

Union Government to launch National One Health Mission

The mission approved by the **Prime Minister's Science, Technology, and Innovation Advisory Council (PM-STIAC)**, aims for robust pandemic preparedness and integrated disease control by recognizing the interconnected nature of health risks.

About National One Health Mission

- **Vision:** To build an integrated disease control and pandemic preparedness system in India by bringing human, animal and environmental sectors together for better health outcomes, improved productivity and conservation of biodiversity.
- **Implementing Agency:** Indian Council of Medical Research (ICMR).
- **Anchor Institution:** National Institute of One Health, Nagpur.
- **Critical pillars:**
 - ⊕ **Research and Development:** Driving targeted R&D to develop essential tools such as vaccines, diagnostics, and therapeutics.
 - ⊕ **Clinical Readiness:** Enhancing preparedness in terms of clinical care infrastructure and response capabilities.
 - ⊕ **Data Integration:** Streamlining data and information linkages across the human, animal, and environmental sectors for improved access and analytics.
 - ⊕ **Community Engagement:** Ensuring close community participation to maintain a constant state of response readiness.

About 'One Health'

- It is an **integrated, unifying approach** that aims to sustainably balance and optimize the **health of people, animals, and ecosystems**.
- **'One Health' imperatives in India:** Unique demographics (diverse wildlife, one of the world's largest livestock populations, and a high density of human population); **Recent Disease Outbreaks** (including the COVID-19 pandemic, outbreaks of Lumpy Skin Disease in cattle, and the persistent threat of Avian Influenza, etc.), among others.

International Cryosphere Climate Initiative released the State of the Cryosphere Report 2025

The report highlights the status and impact of changes in **five key components of cryosphere – Ice Sheets, Mountain Glaciers and Snow, Polar Oceans, Sea Ice, and Permafrost**.

Key Highlights of Report

- **Ice Sheets:** Losses from the Greenland and Antarctic ice sheets have quadrupled since the 1990s.
 - ⊕ **Impact:** Sea-level rise results in widespread loss of infrastructure, agricultural land, homes, and livelihoods in coastal regions.
- **Polar Oceans:** Rising greenhouse gases are impacting their role as heat/carbon absorbers and drivers of global circulation.
 - ⊕ **Impact:** Two major ocean current systems, Antarctic Overturning Circulation (AOC) and Atlantic Meridional Overturning Circulation (AMOC), have slowed substantially due to freshwater melt.
- **Mountain Glaciers and Snow:** Glacier ice loss is increasing exponentially worldwide, with 273 gigatons lost per year between 2000 and 2023.
 - ⊕ **Impact:** Threatens water, food, economic, and political security for billions of people.
- **Sea Ice:** Sea ice extent and thickness have **declined 40-60% at both poles** since 1979.
 - ⊕ **Impact:** Loss of sea ice drives Arctic amplification, threatens ice-dependent species, disrupts weather and ocean currents and increases sea-level rise risks.
- **Permafrost:** Over 210,000 km² of permafrost has thawed per decade since current warming began.
 - ⊕ **Impact:** Thawing permafrost **decreases the global carbon budget** and releases vast amounts of ancient organic carbon (three times more than currently in the atmosphere).

CAQM invokes Stage-III of Graded Response Action Plan (GRAP) in NCR amid severe Air Pollution

It will include a **9-point action plan** comprising a **ban on construction, mining, and polluting vehicles**, along with **hybrid schooling** and **staggered office timings** to reduce emissions and congestion.

- Commission for Air Quality Management in NCR and adjoining Areas (CAQM) is a statutory body established under the **Commission for Air Quality Management in National Capital Region (NCR) and Adjoining Areas, Act 2021**.

About GRAP

- It is an **emergency response mechanism** for the entire NCR, triggered by Delhi's Average AQI, to coordinate multiple stakeholders against deteriorating air quality in Delhi-NCR.
- 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+).

Reasons for NCR Air pollution

- Topographical Factors:** It includes **basin effect** of indo gangetic plain, **Natural barriers** (Himalayas and Aravalis), etc.
- Meteorological Factors:** It includes **temperature inversion**, **low wind speeds** etc.
- Pollution:** It includes pollution from **Stubble burning**, **Vehicular and Industrial emissions** etc.

Case Study: How Beijing reduced its Air Pollution?

- Improved Air Quality:** Beijing's average AQI fell from **144 (2015)** to **92 (2024)**.
- Phased, Long-Term Strategy:** Implemented a **three-phase anti-pollution plan (1998–2017)** combining local governance, public participation, and steady regulation.
- Targeted Source Control:** Aimed to cut emissions from coal power, transport, and industry/construction via clean energy, vehicle upgrades, and stricter industrial rules.
- Regional Cooperation & Investment:** Coordinated regional cooperation with five surrounding provinces and significant public investment led to sharp pollutant reductions.

'Global Cooling Watch 2025' Report calls for urgent shift to Sustainable Cooling

Report published by the **UN Environment Programme's (UNEP) Cool Coalition**, details a **Sustainable Cooling Pathway** aimed at dramatically reducing projected GHG emissions from cooling by 2050.

Key concerns raised in the Report

- Surge in cooling demand:** Under a Business-as-Usual (BAU) Cooling Pathway, the **global stock of cooling equipment will more than triple by 2050**, from 22 terawatts (TW) in 2022 to 68 TW.
- Policy Gaps:** Only 54 nations meet full Sustainable Cooling Pathway standards despite broad policy inclusion.
- Escalating extreme heat:** Global population exposed to deadly heat stress could rise from 30% today to between 48% and 76% by the end of the century. (IPCC)
 - This gets further amplified by **urban heat island effect**, **heatwaves**, etc.

Proposed Sustainable Cooling Pathway

- Passive Cooling:** Reduce cooling loads through passive design, urban planning, and simple measures like doors on refrigerated cabinets to cut costs and emissions.
- Low-Energy Cooling:** Prioritize low-energy systems such as fans and evaporative coolers instead of, or alongside, air conditioning to cut energy use and costs.
- Best Energy Efficiency:** Adopt high-efficiency systems with variable-speed compressors and proper maintenance for optimal performance.
- Rapid HFC Phase-Down:** Select low-GWP refrigerants that maintain system efficiency to reduce direct emissions and support sustainable cooling.

About Beat the Heat Global Initiative

- Joint effort by **UNEP's Cool Coalition and Brazil (COP30 Presidency)** to turn Global Cooling Watch findings into real-world climate action.
- Objective:** Promotes multi-level governance involving governments, cities, industries, and financial institutions for equitable cooling access.
- Focus areas:**
 - Passive and nature-based cooling design integration.
 - Public procurement of efficient, low-GWP (Global Warming Potential) technologies.
 - Urban heat planning and inclusive cooling for vulnerable communities.

India's largest and first MWh-Scale Vanadium Redox Flow Battery (VRFB) inaugurated at NTPC NETRA

Flow Batteries, along with **solid state batteries**, are one of the next generation battery technologies and are emerging as an **alternative to lithium-ion** for grid-scale applications, offering **flexibility, longevity, and safety**.

About Next Generation Battery Technologies

- **Flow Batteries:** Flow batteries are powered by **reduction-oxidation (redox) reactions** and involve **two different liquid electrolytes** that pass ions or protons back and forth through a porous membrane.
 - ⊕ These batteries can **store larger amounts of energy**—as much as the size of the electrolyte cells can contain—and don't use flammable or polluting materials.
 - ⊕ **Types of Flow Batteries:** Vanadium Redox, Zinc–Bromine, Iron–Salt/Organic systems.
- **Solid-State Batteries:** These use **solid electrolyte solutions**, which don't need a different separator.
 - ⊕ It **makes them safer** because they are less prone to leakage from damage or swelling in hot temperatures.

Significance of Next Generation Battery Technologies

- Suitable for **grid-scale energy storage** due to **independent scaling of power and energy capacity**.
- Provides an **alternative to lithium-ion** batteries, as it diversifies material dependency and enhances supply chain security.
- **Used** in power management, pumps, grid energy storage, etc.
- Provides **Long-Duration Energy Storage (LDES) solutions**, enhancing renewable energy integration and grid resilience.

Also In News



Digital Gold

The **Securities and Exchange Board of India (SEBI)** issued a **public advisory** warning investors against investing in '**Digital Gold**' or '**E-Gold**' products offered via various **online platforms**, clarifying that such products **do not fall under SEBI's regulatory framework**.

About Digital Gold

- Digital gold refers to **buying gold without physically possessing the precious metal**.
- The price of digital gold is **linked to that of physical gold**.
- Digital gold is **created using blockchain technology** and allows investors to buy, sell and store gold electronically.
- These products are **neither notified as securities nor regulated as commodity derivatives**.



Exercise VINBAX

6th India-Vietnam Army Exercise VINBAX starts off in Hanoi.

About VINBAX

- It is a **bilateral army exercise between India and Vietnam** aimed at enhancing interoperability and sharing best practices in UN peace-keeping operations.



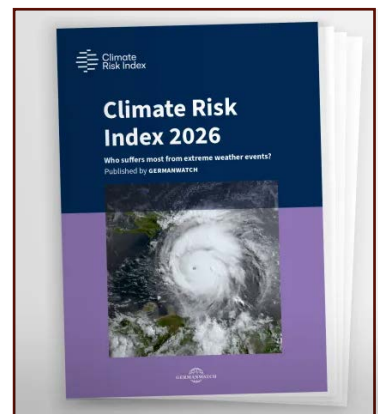
Climate Risk Index 2026

Germanwatch releases Climate Risk Index (CRI) 2026.

- It ranks countries based on the human and economic toll of extreme weather events, highlighting the urgency for stronger climate resilience.

About Climate Risk Index (CRI)

- **Genesis:** Introduced in 2006 as an annual global climate impact index.
- **Key Findings:**
 - ⊕ **Between 1995 and 2024**, 9,700 extreme weather events caused over **8 lakh deaths** and **\$ 4.5 trillion in damages**.
 - ⊕ **India** ranked **15th** in CRI Rank 2024 and **9th** in CRI Rank 1995-2024.
 - ⊕ **India** faced nearly **430 extreme weather events** in three decades, causing **\$ 170 billion losses** and **1.3 billion affected**.





TB Vaccine Development

WHO report calls for bold financing and equitable access strategies to ensure **novel tuberculosis (TB) vaccines** reach adolescents and adults in high-burden countries.

- Despite TB's devastating global impact, **no new vaccines have been licensed** in over a century.
- Presently available **Bacille Calmette-Guérin (BCG) vaccine** offers protection against the consequences of TB for infants and young children but it offers only **limited and variable protection against pulmonary TB** in adolescence and adulthood.
- WHO established the **TB vaccine accelerator Council in 2023** to facilitate the development, testing, authorization, and use of new TB vaccines.



Altermagnetism

Altermagnetism emerges as a new class of magnetic order having properties of both **ferromagnetism and antiferromagnetism**.

- Ferromagnets (like fridge magnets) have all tiny atomic magnets pointing the same way, creating a strong, external magnetic field.
- Antiferromagnets have atoms whose magnetic directions point in alternating directions, cancelling each other and producing no net magnetic field.
- Just like antiferromagnets, it does **not produce a net magnetic field**, but its internal electronic structure is like ferromagnets, creating strong spin polarization



Booker Prize

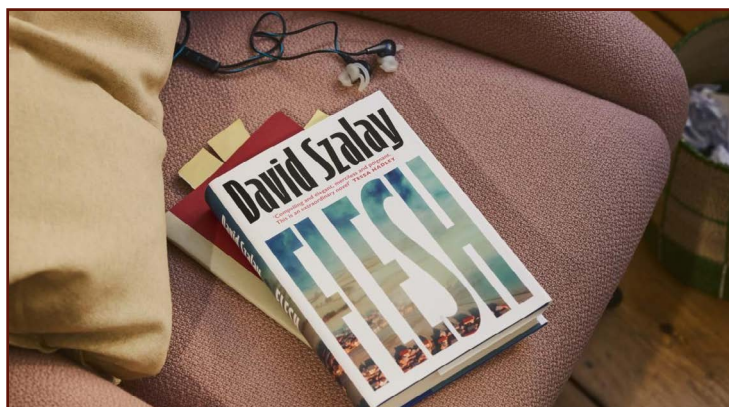
David Szalay has won the 2025 Booker Prize for his novel *Flesh*.

- It was his sixth work of fiction, and he became the first Hungarian-British author to win the award.

About Booker Prize

- Genesis:** Established in 1969 in the United Kingdom.
- Aim:** To honor the best English language fiction published in the UK or Ireland each year.
- Reward:** Winner receives £50,000 and shortlisted authors get £2,500 each.

Note: International Booker Prize is different from Booker Prize, which celebrates the best works of long-form fiction or collections of short stories translated into English and published in the UK and/or Ireland.



Place in News



Ethiopia (Capital: Addis Ababa)

Ethiopia has been selected to host the **UNFCCC COP32 in Addis Ababa (2027)**.

Political Features

- Location:** Landlocked country in the **Horn of Africa**; lost access to the sea after **Eritrea's secession in 1993**.
- Lies **entirely within tropical latitudes**.
- Neighbouring countries:** Eritrea (North), Djibouti (Northeast), Somalia (East), Kenya (South), South Sudan and Sudan (West).

Geographic Features

- Rivers:** Blue Nile, Tekeze, Baro, Shebele, Genale, Awash, Omo River, etc.
- Physiography:** Rift Valley, part of **East African Rift System**;
 - Kobar Sink in Denakil plain** drops as low as 380 feet (116 metres) below sea level.
- Highest point:** Mount Ras Dejen.



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