125 helicopter** is a **light multi-role helicopter** suitable for **civil, para-public, and defense operations**.

  - o It will support the **Indian armed forces**, particularly in **high-altitude operations along the Himalayan frontiers**, and also cater to **civilian aviation markets**.

Made in India H125 helicopter to roll out from Kolar factory in 2027

THE HINDU OCTOBER 03, 2025

India's first helicopter final assembly line in the private sector will come up at Vemagal in Kolar district of Karnataka. The assembly line will be established by Tata Advanced Systems Limited (TASL) to build the Airbus H125 helicopters. The delivery of the first 'Made in India' H125 is expected in early 2027. The helicopter will be available for export in the South Asian region as well.

- **Timeline and Deliverables**

  - o The **first "Made in India" H125 helicopter** is expected to be delivered in **early 2027**.

  - o The project aims to integrate **advanced aerospace technologies** while fostering **local manufacturing capabilities**.

- **Strategic and Industrial Significance**

- o Enhances **India's indigenous defense and aerospace capabilities**, aligning with the **Atmanirbhar Bharat initiative** for **self-reliance in critical sectors**.

- o Promotes **private sector participation in high-technology defense manufacturing**, complementing **Make in India** policies.

- **Legal and Policy Context**

  - o Supported under **Defence Procurement Policy (DPP 2020)** encouraging **private sector and domestic production** for defense equipment.

  - o Contributes to **Article 51A(h)** (promotion of scientific temper) and **national security interests**, by reducing reliance on imports for defense aviation.

- **Conclusion & UPSC Relevance**

  - o TASL's H125 assembly line represents a **fusion of technology, defense preparedness, and industrial growth**, boosting India's **strategic autonomy**.

  - o UPSC Relevance: Important for **GS-3 (Science & Technology, Defense Production, Make in India)**, **GS-2 (Government Policy Implementation)**, and **Current Affairs on defense modernization**.

12. E-Waste Management and Public Health Crisis in India

- **Definition and Context**

  - o **E-waste**: Discarded electrical and electronic devices, including smartphones, computers, and appliances.

  - o India generated **2.2 million tonnes of e-waste in 2025**, becoming the **third-largest global generator** after China and the U.S.

  - o Rapid **digital transformation** has increased convenience but created an environmental and health crisis, especially in **urban areas and marginalized communities**.

E-WASTE MANAGEMENT: Best Practices for Collection, Recycling & Safe Disposal

Collect e-waste · In factory · Dismantling · Reused · Packed

- **Current Scenario and Challenges**

  - o More than **60% of e-waste originates from 65 cities**, with hotspots like **Seelampur (Delhi), Moradabad (UP), and Bhiwandi (MH)**.

  - o Only **322 formal recycling units** exist, capable of treating 2.2 million MT annually; **over half of e-waste is processed informally**, causing release of **over 1,000 toxic substances**, including **lead, mercury, cadmium, POPs, and particulate matter (PM2.5 & PM10)**.

  - o Informal recycling involves **manual dismantling, open-air burning, acid leaching**, leading to **air, water, and soil contamination**.

- **Impact on Human Health**

  - o **Respiratory illnesses**: Chronic bronchitis, asthma, and lung damage from PM2.5 and toxic gases.

- o **Neurological damage and developmental delays**: Exposure to lead, mercury, cadmium affects brain development, especially in children.

- o **Skin and ocular disorders**: Rashes, chemical burns, dermatitis from handling e-waste without PPE.

- o **Genetic and systemic effects**: DNA damage, epigenetic changes, oxidative stress, miscarriages, preterm births, and immunological disorders.

- o **Syndemic environment**: E-waste health impacts exacerbate poverty, malnutrition, and lack of healthcare.

- **Policy and Legal Framework**

  - o **E-Waste (Management) Rules, 2022**: Strengthened **Extended Producer Responsibility (EPR)**, mandatory registration for recyclers, incentives for formalisation.

  - o **Challenges**: Weak enforcement; informal sector still handles majority of e-waste; legal disputes over EPR credit prices.

  - o Constitutional relevance: **Article 21** (Right to Life including healthy environment) and **Directive Principles (Article 48A)** on environmental protection.

- **Way Forward / Recommendations**

  - o **Formalisation of informal sector**: Skill certification, PPE, safe infrastructure, healthcare access, social security.

  - o **Strengthening enforcement**: Empower Pollution Control Boards, digital tracking, mandatory environmental audits.

  - o **Health surveillance**: Long-term studies and medical camps, especially for children.

  - o **Innovation and decentralisation**: Affordable local recycling technologies, treatment hubs.

  - o **Awareness and education**: Mass campaigns, school curriculum integration to build public responsibility.

- **Conclusion and UPSC Relevance**

  - o India's **digital growth** must be balanced with **sustainable e-waste management** to prevent environmental degradation and public health crises.

  - o UPSC Relevance: Important for **GS-3 (Environment, Science & Technology, Health), GS-2 (Government Policy Implementation), and Current Affairs on Digital India & Urban Challenges**.

  - o Links constitutional obligations, technology, public health, and environmental governance in a **holistic policy framework**.