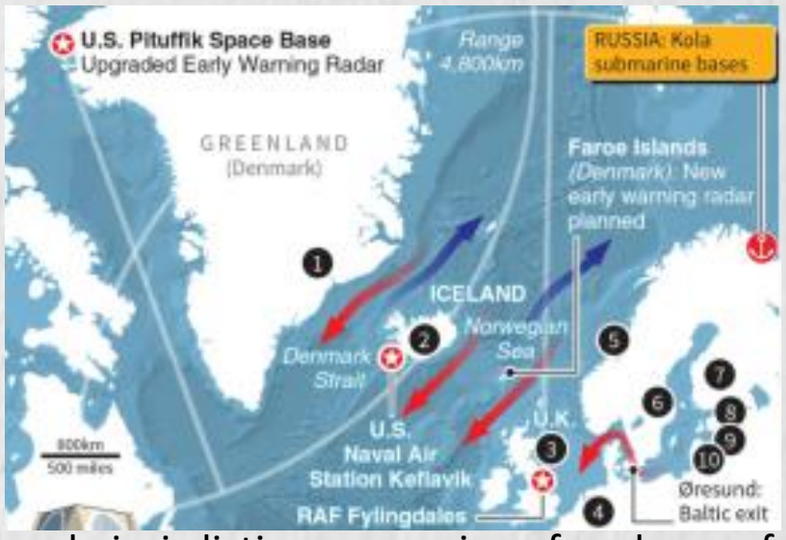
1. **Green Credit Programme (GCP):** Recently, the Ministry of Environment, Forest and Climate Change (MoEF&CC) launched the Green Credit Programme (GCP) despite the Law Ministry's concerns about its legal validity.
   - **About: Green Credit (GC)** is an incentive unit awarded for engaging in environmentally positive activities.
     - These credits can be traded on a dedicated exchange, similar to carbon credits.
     - The Green Credit Programme (GCP) operates under the Environment (Protection) Act, 1986.
   - **Implementation of the Green Credit Programme (GCP):** Launched by the Ministry of Environment, Forest and Climate Change (MoEF&CC) to enhance forest cover, promote sustainable practices, and incentivize pro-environmental actions.
   - **Who Can Earn Green Credits?**
     - **Individuals, communities, and industries** engaged in eco-friendly activities.
     - **Examples include:** Afforestation & reforestation, Water conservation, and Sustainable agri.
   - **How Does It Work?**
     - Participants receive tradable Green Credits for their contributions.
     - These credits can be sold to industries to fulfill environmental obligations, such as compensatory afforestation.
     - Green Credits are traded on a domestic platform, helping industries meet legal environmental requirements.
   - **Current Status of GCP: 384 entities**, including **41 Public Sector Undertakings (PSUs)**, have registered under the scheme.
     - Major PSUs participating include: Indian Oil Corporation Ltd, Power Grid Corporation of India Ltd, & NTPC Ltd
2. **Xenotransplantation**: Recently, the Chinese researchers successfully transplanted a **genetically modified pig liver** into a brain-dead human recipient to assess its survival and functionality.
   - **About Xenotransplantation:** It is defined as the transplantation, implantation, or infusion of live cells, tissues, or organs from a non-human animal into a human recipient.
     - **Ex Vivo Interaction:** Includes human cells, tissues, or organs that have had prior contact with non-human animal cells/tissues outside the body.

- **Historical Background:** Early attempts at human heart xenotransplantation in the 1980s.
- **Genetic Modifications:** Essential to prevent immune rejection in human recipients.
- **Post-Transplant Monitoring:** Ensures organ functionality and detects potential immune responses.

- **Why Pigs Are Used for Xenotransplantation**
  - **Medical Use:** Pig heart valves have been used in human valve replacements for over 50 years.
  - **Similarity: Anatomical and physiological** resemblance to humans makes pigs ideal donors.
  - **Availability:** Pigs are widely farmed, making organs cost-effective and scalable.
  - **Size Matching:** Variety of pig breeds allows organ size customization for human needs.
- **Procedure:** Gene-edited pig liver transplanted into a brain-dead human recipient.
- **Key Genetic Modifications:** Six gene edits to prevent immune rejection and insertion of human transgenes to enhance compatibility.

3. **Arctic Council:** Recently, the International observers have raised concerns over rising tensions in the Arctic, warning that unchecked disputes could lead to conflict in the region.

- **About the Arctic Council:** The Arctic is controlled by eight countries: Canada, Denmark (Greenland), Finland, Iceland, Norway, Russia, Sweden, and the U.S.
- These nations form the Arctic Council, which focuses on environmental protection, scientific research, and indigenous rights.
- Nations exercise sovereignty over Arctic land and exploit resources within their EEZs.



- Waters between territories are under international jurisdiction, ensuring freedom of navigation.
- **Why Does the Arctic Matter?**
  - 2009 U.S. Geological Survey: Arctic holds 13% of undiscovered oil and 30% of untapped natural gas reserves.

- Greenland has rich deposits of rare earth elements, attracting Chinese investment, though some projects were suspended due to environmental and U.S. political concerns.
- Melting sea ice is opening new trade routes, particularly the Northeast Passage along Russia's Arctic coast: could shorten East Asia-Europe trade by 8,000 km compared to the Suez Canal route, and China seeks access via the Polar Silk Road, but Russia remains cautious.

4. **Vibe coding:** Recently, OpenAI introduced "vibe coding," a process where users rely on AI-generated code without focusing on technical details.
   - **About Vibe Coding:** Users describe the desired function, and AI generates the code, which can be copy-pasted and executed.
     - AI coding tools help in tasks like: Building an AI model for language learning → creating an app for reminders → developing a website with video backgrounds → Automating Excel tasks like alphabetizing data.
   - **Advantages of Vibe Coding**: Non-programmers can generate codes without learning tech. skills.
     - Useful for low-risk projects, quick bug fixes, and experimental coding.
     - Exposes users to multiple coding languages and methodologies.
     - Experts can use it for time-saving in repetitive tasks.
     - Ideal for "throwaway" projects, like Karpathy's basic game and AI assistant.
5. **Exercise Tiger Triumph:** The Fourth Edition of Exercise Tiger Triumph, the bilateral India-US Tri-Service Humanitarian Assistance and Disaster Relief (HADR) Exercise, is scheduled on the Eastern Seaboard from 01 to 13 April 2025.
   - **About Exercise Tiger Triumph:** It is a bilateral tri-Service Humanitarian Assistance and Disaster Relief (HADR) Exercise between India and the US.
   - **Aim:** To develop interoperability for conducting HADR operations and formulate Standard Operating Procedures (SOPs) for a Combined Coordination Center (CCC) to ensure rapid coordination between Indian and US Joint Task Forces (JTFs) during exercises and contingencies.
   - **Indian Participation:** Indian Navy → Indian Air Force → Indian Army → Rapid Action Medical Team (RAMT) → P-8I Long Range Maritime Patrol Aircraft.
   - **US Participation:** USS Comstock, USS Ralph Johnson & Troops from the US Marine Division (Pacific).

- **Phases of the Exercise:**
  - **Harbour Phase (Visakhapatnam, 01-07 April 2025):**
  - **Sea Phase (Off Kakinada):** Maritime, Amphibious, and HADR operations with embarked troops.
- **Key Operations:** Joint Command & Control Center at Kakinada Naval Enclave by Indian Army & US Marines.
  - Joint Medical Camp by IAF RAMT and US Navy medical team to provide medical aid.

6. **Dolphin Safari**: Recently, the Uttar Pradesh government has announced the establishment of a dolphin safari in Varanasi to promote conservation and eco-tourism.
   - **About Dolphin Safari:** The safari will be set up between Kaithi and Dhakhwa villages in Varanasi district. This area has the highest number of dolphins in the region.
     - The Uttar Pradesh government has appointed 'Dolphin Mitras' for the conservation of dolphins in the Ganga River in Varanasi district.
   - **Objectives:** Increase the population of Gangetic dolphins and protect their natural habitat, promote eco-tourism along the Ganga River, and educate people on dolphin conservation with the help of **'Dolphin Mitras**' and the Forest Department.
   - **Ganges River Dolphin (Platanista gangetica):** Also known as the "Tiger of the Ganges", it was officially discovered in 1801.
   - **Found in major river systems:** Ganges-Brahmaputra-Meghna and Karnaphuli-Sangu in India, Nepal, and Bangladesh.
     - Recorded in various tributaries of the Ganga river basin, including Ghaghra, Kosi, Gandak, Chambal, Rupnarayan, and Yamuna.
   - **Importance:** Acts as a **reliable indicator of river ecosystem health**, declared India's National Aquatic Animal in 2009, and recognized as the State Aquatic Animal of Assam.
   - **Protection Status:** IUCN Red List (Endangered) → Wildlife (Protection) Act, 1972 (Schedule I) → CITES (Appendix I) → Convention on Migratory Species (CMS) (Appendix I)
   - **Related Government Initiatives:** Project Dolphin, Vikramshila Ganga Dolphin Sanctuary in Bihar**, and** National Ganga River Dolphin Day (October 5)

7. **Carbon-dioxide Lasers:** A team of U.S. physicists has successfully demonstrated a new technique to detect radioactive materials using carbon-dioxide lasers from a distance.



   - **About Carbon-dioxide Lasers:** The technique involves a phenomenon called avalanche breakdown, where charged particles released during radioactive decay ionise the air, creating plasma.
     - Electrons are accelerated to collide with other atoms, releasing more electrons in a chain reaction, known as avalanche breakdown.
     - Researchers used a carbon-dioxide laser emitting long-wave infrared radiation at a wavelength of 9.2 micrometres to accelerate the electrons.
     - The experiment successfully detected alpha particles from a radioactive source 10 meters away, improving the range by a factor of 10 compared to previous experiments.
     - The laser-induced electrons (called seeds) create microplasma balls in the air, generating optical backscatter, which can be amplified for better detection sensitivity.
   - **Advantages of Using Long-wavelength Lasers:** Long-wavelength lasers can drive electron avalanches, allowing the detection of very low concentrations of seed electrons.
     - Longer wavelengths reduce undesirable ionisation effects that could interfere with detection signals.

8. **World Bipolar Day:** It was celebrated on **March 30** to raise awareness about **bipolar disorder.**
   - **About Bipolar Disorders:** Mood disorders are psychiatric conditions characterised by a pathological alteration in mood, energy, and activity levels.
   - **Bipolar disorder has two poles:** Depressive pole & Manic pole
   - **Bipolar Disorder and Genetics:**
     - Bipolar disorder is highly heritable- 60-85% of the condition is linked to genetic factors.
     - Genetic mechanisms involve multiple genetic variants and their interaction with the environment.
     - No single candidate gene or laboratory test exists for mood disorders.
     - The circadian system regulates the body's internal clock, with bipolar disorder showing disturbances in circadian rhythms, including body temperature and melatonin secretion.