1. **World Air Quality Report 2024:** India ranked as the **fifth most polluted country in 2024**, improving from **third in 2023**.
   - **About World Air Quality Report 2024:** Published by Swiss air quality technology firm IQAir.
     - **13 Indian cities** in the top 20 most polluted cities: Byrnihat, Delhi, Mullanpur (Punjab), Faridabad, Loni, Gurugram, Ganganagar, Greater Noida, Bhiwadi, Muzaffarnagar, Hanumangarh, Noida.
     - 35% of Indian cities reported PM2.5 levels exceeding 10 times the WHO limit of 5 $\mu g/m^3$.
   - **Health Impact:** Fine particulate matter smaller than 2.5 microns, enters lungs and bloodstream, causing respiratory issues, cardiovascular diseases, and cancer. Reduces **life expectancy by ~5.2 years**.
   - A **Lancet Planetary Health study** (2009–2019) estimated **1.5 million annual deaths** in India due to prolonged PM2.5 exposure.
2. **Immigration and Foreigners Bill, 2025:** The Bill was recently introduced in the Lok Sabha to streamline immigration services, regulate entry, exit, and stay of foreigners, and replace outdated laws.
   - **About Immigration and Foreigners Bill, 2025:** Its objective to modernize India's **immigration system**, strengthen **border security**, and regulate **foreigners' registration**.
   - **Replaces Old Laws:** Passport (Entry into India) Act, 1920 → Registration of Foreigners Act, 1939 → Foreigners Act, 1946 → Immigration (Carriers' Liability) Act, 2000.
   - **Key Features:**
     - **Onus of Proof:** The **onus of proving citizenship** lies on the individual, not the state.
     - **Stricter Penalties:** Fake Passports (7 years jail + fine up to ₹10 lakh) → Forged Documents (5 years jail + fine up to ₹5 lakh) → Overstaying/Trespassing (3 years jail + fine up to ₹3 lakh) → Unauthorized Entry (Fine up to ₹5 lakh)
     - **Visa and Passport Regulations:** No individual can enter India without a valid passport/visa & Foreigners must register on arrival.
     - **Immigration Officers' Powers:** Can arrest without warrant and regulate movement of foreigners & can restrict departure if required by an authorized agency.
     - **Foreigners' Restrictions:** Entry can be denied on national interest grounds & restrictions on name changes, movement, and access to protected areas.

- **Institutional Obligations: Educational Institutions (**Must register foreign students and report them) & **Medical Institutions** (Must maintain records of foreign nationals).
- **Carriers' Liability:** Airlines, shipping companies, and transport agencies must verify passenger documents before boarding, and non-compliance invites legal penalties.

3. **Kursk Region:** Russian troops have recently launched a large-scale offensive to retake swaths of the western Kursk region from Ukrainian forces.
   - **About Kursk Region:** It is a city and the administrative centre of Kursk Oblast, located along Russia's South-Western border.
   - **Geography:** Lies in the heart of the European part of Russia, about 450 km south of Moscow, along the upper Seym River.




4. **North Sea:** Recently, a cargo ship hit a tanker carrying jet fuel for the American military off eastern England, setting both vessels on fire and sending fuel pouring into the North Sea.
   - **About North Sea:** It is a shallow northeastern arm of the Atlantic Ocean, covering 220,000 square miles (570,000 square km) between the British Isles and northwestern Europe.
   - **Bordered by:** Great Britain (southwest and west), Orkney and Shetland islands (northwest), Norway (northeast), Denmark (east), Germany and the Netherlands (southeast), and Belgium and France (south).
   - **Connected to** the Atlantic Ocean through the Strait of Dover and the English Channel.
   - The **Skagerrak links** the North Sea to the Baltic Sea via the Kattegat and the Danish straits.



- Major rivers draining into the **North Sea** include: **Forth**, **Elbe**, **Weser**, **Ems**, **Rhine and Meuse**, **Scheldt**, **Thames**, and **Humber**.
- **Economic Importance:** One of Europe's most productive fisheries. A major shipping zone for trade among European countries and between Europe and the Middle East. It contains significant reserves of petroleum and natural gas beneath the seafloor.

5. **Enteric Viruses:** Increasing extreme weather events, like prolonged rainstorms and heatwaves, may raise the risk of exposure to **sewage-associated viruses** in rivers, lakes, and coastal waters.
   - **About:** Enteric viruses are the principal cause of **food- and waterborne illnesses** worldwide.
   - **Types:** Includes noroviruses, sapovirus, hepatitis A and E viruses, Aichi virus, enteric adenoviruses, rotaviruses, and astroviruses.
   - **Transmission:** Spread through contaminated food and water, with potential for zoonotic transmission.
   - **Survival in Water:** In seawater at 30°C, viruses remained infectious for up to 3 days; at cooler temperatures, up to 1 week.
   - Under sunlight, viruses survived less than 24 hours on sunny days but remained viable for around 2.5 days during cloudy weather.
   - **Health Risks:** Recreational water users are at risk due to sewage discharge and agricultural runoff.
   - **Global Concern:** Many countries still release untreated or partially treated sewage into natural waters, posing a global health risk.
6. **Global Maternal Mortality:** In 2020, approximately 800 women died daily from preventable causes related to pregnancy and childbirth, equating to one death every two minutes, as per the WHO Report.
   - **About Maternal Mortality:** It refers to the death of a woman during pregnancy or within 42 days of termination, from causes related to or aggravated by pregnancy or its management, not accidental.
   - **Leading Causes:** Haemorrhage (severe heavy bleeding) — 27% of maternal deaths & Hypertensive disorders (e.g., pre-eclampsia) — 16% of maternal deaths.

- **Regional Variation:** Highest haemorrhage-related deaths - Sub-Saharan Africa (28%), Western Asia and Northern Africa (29%), Australia and New Zealand (15%)
- **Hypertensive disorders**: Most prevalent in Latin America and the Caribbean.
- **Global Maternal Mortality Ratio (MMR):** 223 maternal deaths per 100,000 live births in 2020.
- **Target:** SDG **3.1** aims to reduce MMR to below **70 per 100,000 live births** by **2030**.
  - 95% of maternal deaths occurred in low and lower-middle-income countries in 2020 — most were preventable.
- **About WHO: Founded in 1948**.
  - **Role:** UN agency that promotes health, ensures global safety, and serves vulnerable populations.
  - **Initiatives:** In 2024, WHO launched a global roadmap for postpartum haemorrhage with key priorities to reduce maternal deaths.

7. **Esports Federation of India (ESFI):** The Esports Championship 2025 organized by the Esports Federation of India (ESFI) is a key component of the World Audio Visual & Entertainment Summit (WAVES), backed by the Ministry of Information & Broadcasting.
   - **About Esports Federation of India (ESFI):** Organizer of Esports Championship 2025 (WESC2025), a part of WAVES 2025.
   - Responsible for conducting the online qualifying phases and the Grand Finale to determine the ultimate champions.
   - **Supports Indian esports players** by providing:
     - Opportunities to participate in domestic and international esports events.
     - Coaching and training sessions for winning players or teams.
     - Travel and accommodation expenses for the Main Event participants.
   - Ensures the selection of top players to represent **India at global esports events** like the **Asian Esports Games 2024 (AEG2024)**.
8. **Electrochemical Process:** A new electrochemical process converts urea into percarbamide, enabling the treatment of urine in urban wastewater and transforming it into a useful resource.
   - **About Electrochemical Process:** Urine contains phosphorus, potassium, and nitrogen (Big Three nutrients), making it a natural plant fertiliser.

- Separates urea from urine in its solid form via a greener, less energy-consuming process, converting urea into a crystalline peroxide derivative called percarbamide.
- **Nitrogen Cycle:** Humans excrete urea through urine. Extracting urea efficiently can help complete the nitrogen cycle.
- **Pee-cycling Potential:** Annual urine output contains ~4 kg nitrogen and 0.3 kg phosphorus per person, enough to grow wheat for a loaf of bread daily for a year.
- **Formation of Percarbamide:** Urea forms hydrogen bonds with hydrogen peroxide, creating percarbamide – a white crystalline solid that can be precipitated out with high purity.
- **In-situ Technique:** Uses a graphitic carbon-based catalyst to convert urea into percarbamide with almost 100% purity from human and animal urine.
- **Dual Pathways:**
  - **Pathway I:** Urea reacts directly with **hydrogen peroxide** in the presence of a catalyst.
  - **Pathway II:** Urea binds to a **hydroperoxyl (-OOH) intermediate** with **H+ ions**, forming percarbamide with catalyst support.

**9. Gyan Bharatam Mission:** National Archives of India (NAI) is currently working on the world's largest digitization program. The success of this digitization program has inspired the launch of the 'Gyan Bharatam Mission,'.

- **About:** Announced in Union Budget 2025-26, it is a special mission for the survey, documentation, and conservation of **India's manuscript heritage** lying with academic institutions, museums, libraries, and private collectors.
  - It intends to cover more than one crore manuscripts.
  - A key component of the Gyan Bharatam Mission is the **national digital repository** of the **Indian knowledge system.**
  - It will serve as a platform for knowledge sharing.
  - This storehouse will help in digitising and centralising India's traditional knowledge.
  - It will be accessible to researchers, students, and institutions worldwide.
- **Manuscript:** It is a handwritten composition on paper, bark, cloth, metal, palm leaf, or any other material dating back at **least seventy-five years** that has significant scientific, historical, or aesthetic value. **Lithographs and printed volumes are not manuscripts.**