

NEWS TODAY

CAQM invokes Stage-II of Graded Response Action Plan (GRAP) in entire NCR

CAQM Sub-Committee on GRAP has directed to enforce measures outlined under Stage II due to **deterioration in NCR's air quality index (AQI)**.

- Under GRAP-2, use of **coal and firewood** is restricted, and **diesel generator sets** will face limitations in operation.

About GRAP

- It is an emergency response mechanism based on AQI level of Delhi. It is divided into four stages, based on AQI levels.

- ⊖ **Stage 1:** Poor category (AQI 201 to 300).
- ⊖ **Stage 2:** Very poor category (AQI 301-400).
- ⊖ **Stage 3:** Severe category (AQI 401-450).
- ⊖ **Stage 4:** Severe + category (AQI 451+).

- Commission for Air Quality Management (CAQM) in NCR and adjoining areas **oversees implementation of GRAP**.

- ⊖ CAQM was established under **Commission for Air Quality Management in NCR and Adjoining Areas Act, 2021**.

- ⊖ It replaced Environment Pollution (Prevention and Control Authority).

Reason behind rising air pollution in Delhi during winters

- **Wind Direction:** As monsoon withdraws, predominant direction of winds changes to north westerly which brings dust from Rajasthan and sometimes from Pakistan & Afghanistan.
- **Temperature Inversion:** Layer of cool air forms near the ground, trapping pollutants and preventing them from dispersing.
- **Low Wind Speeds:** Reduce the dispersion of pollutants.
- **Stubble Burning:** Farmers in neighbouring states burn crop stubble.
- **Other Factors:** Vehicular Emission, Industrial Emission, Construction dust, Garbage burning etc.

About National Air Quality Index (AQI)

- Launched by government in 2014 to gauge air pollution levels and communicate risks to public.
- There are six categories of AQI, namely 'Good' (0-50), 'Satisfactory' (50-100), 'Moderately polluted' (100-200), 'Poor' (200-300), 'Very Poor' (300-400), and 'Severe' (400-500).
- Eight pollutants (PM10, PM2.5, NO2, SO2, CO, O3, NH3, and Pb) are considered for calculating AQI.

U.S. - Australia Critical Minerals Framework

The U.S. and Australia have signed a Critical Minerals Framework to **combat China's near-absolute monopoly** (especially rare earths) and to **diversify sources** of critical minerals.

- The framework includes **funding** for multiple projects aimed at boosting the supply of key materials used in defense manufacturing and energy security.
- It will also deploy a mechanism to set a **minimum price floor for critical minerals** to counter China's market manipulation strategy of flooding markets that make global competitors unviable.

What are Critical Minerals?

- **Critical minerals** are essential minerals vital for modern technologies and clean energy, but with high supply risk due to limited availability or dependence on a few countries.

- ⊖ E.g., Lithium, cobalt, nickel, copper, etc.

- Rare Earth Elements are a **subset of critical minerals** and are essential for technologies like **electric vehicles, wind turbines, smartphones, and defense equipment**.

Concerns with Critical Minerals Supply Chain

- **Geographic Concentration:** Critical mineral production & processing are concentrated in few regions, making global supply prone to political and economic risks.

- ⊖ E.g., **Democratic Republic of Congo supplies ~70% of the world's cobalt**.

- **Weaponization of Resources:** China has restricted exports of key materials such as gallium and germanium, effectively weaponizing mineral trade.

- ⊖ **China dominates the rare earth sector, meeting 85–95% of global demand**.

India's Initiatives to Secure Critical Minerals

- **National Critical Mineral Mission:** To secure India's critical mineral supply chain by ensuring mineral availability from domestic and foreign sources.

- **Mines and Minerals (Development and Regulation) Amendment Act, 2023:** Enables exploration and mining of critical minerals.

- **Minerals Security Partnership:** India joined the US-led Minerals Security Partnership (MSP) Finance Network to secure sustainable supply chains for critical minerals.

Chandrayaan-2 lunar orbiter has made first-ever observation of effects of Sun's Coronal Mass Ejection (CME) on Moon

The observation was made using the Chandrayaan-2's Atmospheric Composition Explorer-2 (CHACE-2) instrument onboard the orbiter.

About CHACE-2

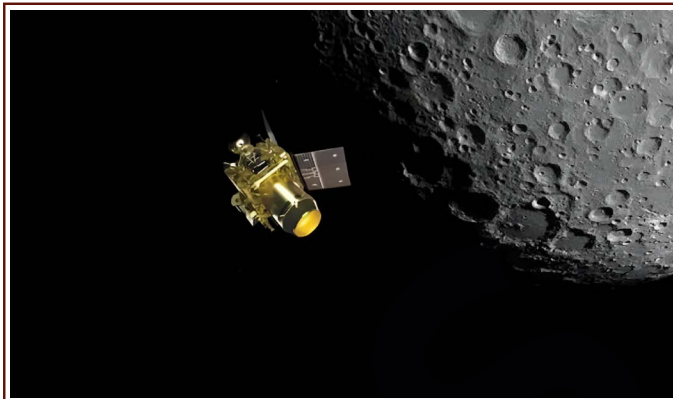
- It is a **neutral gas mass spectrometer** to study the composition of the **lunar neutral exosphere** in the mass range 1–300 AMU (atomic mass unit).

What are Coronal Mass Ejections (CMEs)?

- CMEs are **large expulsions of plasma and magnetic fields** from the Sun's corona (the outermost part of the Sun's atmosphere).
- Causes:** This is often associated with **solar flares** and **active sunspot regions** where magnetic fields are strong and twisted.
- Frequency:** CMEs occur more frequently during the **solar maximum** phase of the **11-year solar cycle**. During solar minima, they are relatively rare.
- Possible Impacts of CME on Earth:** Damaging satellite electronics and GPS communication, Power grid failure, Communication Disruptions E.g., Radio signal disruption, aurora formation, radiation hazard to astronauts, etc.

Key findings of CHACE-2

- When the Coronal Mass Ejection (CME) struck the Moon, it intensified the ejection of atoms from the lunar surface.
 - This led to a noticeable rise in number of neutral atoms per unit volume in the **dayside lunar exosphere**.
 - Lunar exosphere is **extremely thin atmosphere** around the Moon, so tenuous that its gas particles rarely collide.



About Chandrayaan 2

- Genesis:** It was launched by Geosynchronous Satellite Launch Vehicle, **GSLV MkIII-M1** in 2019.
- About:** It comprised an **Orbiter, Lander and Rover** to explore the unexplored South Pole of the Moon.
 - It was India's first attempt at a **soft landing on the Moon**.
- Objectives:** To expand the **lunar scientific knowledge** through detailed study of topography, seismography, mineral identification and distribution, composition of the tenuous lunar atmosphere etc.

New Strategic EU-India Agenda

The European Council has approved the EU-India Strategic Agenda, identifying **five priority pillars** to address emerging opportunities, challenges, and threats in a geopolitical context.

Five Priority Pillars

- Prosperity and Sustainability:** Focuses on **economic growth, job creation, decarbonization**, and strengthening supply chains.
 - The goals of finalizing a **Free Trade Agreement (FTA)** and concluding an **Investment Protection Agreement (IPA)** are central to this.
- Technology and Innovation:** Deepens cooperation on **critical emerging technologies**, digital infrastructure, and promoting **research collaboration** through the **Trade and Technology Council** and **Horizon Europe**.
- Security and Defence:** Addresses global security threats, geopolitical tensions, and technological change. E.g. Coordinate on Indo-Pacific and promote **rule based maritime order**.
- Connectivity and Global Issues:** Strengthens regional connectivity, global governance, and cooperation in third countries.
 - Example: Strengthening initiatives like **India-Middle East-Europe Economic Corridor (IMEC)** and **Global Gateway**.
- Enablers across Pillars:** Facilitates skills mobility, knowledge exchange, business engagement, and institutional cooperation to support all four main pillars.



India-EU Relations

- Diplomatic Relations:** India was amongst the first countries to establish diplomatic relations with the European Economic Community in **1962**.
 - In **2004** their relationship was upgraded to a **Strategic Partnership**.
- Bilateral Trade:** Trade in goods between India and the EU reached **€120 billion** in 2024.
 - EU being **India's largest trading partner** in goods.
- Foreign Direct Investment (FDI):** Cumulative inflows from EU valued at **USD 107.27 billion** between April 2000 and December 2023.

Japan Elects First Female Prime Minister





Japan has elected Sanae Takaichi as the country's first female Prime Minister reflecting a gradual shift toward inclusivity and gender balance.

Similarities between the Indian and Japanese political systems

- **Written Constitutions:** India's constitution is the lengthiest in the world, while Japan has a small constitution with utmost 5000 word.
- **Parliamentary Democracies:** Both are parliamentary democracies with a Prime Minister as the real executive head.
- **Bicameral Legislatures:** Japan's National Diet consists of the House of Representatives and the House of Councillors, while India's Parliament comprises the Lok Sabha and the Rajya Sabha.
- **Fundamental Rights:** In Japan, Chapter III (Articles 10–40) guarantees equality, liberty, and human dignity, while in India, Part III (Article 12-35) ensures 6 fundamental rights.
- **Other:** Independent judiciary, Universal Adult Franchise, Constitutional Supremacy etc.



Differences between the Indian and Japanese political systems

Aspect	Japan	India
 Head of State	Constitutional Monarchy: The Emperor is a symbolic head.	Republic: The President is an elected head.
 Structure of Government	Unitary system: Power centralized in the national government.	Federal system: Powers divided between the Centre and States
 Nature of Constitution	Rigid: Japan's constitution has never been amended since it was Promulgated in 1946.	Partly Rigid, Partly Flexible: Can be amended by Parliament under Article 368 , but the basic structure cannot be altered.
 Political Parties and System	Dominant-party system: Led mainly by the Liberal Democratic Party .	Multi-party system

Also In News



Specialty Fertilizers

India facing specialty fertilizer price surge as China suspends exports

About Specialty Fertilizers

- These are tailored to the specific needs of different crops and soil types.
- **Definition:** Fertilizer formulations **designed to supply nutrients efficiently**, often in a controlled, targeted, or slow-release manner.
 - ⊖ They improve **nutrient use efficiency (NUE)**, **reduce losses**, and **minimize environmental impact**.
- **Types:** Slow released fertilizers, Controlled-release fertilizer, stabilized fertilizer, customized fertilizer and fortified fertilizers.
- **Status of India:**
 - ⊖ India consumes **approximately 1.2 to 1.5 MT per year of specialty fertilizers**.
 - ⊖ **Majority of specialty fertilizer demand** is met through imports with china accounting for more.



Gallantry Awards

Central government has issued a gazette notification listing gallantry award citations for defence personnel.

About Gallantry Awards

- **Objective:** Recognitions given for acts of bravery, valour or self-sacrifice both during wartime and peacetime.
- **Background:** First three gallantry awards namely **Param Vir Chakra, Maha Vir Chakra and Vir Chakra** were instituted by the Government of India on **26th January, 1950**.
 - ⊖ These were deemed to have effect from the **15th August, 1947**.
- **Ashok Chakra Class First, Ashok Chakra Class Second & Ashok Chakra Class Third** were **instituted in 1952**.
 - ⊖ Ashok Chakra Class First, Second, and Third were renamed as **Ashok Chakra, Kirti Chakra, and Shaurya Chakra**, respectively in **January 1967**.
- **These awards** are announced **twice in a year** (Republic Day and Independence Day).



Trachoma

Fiji has officially become the 26th country worldwide to eliminate trachoma as a public health concern.

About Trachoma Disease

- **Trachoma is a neglected tropical disease (NTD)** and the world's leading infectious cause of **blindness**.
- **Cause:** By Chlamydia trachomatis Bacteria,
- **Spread:** Via personal contact, contaminated surfaces, and flies exposed to eye or nasal discharge.
- **Repeated infections** cause eyelid scarring, inward-turning eyelids, and **eventual blindness**.
- Endemic in **vulnerable communities** with limited **clean water and sanitation** access.
- India has successfully eliminated trachoma as a public health problem.



Star Formation

A study by the **Indian Institute of Astrophysics** shows that **supermassive black holes** and their **relativistic jets** suppress star formation in nearby galaxies.

- **Radiation** and **high-speed jets** eject gas from molecular clouds, preventing new stars from forming and regulating **galactic growth**.

Star Formation

- Stars form in **cold, dense molecular clouds** as gravity condenses gas and dust into **protostars**, igniting **nuclear fusion**.
- **Lifespan depends on mass:** **Low-mass stars** become white dwarfs, while **high-mass stars** explode as supernovae, leaving **neutron stars or black holes**.



Central Asian Mammals Initiative (CAMI)

Central Asian countries have come together **under CAMI** to protect **17 shared species** like Saiga, Bukhara Deer etc.

Central Asian Mammals Initiative (CAMI)

- It was launched in **2014** at the 11th Meeting of the Conference of the Parties (COP11) to the **Convention on the Conservation of Migratory Species of Wild Animals (CMS)**.
- **Objective:** To coordinate conservation efforts for **17 key migratory mammal species** in Central Asia.



Kurinji Flowers

Tamil Nadu's newly notified reserve forest in Gudalur hills is covered in **violet kurinji flowers**, blooming after **8 years**.

About Kurinji Flowers

- Kurinji plants **flowers only once in a lifetime**.
- The more famous Neelakurinji (*Strobilanthes kunthiana*) **blooms once every 12 years** at relatively higher altitudes (>1,300 m).
- **Prominent Location:** Shola Forest, Western Ghats.
- **Significance:**
 - ⊕ Kurinji flowering indicates **healthy grasslands**; disturbances cause patchy blooms.
 - ⊖ Acts as a **barometer of biodiversity and climate change**.



Saranda Forest

The Supreme Court Bench ordered the Jharkhand government to give an undertaking to notify a new wildlife sanctuary in Saranda.

About Saranda Forest

- It is the **largest Sal forest in Asia** located in Jharkhand.
 - ⊕ Sal Tree is a **moist deciduous tree**.
- Saranda means '**the land of seven hundred hills**'.
- **Fauna:** It is home to **endangered species** of flying lizards and elephants.
- **Flora:** Sal, Kusum, Mushroom, Mahua etc.
- **Nearly 80%** of the human population belongs to **Ho, Munda, Oraon** and some primitive tribes.



Real Effective Exchange Rate (REER)

Rupee weakens to a record low, with the **Real Effective Exchange Rate (REER)** indicating continued undervaluation.

About REER

- **Definition:** REER measures a country's **currency value against a basket of major trading partners' currencies**, adjusted for **relative inflation**.
 - ⊕ It is derived by adjusting the **Nominal Effective Exchange Rate (NEER)** for **relative consumer prices**.
- **Trade Competitiveness:**
 - ⊕ A **higher REER** makes exports **more expensive** and imports **cheaper**, reducing trade competitiveness.
 - ⊖ A **lower REER** indicates the currency is **undervalued**, potentially boosting exports.

Place in News



Italy (Capital: Rome)

Italy's births are set to sink to a **new record low in 2025**.

Political Features

- Located in **South-central Europe on the Apennine Peninsula**.
- It is positioned both in the **Northern and Eastern hemispheres of the Earth**.
- **Land Borders:** Switzerland and Austria in the north, Slovenia in the northeast and with **France in the northwest**.
- **Water Borders:** Southern boundary extends into the **Mediterranean Sea (South)**, **Adriatic Sea (east)**, **Ionian Sea (southeast)**, **Ligurian Sea**, and **Tyrrhenian Sea (west)**.

Geographical Features

- **Highest point:** Mont Blanc
- **Major Mountains Range:** Alps, Apennines.
- **Major Rivers:** Po, Adige
- **Volcanic Activity:** Italy is largely volcanic in origin. Active volcanoes include **Mt. Etna (Sicily)** and **Stromboli (Aeolian Islands)**.

