

World Meteorological Organization (WMO) Releases "Air Quality and Climate Bulletin"

Bulletin highlights the deep **interlink between air quality and climate change**, stressing the need for holistic action to protect health, ecosystems, and economies.

Key Highlights

- **PM2.5 Pollution:** Major global health risk, causing **millions of premature deaths yearly**.
 - ⊕ Levels have declined in North America, Europe, and East Asia due to regulations but remain high in South Asia and high latitudes, driven by wildfires and industrial activity.
- **Shipping Emission Regulations (MARPOL VI):** Curbed sulfur in marine fuels, improving health but slightly increasing global warming by reducing sulfate aerosols' cooling effect.
- **Air Quality and Climate Change:** Pollutants like ground-level ozone warm atmospheres, while climate change influences pollution through altered chemical reactions, biogenic emissions, and human activity.
- **Aerosols:** Dark aerosols (**e.g., black carbon**) absorb solar radiation, leading to warming, while **brighter ones (e.g., sulfates)** reflect it, causing **temporary cooling**.

Winter Fog Issue in North India (Highlighted by Report)

- **The Indo-Gangetic Plain (IGP)** faces worsening winter fog and rising air pollution due to human activity.
- **Causes:**
 - ⊕ Fog forms as moisture condenses on **PM2.5 (from vehicles, industry, crop burning)** acting as 'fog condensation nuclei' (FCN).
 - ⊕ **Temperature inversions** trap these pollutants, prolonging dense fog. Urbanization, brick kilns, and ammonium emissions intensify this.
- **Consequences:** Major transportation delays and severe health issues like **asthma, with toxic compounds** in fog water being a concern.

About WMO

- **About:** specialized agency of the United Nations (UN).
- **H/Qs:** Geneva, Switzerland.
- **Genesis:** Established in 1950.
- **Members:** 187 Member States (including India) and 6 Member Territories.
- **Global Atmosphere Watch (GAW) Programme:** Coordinates global atmospheric monitoring networks.

100 Years of the Self-Respect Movement

It was founded in 1925 in Tamil Nadu by **E.V. Ramasamy**, who was commonly known as **Periyar**.

- Periyar was influenced by earlier reformers like **Jyotirao Phule** and **B.R. Ambedkar**.
- Periyar published **Kudi Arasu, a Tamil Weekly** and also took part in the **Vaikom satyagraha**.

About the Self-Respect Movement

- **Objective:** To eradicate the caste system, encourage rational thinking, and oppose the dominance of Brahminical traditions.
 - ⊕ Objectives were outlined in two pamphlets: **Namathu Kurikkol** and **Tiravitak Kalaka Lateiyam**.
 - ⊕ It emphasized **rationalism, equality, and individual dignity over ritualism and social hierarchy**.
- **Women's Leadership:** Two prominent female leaders of the movement were **Annai Meenambal** and **Veeramal**.

Features of the Movement

- **Self-Respect Marriages:** The movement introduced Hindu weddings without priests, making them legally recognized.
- **Social Upliftment:** The movement opposed the Devadasi system, caste discrimination, and restrictions on widow remarriage, promoting social equality.
- **Self-Respect Conference:** In 1929, Periyar held the **first provincial conference at Chengalpattu, led by W.P.A. Soundara Pandian**.
- **Significance:** Instilled dignity and political awareness among non-Brahmins and laid the foundation for Dravidian politics and welfare governance in Tamil Nadu.

Land Acquisition for Great Nicobar Trunk Road Found Beneficial: SIA report

Social Impact Assessment (SIA) was prepared by the **Atlas Management Consultancy Services (AMCS) Private Limited**.

- **Area of 130 ha falling within tribal reserves** will be diverted for the Great Nicobar Trunk Infrastructure Road project.

About Social Impact Assessment:

- It is a process of **research, planning and the management of social change or consequences** arising from policies, plans, developments and projects (UNEP, 2007).
- According to the **Right to Fair Compensation and Transparency in Land Acquisition, Rehabilitation and Resettlement (RFCTLARR) Act, 2013** conducting a SIA and preparing a Social Impact Management Plan is mandatory for land acquisition.
 - ⊕ This applies to government use, public-private partnerships, or private acquisition for public purposes.

Issue of tribal displacement and rehabilitation due to development

- **Displacement:** Developmental projects often target mineral- and forest-rich areas that are predominantly inhabited by indigenous populations. Example- Sardar Sarovar Dam project, Ken Betwa River Linkage.
 - ⊕ **Impact of Displacement:** loss of livelihood, cultural erosion, psychological distress and social disintegration.
- **Rehabilitation:** Tribals are provided rehabilitation through policies such as **RFCTLARR Act 2013**.
 - ⊕ **Challenges in Rehabilitation:** insufficient compensation, lack of community participation, bureaucratic hurdles and corruption.

Beyond displacement and rehabilitation, a holistic perspective include:

- **Empowerment and self-governance:** Legislations like the **Panchayats (Extension to Scheduled Areas) Act (PESA)**, 1996, and the **Forest Rights Act (FRA)**, 2006, empower Gram Sabhas with decision-making power over land and resources.
- **Education:** Initiatives like **Eklavya Model Residential Schools** for quality education in tribal areas.
- **Livelihood diversification:** Schemes such as the **Van Dhan Vikas Kendras** promote value-addition of Minor Forest Produce (MFP) and enhance tribal incomes.
- Other schemes such as **PM JANMAN** provide holistic development of tribals.

Technology Perspective Capability Roadmap (TPCR) 2025 unveiled by Ministry of Defense

This **15-year plan** details the Armed Forces' **long-term modernization goals**, guiding industry in technology development and **promoting self-reliance**.

- The TPCR 2025 builds upon **previous editions (2013, 2018)** and significantly stresses on **indigenization**.

Key Highlights

- **Technological Impact on Warfare:** Cyber operations, info dominance, space wars, and advances in robotics, AI, and IT will shape future operations.
- **Focus on Public Private Partnership:** Stronger collaboration needed for indigenization and modernization of the Services.
- **Key technology requirements**
 - ⊕ **Artificial Intelligence, Machine Learning, and Big Data:** It includes Autonomous AI Based Unmanned Ground Vehicles (UGVs) for Mine Laying, Deep Fake Detection Software etc.
 - ⊕ **Unmanned and Autonomous Systems:** Includes Medium/High Altitude Long Endurance Remotely Piloted Aircraft (MALE/ HALE RPAs) with stealth capability, Drone Based Mine Delivery System etc.
 - ⊕ **Cyber and Electronic Warfare (EW):** Includes Integrated EW System, Future Ready Combat Vehicle (FRCV), Electronic Denial Bubble etc.
 - ⊕ **Nuclear Deterrence Measures:** Radiation detection tools, Decontamination System, Armoured Amphibious Dozer etc.
 - ⊕ **Naval systems:** It includes Aircraft Carriers, Next Generation Corvettes, Nuclear Propulsion systems etc.

Key Indian Projects for Defence Indigenization

- **MAKE projects:** It aims to achieve the objective of self-reliance by involving greater participation of the Indian industrial eco-system including the private sector.
 - ⊕ It includes **Make-I** (Government Funded), **Make-II** (Industry Funded) and **Make-III** (not designed/ developed indigenously) sub categories.
- **iDEX (Innovation for Defence Excellence):** Launched in 2018 to promote innovation via start-ups, MSMEs, academia and R&D.
- **Srijan Portal:** It is an online platform for indigenisation of high-value spares.

ICIMOD's Report on Clean Energy Potential in Hindu Kush Himalayas (HKH) Region

Report reveals that **Himalayan nations** are harnessing only **around 6% of their immense clean energy potential**, leaving a vast **untapped** opportunity in the region.

- HKH region encompasses eight nations i.e. **Afghanistan, Bangladesh, Bhutan, China, India, Myanmar, Nepal, and Pakistan.**

Current Status and Underutilization of Energy Potential:

- **Hydropower Capacity:** The region holds **882 GW potential**, but just **49% is harnessed**, mostly from **transboundary rivers**.
- **Solar and Wind Potential:** **Vast** non-hydro clean energy with **3 Terawatts** available from solar and wind.
 - ⊕ Renewable energy potential within the HKH region alone is over 3.5 TW.
- **Energy Mix:** While Bhutan and Nepal generate 100% electricity from renewables, fossil fuels dominate electricity generation in other HKH countries e.g. **77% in India.**

Barriers to Progress in Energy Co-operation

- **Climate Risks:** Shifting river flows, **glacial lake outburst floods (GLOFs)**, and extreme weather threatens nearly **two-thirds of existing and planned hydropower projects** in region.
- **Economic & Financial Hurdles:** High project costs, weak private investment, and heavy dependence on fossil fuel imports.
- **Other:** Funding & Infrastructure Gap, land acquisition, displacement, and damage to fragile mountain ecosystems, technology deficit, etc.

Recommendations for Regional Energy Cooperation

- **Regional Cooperation:** Strengthen cross-border **renewable energy trade** and integrate **disaster risk reduction** through **SAARC and BIMSTEC**.
- **Climate Resilience:** Build safeguards against **GLOFs, floods, and extreme weather** by weaving **disaster risk into energy planning**.
- **Diversification:** Go **beyond big dams**, invest in solar, wind, small hydro, and **smart solutions**.
- **Financial Innovation:** Bring in **private players**, tap **global climate funds**, and scale up tools like **green bonds**.

Tech Firms face Intellectual Property Rights Challenges in AI Development

A **copyright infringement** lawsuit has been filed by Authors against **Apple** for using their books in **AI training**.

- Such lawsuits filed against AI firms present **legal and ethical challenges in Intellectual Property Rights (IPR) enforcement in the AI age.**

Challenges Related to IPR Enforcement on AI-generated Content

- **Lack of Consent for Using Works in AI:** Use of copyright works **without authorization** in machine learning constitutes **copyright infringement**.
 - ⊕ However, this may impact **AI development and free flow of data** to improve **innovation in AI**.
- **Authorship or Ownership:** Legal debates over whether AI can be treated as the author or creator of innovations.
 - ⊕ **South Africa** issued a patent with the **AI tool DABUS** as the inventor.
- **Patentability of AI Systems:** It is **difficult to ascertain the originality** of the AI-generated work. E.g. deep fakes.
- **Ethical: Promoting AI Capabilities** in IPR challenges the originality of human intellect and leads to potential **erosion of human creativity**.

There is a need to **review IPR laws** to **balance the interests** of AI developers, preventing monopolies, and safeguarding original human expression.

Related Legal provisions India

- **The Indian Copyright Act of 1957:** Recognises a **person** behind the **computer-generated work** as the author of the work.
 - ⊕ However, the **non-human counterpart (software/AI system)** cannot be assigned **authorship**.
- **Parliamentary Standing Committee Recommendation:** Introduction of a **separate category** for protection of AI-based inventions as **IPRs** and a **review** of the **patent and copyright laws** to accommodate AI-related inventions.

Global

- **Countries such UK, New Zealand** provide for copyright protection of computer-generated works that do not have a human creator.

Also in News



Taliban Sanctions Committee (TSC)

Taliban foreign minister's India visit called off due to a travel ban imposed under **UN Security Council (UNSC) sanctions**.

About Taliban Sanctions Committee (TSC)

- **Established:** In 2011, when UNSC split the earlier "**1267 Committee**" into two – one for Al-Qaeda (1267/1989) and one specifically for the Taliban (1988).
- **Key Mandate:** Oversees sanctions against individuals, groups, and entities associated with the Taliban in relation to the situation in Afghanistan.
- **Members:** Comprises all 15 members of the Security Council.
- **Current Chair:** Pakistan



Beas River

Swollen Beas River floods Areas in **Punjab and Himachal Pradesh**

- The river overflowed, forcing **Bhakra Beas Management Board** to release excess water from **Pong dam**.

About Beas River

- **Origin:** Rises at **Beas Kund**, southern face of **Rohtang Pass (Kullu)**.
- **Course:** Flows 470 km **before joining Sutlej** at Harike, Punjab.
- **Tributaries:** Bain, Banganga, Luni and Uhal.
- **Landforms:** It forms the valleys of Kullu and Kangra.
- **Ancient name :** Vipasha (sanskrit)



Unified Payments Interface (UPI)

NPCI Raised Per-UPI Transaction Limit to Rs 5 Lakh and Cumulative Limit for 24 hrs to Rs 10 Lakh.

- **Applicability:** Only to Person-to-Merchant (P2M) transactions with verified merchants.
- **Exemption:** Person-to-Person (P2P) transaction limits will remain the same i.e. at Rs 1 lakh per day.

About UPI:

- It is an instant payment system and protocol developed by NPCI in the year 2016.
 - ⊕ Immediate **money transfer** through mobile device round the clock 24*7 and 365 days.
 - ⊕ Single **Click 2 Factor Authentication**.
- **Uniqueness:**
 - ⊕ NPCI was established under **Payment and Settlement Systems Act, 2007**.



Angikaar 2025 Campaign

The Union Minister for Housing and Urban Affairs launched the **Angikaar 2025 campaign** under **Pradhan Mantri Awas Yojana - Urban 2.0 (PMAY-U 2.0)**.

- **PMAY-U 2.0** was launched in **2024** to provide **all-weather pucca houses** to all eligible urban households with the vision of '**Housing for All**'.

About Angikaar 2025 Campaign

- It is a **2-month last-mile outreach campaign** to create awareness about **PMAY-U 2.0**



Functional Genomics

Functional genomics is improving **cancer treatment decisions**.

- It **reinforces cancer therapy** by illustrating how genetic variations operate within cells, **aiding in the identification of harmful or benign mutations**.

About Functional Genomics

- It is the study of how the **genome and its products**, including RNA and proteins, function and interact to affect different biological processes.
 - ⊕ The **genome** of an organism is the **complete genetic information** present in the cell of an organism.
- **Purpose:** To understand the relationship between genotype and phenotype.
 - ⊕ **Phenotype** refers to an individual's observable traits, such as height, eye color and blood type.



SWIFT Messaging Network

Indian banks have accelerated adoption of the **SWIFT messaging framework, ISO 20022**.

- The **ISO 20022** is an open global standard for financial information.

About SWIFT (Society for Worldwide Interbank Financial Telecommunication)

- **Genesis:** Founded in 1973 by 239 banks from 15 countries.
- **Purpose:** To streamline and secure cross-border financial communication.
 - ⊕ It is a secure messaging network **facilitating global financial transactions** between over 11,000 institutions **across 200 countries**.
- **Headquarter:** Belgium.



WHO Model Lists of Essential Medicines

WHO published an update to its **Model Lists of Essential Medicines (EML)** adding new treatments for **cancers, diabetes and obesity**.

About WHO Model Lists of Essential Medicines

- The List acts like a **register of minimum medicine needs** for every health-care system.
- It aims at ensuring all-time **availability of high priority drugs** for all people, guiding physicians to evidence-based and rational prescribing.
- It is **updated every two years** by the Expert Committee on Selection and Use of Essential Medicines.
- The **first** Essential Medicines List was **published in 1977**.



MPOX (Monkeypox)

WHO chief says mpox **outbreak in Africa** is no longer a global health emergency.

About Mpx

- **Type:** Viral zoonotic disease caused by **Monkeypox virus (Orthopoxvirus genus)**.
- **Transmission:** Close contact with infected **people, animals, or contaminated objects**.
- **Types of Mpx:**
 - ⊕ **Clade I:** Found in Central Africa; usually more severe, but recent outbreaks less deadly.
 - ⊕ **Clade II:** Found in East Africa; cause of the global outbreak since 2022; generally milder and less fatal.
- **Incubation Period:** 5–21 days.
- **Symptoms:** Fever, headache, muscle aches, fatigue, swollen lymph nodes.
- **Global Concern:** Declared a **Public Health Emergency of International Concern (PHEIC)** by WHO in 2022.
- There is no **proven treatment** for Mpx.

Place in News



Finland (Capital: Helsinki)

Finland joins declaration on two-state solution between Israel, Palestinians.

Political Features

- **Location:** Northern Europe.
- **Bordering Nations:** Norway (north), Russia (east), Sweden (northwest).
- **Bordering Water Bodies:** Gulf of Finland (south), Gulf of Bothnia (southwest), Baltic Sea.

Geographical features

- **Terrain:** Heavily forested, dotted with ~56,000 lakes and vast marshlands.
- **Major Regions:** Coastal plain, lake district, highlands of Lapland.
- **Highest Point:** Mount Halti (1,328 m).
- **Arctic Features:** One-third of land lies north of the Arctic Circle.



AHMEDABAD



BHOPAL



CHANDIGARH



DELHI



JAIPUR



JODHPUR



GUWAHATI



HYDERABAD



LUCKNOW



PRAYAGRAJ



PUNE



RANCHI



SIKAR