

1. **United Nations Population Fund** : Recently, the United Nations Population Fund (UNFPA), in its **State of World Population 2025: The Real Fertility Crisis report**, estimated that India's population has reached 146 crore as of April 2025.
 - This surpasses China's 141 crore, officially confirming India as the world's most populous country.
 - **Key Findings**: India's population is projected to **peak at 170 crore** in the next 40 years before beginning to decline, consistent with Indian demographers' projections from 2019.
 - **Total Fertility Rate (TFR) Falls Below Replacement Level** : India's TFR has declined to **1.9**, below the replacement level of **2.1**, indicating a move toward population stabilization.
 - The report highlights the **"real fertility crisis"** as the **inability of individuals to achieve desired family size**, rather than overpopulation.
 - **About UNFPA** : Founded in **1969** as the **United Nations Fund for Population Activities**.
 - In **1987**, it was renamed the **United Nations Population Fund**, while retaining the original acronym **UNFPA**.
 - **Core Mission**: Promotes **sexual and reproductive health and rights** for all individuals.
 - ✓ Focuses on **empowering women and youth** to make informed decisions about their bodies and reproductive choices.
2. **Karlsruhe Tritium Neutrino Experiment (KATRIN)**: Recently, the KATRIN collaboration announced a new and more stringent upper limit on the combined mass of the **three known types of neutrinos**.
 - **About Neutrinos**: **Electrically neutral subatomic particles** produced in processes like **radioactive decay** and nuclear reactions in stars, including the sun.
 - Fundamental particles in the Standard Model of particle physics (exact mass is still unknown)
 - Extremely lightweight, with masses **less than a millionth of an electron's mass**.
 - **3 known types of neutrinos**: electron neutrino, muon neutrino, and tau neutrino.
 - **About KATRIN Experiment**: Located in **Karlsruhe, Germany** and aims to **precisely measure the mass** of the **electron antineutrino**, a neutrino type produced during **beta decay**.
 - The experiment studies the decay of **tritium** (a radioactive hydrogen isotope), which emits an **electron** and an **electron antineutrino**.

- By analyzing the **energy of emitted electrons**, researchers can infer the **upper limit of the neutrino's mass**.
 - **Recent Findings:** Total neutrino mass is now constrained to less than 0.45 electron volts (eV).
 - Researchers found it cannot exceed **8.8×10^{-7} times the mass of an electron** — a twofold improvement over previous lab-based limits.
 - This marks a **nearly 50% reduction** from KATRIN's earlier estimates.
- 3. Semaglutide and Tirzepatide :** Recently, a U.S.-based study published in the Obesity journal revealed that popular weight-loss drugs — **semaglutide** and **tirzepatide** — result in significantly lower weight loss in real-world settings compared to the outcomes observed in clinical trials.
- **About Semaglutide and Tirzepatide :** They are **polypeptides** (small proteins) that mimic natural hormones in the body, especially **GLP-1 (Glucagon-Like Peptide-1)**, which plays a role in appetite and digestion.
 - Both drugs are approved by the **U.S. Food and Drug Administration (FDA)** for **chronic weight management in adults**.
 - **Difference Between the Two:** Semaglutide targets only **GLP-1 receptors**.
 - ✓ Tirzepatide targets both **GLP-1** and **GIP (Glucose-Dependent Insulinotropic Polypeptide)** receptors, providing an added mechanism for weight and glucose control.
 - **Common Side Effects:** May include nausea, vomiting, diarrhoea, constipation, abdominal pain, indigestion, fatigue, injection site reactions, belching, hair loss, and heartburn.
- 4. India-EU Relationship:** Recently, India and the European Union (EU) made notable progress in their ongoing **Free Trade Agreement (FTA) negotiations**, particularly in the area of **Intellectual Property Rights (IPR)**.
- **About IPR :** Legal rights granted to creators/inventors to protect their original work in arts, literature, science, and technology.
 - Article 27 of the **Universal Declaration of Human Rights** affirms the right to benefit from one's intellectual creations.
 - These rights are **time-bound** and ensure exclusive control over the use of the work.

- **IPR in India:** Administered by **DPIIT** under the Ministry of Commerce & Industry.
- **Global Governance of IPR:** **WIPO (World Intellectual Property Organization)** oversees global IP protection.
- **Types : Patents :** Granted for inventions that exhibit **novelty, non-obviousness, and industrial applicability**, giving the holder exclusive rights to make, use, or sell the invention.
 - **Copyright:** Protects **literary, artistic, and musical works**, including software and maps. Generally valid for **50 years after the author's death**.
 - **Trademarks:** Distinctive **signs, symbols, or names** identifying products/services.
 - **Industrial Designs:** Protects the **aesthetic aspects** of a product (shape, color, pattern).
 - **Geographical Indications (GI):** Tags products linked to a **specific location** with unique qualities.
 - **Trade Secrets:** Protects confidential information with **commercial value** from misuse.
- 5. **High Seas Treaty:** Recently, at the United Nations Oceans Conference (UNOC) in Nice (France), India announced that it is in the process of ratifying the High Seas Treaty, officially known as the Biodiversity Beyond National Jurisdiction (BBNJ) Agreement.
 - **About High Seas Treaty:** It is a legally binding international treaty under the **United Nations Convention on the Law of the Sea (UNCLOS)**.
 - **Objective:** Aims to ensure **long-term conservation and sustainable use** of marine biodiversity in areas beyond national jurisdiction (the high seas).
 - **Key Features:** Promotes **international cooperation and equitable benefit-sharing** of marine resources.
 - ✓ Follows an **ecosystem-based, precautionary** and **inclusive** approach, integrating **traditional knowledge** and **scientific research**.
 - ✓ Introduces **area-based management tools** (like Marine Protected Areas) and **Environmental Impact Assessment (EIA)** requirements.
 - ✓ Supports achievement of **Sustainable Development Goal 14 (Life Below Water)**.
 - **About High Seas:** As per the **1958 Geneva Convention on the High Seas**, high seas refer to all parts of the ocean **beyond the jurisdiction** of any single country. They lie beyond a nation's **Exclusive Economic Zone (EEZ)**, which extends **200 nautical miles** from its coastline.

- 6. Copper Cathodes:** Recently, the Ministry of Mines confirmed that **copper cathode imports** have fully stabilised after an initial decline triggered by the implementation of the **Copper (Quality Control) Order, 2023**, which came into effect on December 2024.
- **About Copper:** It is known for **high electrical conductivity, malleability, and resistance to corrosion**.
 - It is **100% recyclable** without loss of quality, making it an **eco-friendly metal**.
 - **Applications : Electrical Industry:** Widely used in electrical wiring, motors, transformers, and other power systems due to its excellent conductivity.
 - ✓ **Construction Sector:** Utilized in roofing, plumbing, and heating systems for its durability and corrosion resistance.
 - ✓ **Automobile Industry:** Plays a crucial role in vehicle electrical systems, including wiring, radiators, and connectors.
 - ✓ **Electronics:** Essential component in integrated circuits, printed circuit boards, and semiconductors.
 - ✓ **Renewable Energy Sector:** Vital for the functioning of solar panels, wind turbines, and electric vehicles, supporting the green energy transition.
 - **Major Copper Reserves in India:** **Rajasthan** (Khetri and Jhunjhunu copper belts) , **Madhya Pradesh** (Malanjkhand mine – the largest open-pit copper mine in India) and **Jharkhand** (Singhbhum copper belt).
- 7. Blue Economy :** Recently, at the Third United Nations Ocean Conference (UNOC3), India made a strong pitch for a Global Ocean Pact, reaffirming its growing leadership in marine conservation and the development of a sustainable blue economy.
- **India's Blue Economy Growth :**
 - **Port-Led Development:** India is driving maritime infrastructure through over 600 port-led projects under the **Sagarmala Programme**, valued at \$80 billion.
 - **Fisheries Sector Boost:** A \$2.5 billion investment under the **Pradhan Mantri Matsya Sampada Yojana** has led to a 10% rise in fish production and the creation of 1,000+ Fish Farmer Producer Organizations since 2022.

- **Deep Sea Exploration:** The 'Samudrayaan' project under the Deep Ocean Mission will deploy India's first manned submersible by 2026 to explore ocean depths of up to 6,000 meters.
- **Marine Biodiversity Protection:** India has expanded Marine Protected Areas to 6.6% of its Exclusive Economic Zone and restored over 10,000 hectares of mangroves using nature-based solutions.
- **SAHAV Digital Ocean Portal:** Enables transparent, inclusive access to ocean data for informed marine planning and conservation.
- **Commitment to SDG-14:** India reiterated its resolve to achieve Sustainable Development Goal 14 (Life Below Water) through cooperation with governments, civil society, and private stakeholders.

8. **Spatial Triad:** Urban theorist **Edward Soja** described **Thirdspace** as informal, lived environments that transcend physical geography, reflecting emotion, memory, identity, and resistance — showing that space is shaped by how we live and relate to it.

• **About Soja's Trialectics:**

- **Firstspace** – The **physical** space: roads, buildings, parks — what you can map and measure. Example: A slum on the city outskirts — physically real, but shaped by inequality.
- **Secondspace** – The **ideological** space: created by governments, planners, and developers through zoning, maps, and design. Example: Declaring an area "commercial" or "unsafe" reflects deeper social values or biases.
- **Thirdspace** – The **lived** space: where people bring in emotion, memory, resistance, and culture. Example: A refugee colony turning into a cultural hub with festivals, food, and music. It offers a platform where marginalized groups—such as migrants, women, and the working class—assert visibility and resist dominant structures through everyday practices.
- **Why Thirdspace Matters Today:** Helps understand how people build belonging amid migration and urban change.
 - Highlights community resistance to erasure from development and surveillance.
 - Urges urban planning to incorporate lived experiences, not just formal designs.