






Parliamentary Committee highlights issues in India's Water Management

Recently, **Parliamentary Standing Committee on Water Resources** in a report highlighted that despite significant technological advancements and substantial investments, India continues to face **severe socio-economic losses due to floods and water scarcity**.

Key Themes and Recommendations

Themes	Current Status/ Issues	Recommendations
 Flood Forecasting Modernization and Expansion	Central Water Commission (CWC) operates 340 flood forecasting sites covering 22 states and 2 UTs, which is planned to increase to around 375 by 2026	Upgrade the present system to address challenges in flood forecasting due to climate change .
 Interlinking of Rivers Program	<ul style="list-style-type: none"> 30 link projects identified. Lack of consensus among States is a major obstacle as Water is a State subject under Schedule VII. 	Conduct detailed studies on benefits of the projects enhancing awareness amongst the States concerned and expediting implementation of link projects.
 Dam Safety	Out of over 6,000 dams, only 459 have Emergency Action Plans (EAP) . Dam Safety Act, 2021 mandates EAP preparation within five years of enactment.	National Dam Safety Authority should constantly engage with dam owners for preparation of EAP.
 Rainwater Harvesting and Water Conservation	'Jal Shakti Abhiyan: Catch the Rain' and 'Jal Sanchay Jan Bhagidari' promote community-driven water conservation and groundwater recharge. Increase of 11.36 billion cubic meters (BCM) in 2024 with respect to 2017. (Dynamic Ground Water Resources Assessment Report 2024)	Provide dedicated financial grants to States/UTs for Rainwater Harvesting to boost and enhance support for and enhance support rainwater harvesting initiatives.
 Proactive and Integrated approaches	New Draft National Water Policy is under consideration.	<ul style="list-style-type: none"> Cross-Border Flooding Management as an independent initiative coordinated between Ministry of Jal Shakti and Ministry of External Affairs. Inclusion of local MP/MLA in the bodies under National Mission for Clean Ganga to ensure more cohesive outcome.

Stanford Scientists Create Password-Protected Mind Reading Brain-Computer Interface (BCI)

The innovation ensures brain-computer interfaces respect **user privacy by requiring mental passwords** before **decoding thoughts into text or audio**.

What is a Brain-Computer Interface?

- A BCI enables **direct brain-to-device communication**, translating neural signals into commands.
 - ⊕ This **bypasses muscular control**, allowing users to operate applications with thought alone.
- BCIs **acquire brain activity (via invasive implants or non-invasive wearables)**, process signals, and send commands, with **feedback crucial for user adaptation**.

Key Applications of BCIs

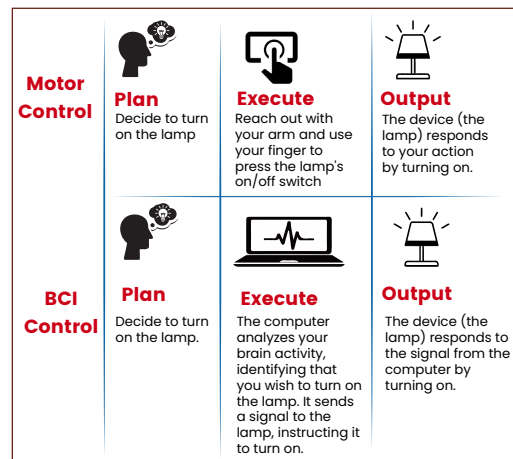
- **Medical:** Restoring mobility and speech for patients with paralysis, ALS, or stroke.
- **Mental Wellness:** Providing feedback for mental health management.
- **Gaming/Industry:** Enabling immersive gaming and decision support systems.
- **Cognitive Enhancement:** Potential for enhancing memory, attention, and decision making.

Key Concerns Related to BCIs

- **Cybersecurity:** Risks like brain tapping (intercepting private thoughts/beliefs), misleading stimuli attacks (mind control), and adversarial attacks on AI components.
- **Privacy:** Protecting sensitive neural data from unauthorized access.
- **Cognitive Liberty:** Threat to an individual's mental self-determination.
- **Health Impacts:** Unclear long-term consequences of BCI use.
- **Regulatory & Cost:** Lack of standardized regulations and high costs limit accessibility.

Way Forward

- **Robust Regulations:** Implementing tailored data privacy laws, ensuring transparency and informed consent.
- **Enhanced Security:** Developing BCI-specific access controls and defense strategies.
- **Establishing neurorights:** To **safeguard mental privacy**, cognitive autonomy, and freedom of thought of individuals **from exploitation and unauthorized interference**.



Global Plastics Treaty talks end without a deal

UN Environment Assembly in 2022 adopted a resolution to create a **legally binding treaty to end plastic pollution**, with a mandate to address the entire **lifecycle of plastics** (from design to disposal). Geneva talks (**INC-5.2, Aug 2025**) intended as the final **round of negotiations** to adopt the treaty.

- **Talks failed as consensus could not be reached on key issues** such as whether the treaty should impose caps on new plastic production or put its focus instead on waste management, reuse and improved design, among others.

Need for Global Plastic Treaty

- **Plastic production:** More than 460 million metric tons/year.
- **Recycled:** Only 9%
- **Pollution:** 20 million tons enter the environment annually.
- **Future projections**
 - ⊕ By 2060, plastic waste is projected to triple.
 - ⊕ **Economic damage worth: \$281 trillion (2016–2040).**
- **Environmental and Health impact**
 - ⊕ Plastics contribute to 4% of global GHG emissions.
 - ⊕ Major driver of **biodiversity loss** and ecosystem degradation.
 - ⊕ **Microplastics** infiltrating oceans and food chains.

Conclusion

Plastic pollution has become a transboundary crisis akin to climate change, demanding a **coordinated global response**. An inclusive treaty can set global standards, unlock essential financing for circular solutions, and protect ecosystems, human health, and livelihoods.

India's Initiatives to control Plastic Pollution

- **Solid Waste Management Rules, 2016:** Enforcing duty on manufacturers for disposal of plastic waste.
- **Plastic Waste Management Rules, 2016:** To improve management of Plastic waste by focusing on segregation, recycling, Extended Producer Responsibility, etc.
 - ⊕ **Ban on identified single use plastic items (2022)**
- **Mandatory Jute Packaging Act, 2010:** It has provisions on **mandatory use of jute packaging**, as an alternative to plastic packaging.

Global Initiatives

- **UN Clean Seas Campaign:** Promotes the right to a healthy environment, including plastic-free oceans.
- **Basel Convention:** Includes a set of actions for preventing and minimizing the generation of plastic waste; reducing the risk from hazardous constituents in plastic waste, etc.

Nationwide rollout of E20 raises concerns among Consumers

Government started **rolling out 20% ethanol-blended petrol (E20) in April 2025** which has left vehicle-owners worried about the impact on their older vehicles and about a surge in maintenance costs.

- **Union Ministry of Petroleum and Natural Gas**, however, clarified that **E20 enhances vehicle performance** through a higher octane rating and that any perceived loss in fuel efficiency is often due to other factors, assuring the public of **vehicle and insurance compatibility**.

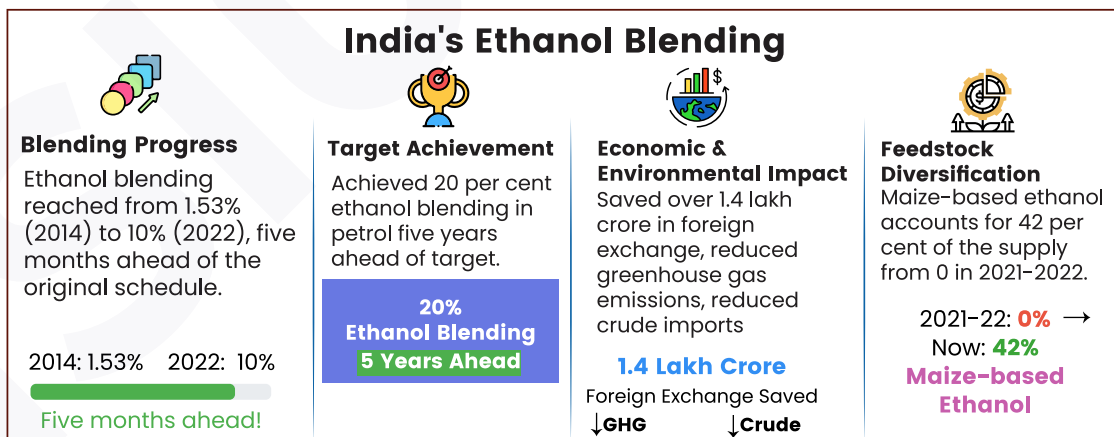
Key concerns of EBP regarding vehicular compatibility

- **Materials compatibility:** Ethanol can **degrade rubber, plastics, and metals in older or non-upgraded vehicles**, causing leaks and corrosion.

- **Fuel System issues:** Ethanol is prone to **water absorption and phase separation**, increasing the risk of **clogging and fuel system failures**.
- **Engine combustion and Control:** Older or basic engines may **struggle with air-fuel adjustments on ethanol blends**, resulting in drivability and emissions problems.
- **Emissions control:** High ethanol blends **can increase NOx and aldehyde emissions if engines** and materials are not designed for them.
- **Legacy and regional fleet concerns:** Many older vehicles and two-wheelers **lack ethanol-compatible parts**, making them **less tolerant to higher blends**.

About Ethanol Blended Petrol (EBP) Programme

- **Objective:** Launched in **2003 to promote blending of ethanol in petrol**.
- **Ministry:** Ministry of Petroleum and Natural Gas.
- **Target:** 20% ethanol **blending in petrol by 2025-26**, advanced from the initial timeline of 2030.



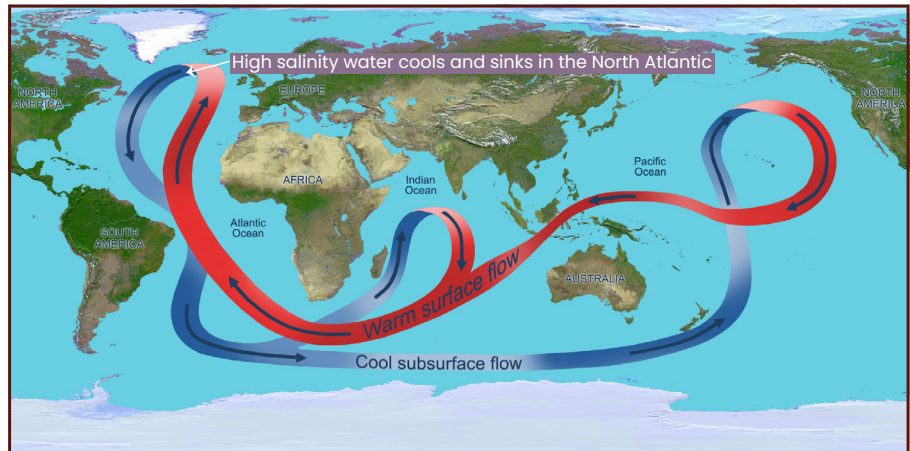
Scientists Reconstruct 12,000 Years of Atlantic Meridional Overturning Circulation (AMOC)

Their findings indicate that while the AMOC experienced natural fluctuations, it largely remained stable during this time i.e. **Holocene Epoch**.

- However, future projections suggest **human-caused climate change** could lead to an **unprecedented weakening of the AMOC**.

About AMOC

- A system of ocean currents **that circulates water within the Atlantic Ocean**, bringing warm water north and cold water south.
- **Driving Force:** Differences in water temperature and salinity.
 - ⊕ The warm tropical water moves towards the poles, becomes cool & dense, **sinks in the North Atlantic and flows south before warming** and resurfacing thus restarting the cycle.



➤ Significance:

- ⊕ **Weather and Monsoon:** Influences rainfall patterns, including Indian monsoon and rainfall in Sahel region of West Africa.
- ⊕ **Heat Transport:** From the tropics to higher latitudes, moderating Europe's climate.
- ⊕ **Carbon uptake:** It transports dense and carbon-rich water masses from the surface to the deep ocean.
- **Concerns: Potential slowing down of AMOC due to** increased influx of freshwater from melting Greenland ice sheet and Arctic amplification due to global warming.
 - ⊕ Freshwater **reduces density of North Atlantic waters**, hindering their ability to sink and drive the circulation.

Potential Impacts of AMOC Slowdown:

- **AMOC carbon feedback:** Reduction of ocean carbon uptake, which leads to more atmospheric CO2 and more global warming.
- **Extreme events: E.g.** Colder temperatures in Europe, Could shift South Africa's rain belt (triggering droughts for millions), Sea level rise (e.g. across the U.S. East Coast).
- **Fewer nutrients transport:** Could affect all kinds of sea life, from plankton and sea birds to fish and whales.

Also In News



Sustainable Aviation Fuel

Indian Oil's Panipat refinery recently received **International Civil Aviation Organization's** certification for SAF production from used cooking oil.

About Sustainable Aviation Fuel (SAF)

- SAF, often known as jet biofuel or aviation bio-kerosene, closely resembles conventional jet fuels derived from crude oil.
 - ⊕ However, SAF is **derived from diverse and renewable biomass sources**.
- **Feedstock for SAF Production:** Oil seed plants and energy grasses, Municipal solid waste, Industrial carbon monoxide waste gas, Agricultural and forestry residue, Fats, oils, and greases from cooking waste and meat production etc.

Benefits

- **Engine and infrastructure compatibility:** Blended with conventional Jet fuel, it can be used in existing aircrafts.
- **Fewer GHG emissions, More flexibility.**

Barriers: High costs of production than conventional fuels, availability and sustainability of feedstock etc.



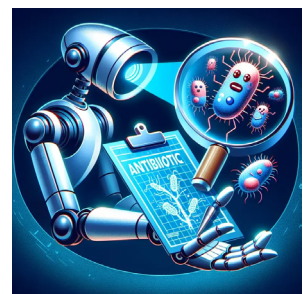
AI-designed Antibiotics

MIT researchers used **Generative AI** to design completely novel **antibiotics** from scratch.

- Researchers have designed novel antibiotics effective against: **Neisseria gonorrhoeae** (causes drug-resistant gonorrhea), **Methicillin-resistant Staphylococcus Aureus (MRSA)**.

About AI-Designed Antibiotics

- **Methodology:** Over 36 million **hypothetical compounds** were generated using AI and screened computationally.
- It allowed the researchers to **generate and evaluate theoretical compounds** that have never been seen before.
- **Significance:** Opens new avenues for **drug discovery** using AI, potential applications for other **pathogens** like **Mycobacterium tuberculosis**, etc.





Mount Elbrus

Recently an Arunachalee Mountaineer has **scaled Mt. Elbrus**.

About Mt Elbrus

- It is highest peak (Elevation: 5,642m) of **Caucasus Mountains and a dormant volcano** with twin summits.
- **Location:** In the western Caucasus Mountains of **southwestern Russia**.
- **Highest peak of Europe and Russia:** Part of the Seven Summits (the highest mountains on each continent).



Asset Reconstruction Companies

ARCs significantly increased their acquisition of retail loan portfolios in the first quarter of FY26.

About ARC:

- It is a company incorporated under **Companies Act** and **registered with RBI under** Securitisation and Reconstruction of Financial Assets and Enforcement of Security Interest (**SARFAESI Act, 2002**).
- **Objective:** To facilitate securitisation and asset reconstruction of non-performing assets thereby earliest resolution and bringing liquidity in the system.
 - ⊕ ARCs buy the **Non-Performing Assets (NPAs) or bad assets from banks and financial institutions** so that the latter can clean up their balance sheets.
- **Examples:** National Asset Reconstruction Company Limited (NARCL), India Debt Resolution Company Ltd etc.



Off-budget borrowing

States to ease off-budget borrowings amid fiscal discipline push.
About Off-budget borrowing (OBBs)

- **Definition:** Government borrowing that is **not explicitly included in the official budget** presented to the public or approved by the legislature.
- These borrowings are typically **raised through government-controlled Public Sector Undertakings (PSUs), or entities** which depend heavily on budgetary support via equity infusions, loans, grants, or subsidies for their operations.
- **Purpose:** Keeps borrowings **off the fiscal deficit books**, creating an impression of prudence.
- **Concerns:** Reduces **transparency, accountability**, and conceals true debt burden.



E-Jagriti Platform

10 States along with National Consumer Disputes Redressal Commission have recorded a disposal rate of over 100 percent on E-Jagriti platform in July 2025.

About E-Jagriti platform

- **Launched on:** 1st January, 2025
- **Ministry:** Ministry of Consumer Affairs, Food, and Public Distribution.
- **Objective:** Computerization and networking of all Consumer Commissions at the national, state, and district levels to ensure transparency, efficiency, and speedy resolution of consumer disputes.
 - ⊕ e-Jagriti **enables consumers to file complaints**, track case statuses, and access judgments **online**.

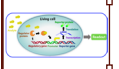


Operation Sadbhavana

Indian Army inaugurates '**Arogyam health & wellness centre**' in Tawang under **Operation Sadbhavana**.

About Operation Sadbhavana

- **Launched by:** Indian Army in 1998 in Jammu & Kashmir.
- **Aim:** Apply "healing touch" and Win Hearts and Minds (WHAM) of people affected by terrorism and insurgency.
- **Purpose:** **Extended Army's role** from border defence & counter-insurgency **to development and community welfare**.
- **Focus Areas:** Education, healthcare, women empowerment, skill development, sports, infrastructure, ecology & environment.



Whole-cell Biosensor

Recently, Scientists turned E. coli bacteria into a self-powered chemical biosensor that interface directly with electronics.

- Biosensor is an **analytical device** that **converts a biological signal** into a **detectable electrical signal**.

About Whole-cell Biosensors

- They use **living microorganisms** (e.g., genetically engineered bacteria) which **can maintain and repair themselves** and operate inside contaminated samples.
 - ⊕ **Traditional biosensors**, such as those based on enzymes, are often fragile, costly and/or have a slow response time in complex environments.
- **Application:** Pollution detection in agriculture, environmental and in biomedical diagnostics, etc.

Place in News



Algeria (Capital: Algiers)

Earthquake of 5.8 magnitude strikes Algeria's Tebessa province.

Political Features

- **Location:** Largest country in **North Africa**.
- **Land Boundary:** Tunisia (Northeast), Libya (East), Niger & Mali (South), Mauritania & Western Sahara (Southwest), Morocco (West).
- **Maritime Boundary:** Mediterranean Sea (North).

Geographical Features

- **Relief:** Tell in the North, **the highlands and the Saharan Atlas** in the center, and **the Sahara** in the South.
- **Climate:** Mediterranean in north to desert type in south. **Tlemcen:** Known for Moorish architecture, **called "city of cherries."**
- **M'zab Valley:** 5 fortified oases towns is a **UNESCO World Heritage site**.



AHMEDABAD



BENGALURU



BHOPAL



CHANDIGARH



DELHI



GUWAHATI



HYDERABAD



JAIPUR



JODHPUR



LUCKNOW



PRAYAGRAJ



PUNE



RANCHI