

# CROSS & CLIMB ROHTAK

Institute of Research Based Learning & Competition

## Current Affairs - 05 July 2025

### ASTEROID TERRESTRIAL-IMPACT LAST ALERT SYSTEM (ATLAS)



- It is an asteroid impact early warning system developed by the University of Hawaii and funded by NASA.
- It consists of four telescopes (2 in Hawaii, 1 in Chile, 1 in South Africa), which automatically scan the whole sky several times every night looking for moving objects.
- Although the ATLAS system is also used to identify dwarf planets, supernova explosions, and life exposure remanence from a star being absorbed by a supermassive black hole in a distant galaxy, the main purpose of this project is to search for large “killer asteroids” that may have a tremendous impact on life on earth.
- ATLAS will provide a warning time depending on the size of the asteroid -- larger asteroids can be detected further from Earth.
- ATLAS will see a small (~20 meter) asteroid several days out, and a 100 meter asteroid several weeks out.
- The system is specially designed to detect objects that approach very close to Earth – closer than the distance to the Moon, about 240,000 miles or 384,000 kilometers away.

### POLAR ANTICYCLONE



- It is a wind system associated with a region in which high atmospheric pressure develops over or in the vicinity of the poles.
- The polar anticyclone is strongest in the cold season of the year.
- **Examples:** The Siberian anticyclone is an example of a polar anticyclone, as is the high-pressure area that forms over Canada and Alaska during the winter.

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- **Formation of Polar anticyclones**

- Polar anticyclones are created by the **cooling of surface layers of air**.
- This cooling causes the **air near the surface to become denser and**, at the same time, causes an inflow of air at high levels to replace the denser, sinking air.
- These processes increase the mass of air above the surface, thus creating the anticyclone. The weather within the central regions of these anticyclones is typically clear and quite cold. The strength of polar anticyclones is **greatest near the Earth's surface**.
- It **frequently migrate eastward** and equator ward in the winter season, bringing cold waves to warmer latitudes. In the summer they provide cool, dry weather as they move toward the Equator.
- The boundary separating **the cold polar air from the warmer air is called the polar front**, and along this frontal surface the extratropical cyclones, or wave cyclones, form. See also front.

### HAM RADIO



- Amateur radio, popularly known as ham radio, is a **licensed radio service that relies on radio waves** for establishing communication.
- Ham radio service is largely **deployed for educational and knowledge purposes**, for emergency or SOS communication.
- Using a dedicated frequency, a transceiver and an antenna, communication can be set up between two licensed hams by trained ham operators.
- The communication can be hyper-local, global, and in space. In India, any **individual above the age of 12 is permitted to operate** a ham radio.
- In India, the **Ministry of Electronics and Information Technology** issues these licences.

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- Even though the technology to establish communications has advanced, the radio remains one of the most reliable and stable modes of communication.
- It is effective and an alternate medium of establishing communication.
- Previously, there have been instances when ham radio came to the rescue when traditional communication lines broke down, either due to man-made scenarios (like wars) or natural disasters such as earthquakes, cyclones, and floods.
- In India, ham radio was used for making emergency contacts during **the Bhuj earthquake** (2001), the Indian Ocean tsunami (2004), the floods of **Uttarakhand** (2013) and more such calamities.

#### BHARAT INITIATIVE



- BHARAT is a short for '**Biomarkers of Healthy Aging, Resilience, Adversity, and Transitions**', as part of its Longevity India Program.
- The study aims to map the **physiological, molecular, and environmental indicators** that drive ageing in **the Indian population**.
- **Under this initiative researchers are** building India's first comprehensive aging database through:
  - Multiparametric analysis
  - Advanced clinical assessment
  - Lifestyle and environmental factors
  - Comprehensive biomarker discovery
- It is identifying biomarkers for healthy ageing and also **building the Bharat Baseline** — a reliable reference for what is normal in the Indian population.
- Its database will include **genomic biomarkers** (like mutations linked to disease susceptibility), **proteomic and metabolic indicators** (reflecting biological pathways and metabolic health), and environmental and lifestyle factors.

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- It will **challenge the western values** for cholesterol, vitamin D, or B12 may label many Indians as deficient.

### What are Biomarkers?

- Biomarkers, short for '**Biological Markers**' are a **physical, chemical, or biological characteristic** that is present in the human body, and measurable too.
- The WHO defines a biomarker as "any measurement reflecting an interaction between a **biological system and a potential hazard**, which may be chemical, physical, or biological. The measured response may be functional and physiological, biochemical at the cellular level, or a molecular interaction".
- They are **indispensable in diagnosing disease**, prescribing the right medication, right dosage, and even while designing new drugs.
- Biomarkers **include biomolecules** like carbohydrates, proteins, lipids, genes, DNA, RNA, platelets, enzymes, hormones, etc.

### RELAXED EMISSION NORMS FOR SMALL CARS URGED AMID GLOBAL TRENDS

A new study by researchers at Nomura suggests that India should reform its **Corporate Average Fuel Efficiency (CAFE) norms** to align with global best practices by including protection measures for small cars.

#### India's CAFE Norms

- Corporate Average Fuel Efficiency (CAFE) norms are government-mandated standards that require auto manufacturers to meet a fleet-wide average fuel economy target.
- India's CAFE norms, introduced by the Bureau of Energy Efficiency (BEE) in 2017, aim to regulate fuel consumption and CO<sub>2</sub> emissions from passenger vehicles under 3,500 kg.
  - In India, CAFE norms were introduced in two phases, with the first stage effective from 2017-18 and the second from 2022-23.
- These norms apply to vehicles powered by petrol, diesel, LPG, CNG, hybrids, and electric power.

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### Call to Reform India's Emission Norms for Small Cars

- A recent study by Nomura researchers has urged India to reform its CAFE framework to align with global best practices.
- The study recommends incorporating protection mechanisms for small, lightweight cars, similar to what is done in major automobile markets like the US, EU, China, Japan, and Korea.
- **Impact on Small Car Market and Decarbonisation**
  - Manufacturers try to reduce emissions by lightweighting, but the CAFE framework assigns even stricter targets to lighter vehicles.
  - Thus, entry-level small cars—already efficient—struggle to meet their moving goalposts, discouraging further innovation in this segment.
  - The lack of regulatory protection has discouraged lightweighting, a critical strategy for decarbonisation.
  - Manufacturers like Maruti Suzuki have been lobbying for a relaxation in norms for this category.

### IMPACT OF THE US REMITTANCE TAX ON INDIA: LIMITED LOSSES BUT HIGHER COSTS

- A newly passed US legislation, the **One Big Beautiful Bill Act (OBBBA)**, has introduced a **1% tax on certain outbound remittances**, sparking concern among countries that rely heavily on money sent back by expatriates.
- The tax, effective from **January 1, 2026**, is expected to marginally affect India, the world's largest recipient of remittances, primarily through higher costs rather than a significant decline in remittance volumes.

### Key Features and Exemptions

- Originally proposed as a **5% tax**, the remittance levy was later reduced to **1%** after bipartisan negotiations. However, key exemptions in the Senate-passed version limit its reach:

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- Applies only to physical modes of transfer like cash, money orders, and cashier's checks.
- Bank account transfers or payments through US-issued debit/credit cards are exempt.
- Transfers under \$15 are not taxed.
- US citizens sending remittances are not subject to the tax.
- These exclusions will mitigate the adverse impact for a large portion of Indian-origin remitters using digital channels.

### Implications for India's Remittance Economy

- According to the **Centre for Global Development**, India may lose just under **\$500 million in formal remittance inflows**, second only to Mexico, which could lose over \$1.5 billion.
- Although this is a small portion of the \$124.3 billion India received in **net remittances during 2024-25**, the tax is a symbolic reminder of increasing policy barriers to international money flows.
- Moreover, **remittances from the US account for nearly 27.7%** of India's total, approximately **\$32 billion** in 2023-24.
- While the proportion of cash-based transfers is low, even a slight disruption can impact rural households relying on such inflows.

### Distributional and Timing Effects

- According to economists, the **impact will be frontloaded** into the first three quarters of FY2025-26, as senders might advance transfers to avoid the tax.
- However, the **lower-than-expected rate (1%)** means that the overall **long-term impact will remain limited** and primarily felt in transaction costs rather than volume reductions.



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### DELHI'S FUEL BAN ON OLDER VEHICLES: LEGAL PROVISIONS EXPLAINED

- Starting July 1, diesel vehicles over 10 years old and petrol vehicles over 15 years old are denied fuel at Delhi's fuel stations under the CAQM directive.
  - In April 2025, the CAQM directed a phased denial of fuel to ELVs at fuel stations in the NCR:
    - in Delhi from July 1,
    - in high-density NCR districts from November 1, and
    - in the rest of the NCR from April 1, 2026.
- Real-Time Enforcement with ANPR Technology**
  - 498 fuel stations and 3 ISBTs now have Automatic Number Plate Recognition (ANPR) cameras.
  - These scan vehicle plates and cross-check with the VAHAN database.
  - If identified as an End-of-Life Vehicle (ELV), an audio alert is triggered, and fuel is denied.
- Enforcement and Penalties**
  - ELVs may be **impounded and scrapped** unless valid exemptions or documents are shown. Enforcement teams include the **Transport Department, Traffic Police, and civic bodies**.

### **Delhi Government Flags Premature Implementation**

- Delhi Environment Minister, in a letter to CAQM, called the immediate enforcement of the fuel ban "premature and potentially counterproductive".
- The Automatic Number Plate Recognition (ANPR) system is facing multiple issues:
  - Camera misplacement
  - Non-functional sensors and speakers
  - Inability to detect ELVs due to HSRP-related issues
- The system lacks integration with vehicle databases of adjoining NCR districts, making it easy for vehicle owners to bypass the ban by refueling in nearby areas.

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- Due to these technological and operational issues, the public is facing inconvenience, leading to widespread discontent and backlash.

### Why Older Vehicles Are a Concern

- Authorities say **pre-BS-VI vehicles** significantly contribute to air pollution, even if maintained well.
  - BS-IV vehicles emit 4.5 to 5.5 times more particulate matter than BS-VI vehicles.
  - BS-VI norms became mandatory from April 1, 2020, setting stricter emission standards.
- Transport sector accounts for: 28% of PM<sub>2.5</sub>; 41% of SO<sub>2</sub>; 78% of NO<sub>x</sub> emissions. CAQM highlights transport as a key driver of Delhi's air pollution.
- While legal mandates for banning overage vehicles existed since 2015, lack of technology delayed enforcement.
- **Legal Basis Under Motor Vehicles Act**
  - **Motor Vehicles Act, 1988**: Registration for non-transport vehicles valid for 15 years, renewable thereafter.
  - **Central Motor Vehicles Rules, 1999**: After expiry, a vehicle is no longer considered validly registered.

### Effectiveness of Such Measures in Dealing with Delhi's Bad Air Problem

- Experts agree that **no single measure**, including the fuel ban for old vehicles, can fully resolve Delhi's severe air quality crisis.
- The Centre for Science and Environment (CSE) cautions that age caps aren't scalable nationwide and older vehicles aren't the only polluters.
- Poor maintenance can make even newer vehicles highly polluting.
- Multi-Pronged Approach Needed
  - CSE advocates a comprehensive strategy, including:
    - Upgrading fuel and emission standards
    - Strict Pollution-Under-Control (PUC) enforcement
    - Major expansion of public transport



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#### ALAKNANDA RIVER



- It is a Himalayan river in the state of **Uttarakhand**.
- It is **one of the two main headstreams of the Ganges River**, the other being the **Bhagirathi River**.
- It **originates from the meltwaters of the Satopanth and Bhagirath Kharak glaciers in the Garhwal Himalayas of Uttarakhand**.
- The river is joined by many tributaries in Uttarakhand.
- **Five of the tributaries are considered major**, and their points of confluence are also worshipped. The **five holy confluences** in the Garhwal Himalayas are also **known as Panch Prayag**. They are listed below:
  - **Vishnuprayag**: Alaknanda meets **Dhauliganga River**
  - **Nandprayag**: Alaknanda meets **Nandakini River**
  - **Karnaprayag**: Alaknanda meets **Pindar River**
  - **Rudraprayag**: Alaknanda meets **Mandakini River**
  - **Devprayag**: Alaknanda meets **Bhagirathi**. This is the **most revered confluence**, as it is here when the **surging water coming from the mountains is finally called the Ganga**.
- From its source till its union with Bhagirathi, Alaknanda travels for **190 km (approx.)**.
- Along the banks of the Alaknanda are numerous important **pilgrimage sites** such as **Badrinath, Hemkund Sahib, and Joshimath**.
- The Alaknanda River valley is a **significant part of the Char Dham Yatra**, a pilgrimage circuit that encompasses four sacred sites—**Badrinath, Kedarnath, Gangotri, and Yamunotri**.
- There are several **hydel projects** in the basin, which include the Alaknanda (Badrinath), **Lata Tapovan, Devisari Dam, Nandprayag Langasu, and Vishnugad Pipalkoti**, to name a few.