

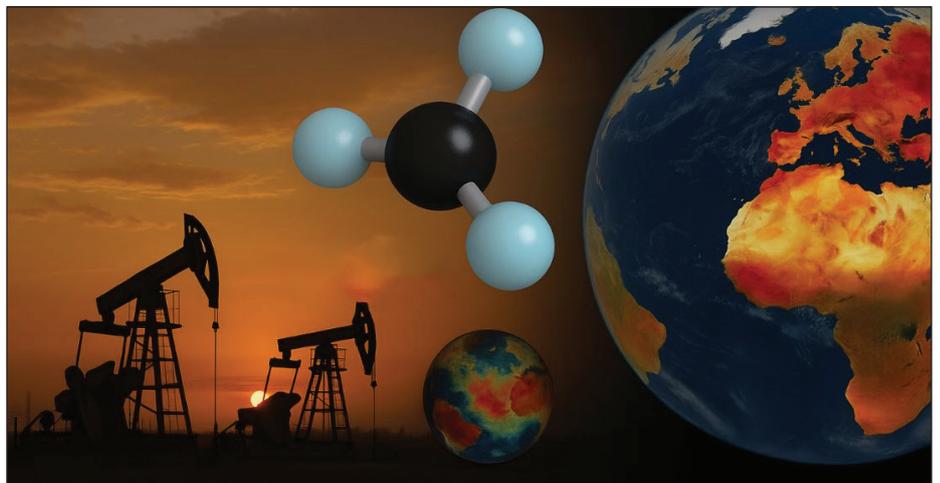


GLOBAL METHANE HOTSPOTS : UN REPORT AT COP 30

According to a UN report presented at COP30 in Belem (Brazil) on November 17, 2025, India has emerged as one of the major sources of methane emissions caused by crop-residue burning. India ranks as the world's third-largest methane emitter, following China and the United States, with annual emissions of about 31 million tonnes. G20 nations (including India) are responsible for nearly 65% of global methane emissions, contributing to a total worldwide output of around 360 million tonnes annually.

Methane Emissions in India :

- Agriculture is the largest source of methane in India, mainly from livestock (enteric fermentation, manure) and rice cultivation.
- Crop-residue burning has become a major emerging hotspot for methane emissions.
- Waste-burning emissions increased significantly from 4.5 million tonnes in 1995 to 7.4 million tonnes in 2020 (64% rise) compared to a 43% global increase.
- In 2020, India emitted 20 million tonnes of methane from agriculture and 4.5 million tonnes from the energy sector.



ABOUT METHANE:

■ Methane (CH₄) is the simplest hydrocarbon, consisting of one carbon and four hydrogen atoms. It is colourless, odourless, tasteless, lighter than air, and burns with a blue flame, producing CO₂ and H₂O during complete combustion. It is the primary component of natural gas and widely used as a fuel. (Space Rocket fuel)

■ **Global Warming Potential :** Over a 20 year period, methane is 84 times more potent than CO₂ in trapping heat, Although highly potent, it remains in the atmosphere for a shorter duration than CO₂.

■ **Climate Impact and Air Pollution :** Methane is responsible for about 30% of the global temperature rise since the pre industrial period, Methane contributes to the formation of ground level ozone, a harmful pollutant affecting health and crops.

Global Methane Initiative (GMI) :

- ▶ Methane Alert and Response System (MARS) : A data-to-action system designed to deliver reliable, real-time & actionable methane-emission data for mitigation, Announced at COP27 (2022), with the pilot phase launched in January 2023, Utilizes satellite-based monitoring to detect and track major methane emission hotspots globally.
- ▶ International Methane Emissions Observatory (IMEO) : Launched at the G20 Leaders' Summit in 2021, Initial focus on methane emissions from the fossil fuel sector, Linked to OGMP 2.0, UNEP's flagship programme aimed at improving accuracy and transparency in methane reporting within the oil and gas industry.

Tejas jet crashes: Dubai Air Show

An Indian Air Force Tejas fighter jet crashed during the Dubai Air Show at Al Maktoum International Airport, killing Wing Commander Namansh Syal after it went out of control and caught fire on impact. Defence minister inaugurated the third production line of Tejas Light Combat Aircraft (LCA) Mk1A was recently inaugurated by Defence minister at Hindustan Aeronautics Limited (HAL), Nashik.



About Tejas Light Combat Aircraft (LCA)-Mk1A :

- ▶▶ Designed by the Aeronautical Development Agency (ADA) of DRDO and produced by Hindustan Aeronautics Limited (HAL).
- ▶▶ Entered production for the Indian Air Force (IAF) in 2024 after extensive flight trials and certification. Enabling Speeds up to Mach 1.8, Avionics: Equipped with Active Electronically Scanned Array (AESA) radar, Electronic Warfare Suite, and Onboard Oxygen Generation System
- ▶▶ Weapons Integration: Can carry air-to-air, air-to-ground, and precision-guided munitions, including Beyond Visual Range (BVR) missiles.
- ▶▶ Payload capacity over 4,000 kg across eight external hardpoints; combat radius around 500 km, ferry range Up to 1,700 km.



Variants of Tejas Aircraft :

- Tejas Trainer :** 2-seater operational conversion trainer for training air force pilots.
 - LCA Navy :** Twin- and single-seat carrier-capable for the Indian Navy.
 - LCA Tejas Navy MK2 :** This is phase 2 of the LCA Navy variant.
 - LCA Tejas Mk-1A :** This is an improvement over the LCA Tejas Mk1 with a higher thrust engine.
- Note : Read about 1. Rafael 2. MiG-29 3. Tejas MK-1.

Dugong : Species in News

- A recent IUCN report released at the Conservation Congress in Abu Dhabi warns of a growing threat to India's dugong population.
- Dugongs are plump marine mammals related to manatees, with a dolphin-like fluke tail; they grow up to 10 feet long and weigh about 420 kg.
- They feed exclusively on seagrass species like Halophila, Thalassia, and Halodule, earning the names "sea cows" and "farmers of the sea."
- Dugongs consume 30 to 40 kg of seagrass daily and inhabit shallow, warm coastal waters less than 10 m deep bays, lagoons, and estuaries.
- In India, they are found mainly in the Gulf of Kutch, Gulf of Mannar (Palk Bay), and the Andaman & Nicobar Islands.
- The IUCN report 'A Global Assessment of Dugong Status, dugong survival in the Gulf of Kutch and Andaman & Nicobar Islands is highly uncertain, while populations in the Gulf of Mannar (Palk Bay) have sharply declined.



Hidden Cost of Polluted Groundwater: BIHAR

Field evidence from Bihar : Uranium found in breastmilk of lactating mothers across Bihar.

Punjab, Gujarat, Telangana, and Haryana indicated a sharp rise in toxic contamination, including fluoride-linked deformities, arsenic poisoning, and uranium beyond safe limits. The scale is unprecedented: nearly 600 million Indians rely on groundwater.

It is no longer limited to some places, it is now a national issue. Requiring urgent regulation, technological interventions, and sustainable water management.

Causes Behind Rising

Groundwater Contamination :

▶▶ Excessive Groundwater Extraction :

Agriculture uses over 60% of groundwater, causing over-extraction and falling water tables. Reduced canal irrigation increases dependence on tube wells, concentrating pollutants. Deep borewell drilling may cause heavy metals from deeper layers to move upward, eventually entering the main water stream.

▶▶ Agricultural Chemical Runoff :

Overuse of fertilizers and pesticides leads to nitrate seepage into aquifers. Toxic metals like arsenic, fluoride, and uranium exceed safe limits, causing severe health issues.

▶▶ Industrial & Sewage Pollution :

Untreated industrial waste and sewage contaminate groundwater beyond local areas. Heavy metal discharge from factories pollutes aquifers in rural and semi urban zones.

Ground water pollution : impact on agriculture and environment

● Falling Farm Productivity :

Contaminated irrigation water lowers crop yields over time. Heavy metals



Impact of Groundwater Pollution : Rising Health Burden

- **Emerging concern :** Uranium detected in the breastmilk of mothers in Bihar, raising alarm for similar findings in other states.
- **Severe health impacts:** Fluorosis, skeletal deformities, and kidney damage caused by toxic metals in drinking water.
- **Children hit hardest:** Early exposure reduces growth, learning ability, and future productivity. And families spend more on

Health treatment and clean water.

- **Inequality widens:** Wealthier households manage better; poorer families lack access to alternative water sources.
- **Intergenerational Effects :** Cognitive harm, Arsenic and fluoride exposure affects education outcomes.
- **lower economic mobility :** Chronic illness lowers earning potential across generations.

degrade soil, reducing both crop diversity and nutritional value.

- **Threat to Agri Exports :** Global buyers demand strict quality standards; contamination risks rejection.
- **The Over-Extraction Trap :** Falling water tables push farmers to drill deeper, pulling up more contaminants.
- **Excess fertilizer use :** alters soil chemistry, reducing long-term sustainability.

Way forward :

▶ Real Time Groundwater

Monitoring : Use Tech for data-driven planning (Internet of Things, GIS mapping), Deploy IoT-based monitoring devices (as planned by BWSSB, Bengaluru) to track pumping activity, water depth, and contamination levels. Create an open-access digital platform so communities know the quality of the water they drink and use for irrigation.

▶ Stronger Industrial & Sewage Regulation :

Enforce strict effluent norms to stop industrial leakages. Expand sewage treatment capacity, especially in urban belts. Promote PPP - model R&D in wastewater and sewerage treatment (as initiated by BWSSB, Bengaluru).

▶ Agricultural Policy Reform :

Reduce dependence on water-intensive crops; promote pulses, maize, and oilseeds. Expand micro-irrigation (drip, sprinkler) to lower groundwater stress.

▶ Localised Water Purification :

Set up community level purification plants in highly contaminated regions.

[PYQ UPSC 2024] Q. The world is facing an acute shortage of clean and safe freshwater. What are the alternative technologies which can solve this crisis? Briefly discuss any three such technologies citing their key merits and demerits.

Constitution Day 2025:

Constitution Day 2025 was observed on 26th November with the release of the Constitution of India in nine languages, reaffirming the nation's commitment to constitutional values and democratic principles. The Indian Constitution controls governmental power, protects the freedom and dignity of every citizen, and maintains the sovereignty of the nation.

About Constitution Day:

▶ It marks the adoption of the Indian Constitution on 26th November 1949, symbolizing India's transformation into a sovereign, democratic republic.

▶ The Constituent Assembly

convened for the last time on 26th November 1949, when 284 members signed the final draft of the Constitution.

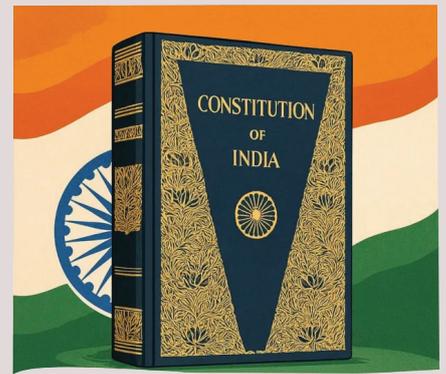
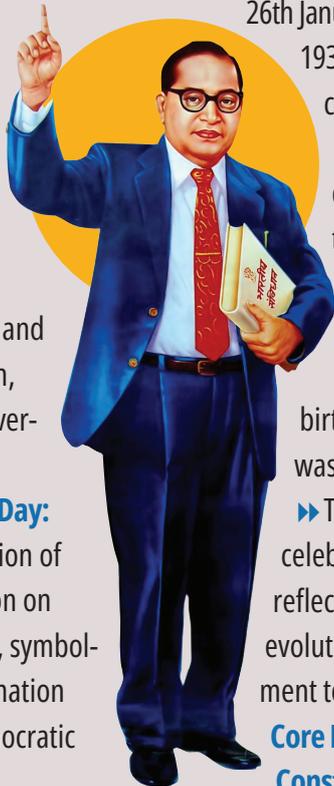
▶ The Constitution came into effect on 26th January 1950, chosen to honour the 1930 Poorna Swaraj resolution now celebrated as Republic Day.

▶ Constitution Day was officially designated in 2015 by the Government of India under the Ministry of Social Justice and Empowerment, coinciding with Dr. B.R. Ambedkar's 125th birth anniversary; previously, it was observed as Law Day.

▶ The day serves as a national celebration of constitutional values, reflecting on India's democratic evolution and reinforcing the commitment to its guiding principles.

Core Features of the Constitution :

▶ The Constitution is the



supreme law of India and upholds equality before the law for all citizens.

▶ It establishes a parliamentary system of government within a federal framework.

▶ Dr. B. R. Ambedkar, the Chairman of the Drafting Committee, is regarded as the chief architect of the Indian Constitution.

▶ The Constitution empowers Parliament to amend it whenever necessary.

▶ It assigns distinct responsibilities to the three organs of the state Legislature, Executive, and Judiciary and grants the Judiciary the power to strike down any governmental action that violates the Constitution.

Driving Dreams, Empowering Future

African Grey Parrot :



A series of RTI applications filed by The Hindu across 19 States/UTs revealed that most State Forest Departments have no records of breeders, pet shops, or ownership registrations for the African Grey Parrot. Only Kerala reported receiving 17 breeder licence applications through the PARIVESH portal.

About African Grey Parrot : (Psittacus erithacus)

- **IUCN Status:** Endangered
- **CITES Status:** Appendix I (Highest level of protection; commercial international trade highly restricted)
- **WPA 1972:** Listed under Schedule IV

(post-2022 amendments)

- **Legal & Regulatory Framework (India):** Living Animal Species (Reporting and Registration) Rules, 2024
- Mandatory registration of all exotic live species on **PARIVESH 2.0**. - Applies to: Pet owners, Pet shops and Breeders.
- **Breeders of Species Licence Rules, 2023** - To breed any **CITES Appendix I species**.
- **Breeding Licence** from State Chief Wildlife Warden
- **CITES** : Import Permit
- **DGFT** : Import Licence Number
- **NOC from State Chief Wildlife Warden** prior to import.

CHIEF JUSTICE OF INDIA (CJI) : JUSTICE SURYA KANT

Justice Surya Kant took oath as the **53rd Chief Justice of India (CJI)** on November 24, 2025, administered by President Droupadi Murmu at Rashtrapati Bhavan.

The Chief Justice of India (CJI) is widely regarded as the **guardian, interpreter, and protector of the Constitution**.

Major Cases Involving Justice Surya Kant :

- Abrogation of Article 370 (J&K's special status removed).
- Electoral Bonds Case : Bench struck down the scheme as unconstitutional.
- Pegasus spyware case.
- Suspension of sedition law deliberations.



Procedure for Selection of the Chief Justice of India (CJI) :

» **Constitutional Basis** : Governed by Article 124(2).

» President of India appoints the CJI.

» **Seniority Convention** : By tradition, the senior most Supreme Court judge becomes the next CJI, on the basis of Seniority - date of appointment to the Supreme Court.

● **Role of the Collegium** : When the CJI's post is about to fall vacant, The outgoing CJI recommends the senior-most judge's name to the Government. Only the CJI's recommendation is needed for this appointment.

● **Role of the Law Ministry** : Processes the recommendation, Sends it to the Prime Minister, who advises the President.

● **Appointment** : The President appoints the new CJI, appointment is published in the Official Gazette.

● **Oath of Office** : Administered by the President at Rashtrapati Bhavan. Oath under Article 124(6).

● **Tenure** : CJI serves until 65 years of age. CJI can resign earlier by writing to the President.

The G20 Summit 2025



First-ever G20 Summit held in Africa, Johannesburg, South Africa
Theme: Solidarity, Equality, Sustainability.
G20 Declaration adopted despite a U.S. boycott.

Key Highlights of the Declaration :

- Disaster Resilience & Debt Relief : People-centred disaster response.
- Support for debt-burdened nations.
- Focus on sustainable industrialisation and job creation.
- Climate & Energy Transition : Push for renewable expansion.
- Endorsed G20 Critical Minerals Framework (voluntary).
- Reaffirmed Paris 1.5°C goal and global biodiversity commitments.
- Institutional Reform : Emphasis on multilateral cooperation rooted in Ubuntu (shared humanity).
- Women's Empowerment : Reaffirmed commitment to empower women and girls.
- Counterterrorism : Condemned terrorism in all forms.

Major Ideas Proposed by India :

- » Global Traditional Knowledge Repository : Platform for shared human wisdom.
- » Africa Skills Multiplier : Train 1 million certified trainers to boost youth skills.
- » Global Healthcare Response Team : Rapid-response team for global health crises.
- » Open Satellite Data Partnership : Sharing satellite data for agriculture, fisheries, and disaster response.
- » Critical Minerals Circularity Initiative : Recycling, innovation, supply-chain security.

About G20 Summit :

» Founded: 1999, in response to the 1997–98 Asian Financial Crisis, 21 total members.

» Argentina, Australia, Brazil, Canada, China, France, Germany, India, Indonesia, Italy, Japan, Republic of Korea, Mexico, Russia, Saudi Arabia, South Africa, Türkiye, United Kingdom, United States, European Union, African Union.

Purpose :

To shape and strengthen global economic governance.

To coordinate policies on major international economic and financial issues.

Annual Summit:

- Held once a year under a rotating Presidency.
- Presidency is supported by the Troika (Previous, Current, Incoming Presidencies).
- Current Troika (under South Africa's Presidency):
Brazil – South Africa – United States.