NEXT IAS

DAILY CURRENT AFFAIRS (DCA)

Time: 45 Min

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RECUSALS BY JUDGES

Context

- Recently, a Supreme Court judge **recused from a bail case** after many adjournments without giving an explanation.

Recusal

- **Recusal** means **a judge voluntarily withdrawing from hearing a case** when there is a **chance of bias or conflict of interest.**
- **The main purpose is to ensure:**
  - Judges remain independent and impartial.
  - The public has confidence in the fairness of justice.
- **It is based on the principle:** "Justice must not only be done, but must also be seen to be done."
- In India, **there are no formal rules governing recusals by judges**. Judges who choose to opt out of a case **can do so without giving any reason.**

Position in Indian Law

- Indian courts recognize **"reasonable likelihood of bias"** as the standard.
- **There are two kinds of recusals** — automatic recusal where a judge himself withdraws from the case, or when a party raises a plea for recusal highlighting the possibility of bias or personal interest of the judge in the case.
  - **The decision to recuse rests solely** on the conscience and discretion of the **judge** and **no party can compel a judge** to withdraw from a case.
- If a judge recuses himself, the case is listed before the **Chief Justice for allotment to an alternate Bench.**

Various Interpretations of Supreme Court

- **India has no codified rules governing recusals,** although several Supreme Court judgments have dealt with the issue.
- **Important cases:**
  - **Ranjit Thakur v. Union of India (1987):** Court said even a "reasonable apprehension of bias" is enough for recusal.
  - **State of West Bengal v. Shivananda Pathak (1998):** Bias destroys fairness; justice becomes meaningless if bias is present.
  - **Formulating a more definite rule in Supreme Court Advocates-on-Record Association v. Union of India (2015)**, the Court observed that where a judge has a pecuniary interest, no further inquiry is needed as to whether there was a 'real danger' or 'reasonable suspicion' of bias.

Recusal in Global Jurisdictions

- **The United States** has a well-defined law on recusals — Title 28 of the U.S. Code details the grounds for 'disqualification of justice, judge, or magistrate judge'.
  - This specifies three grounds for recusal— financial or corporate interest, a case in which the judge was a material witness or a lawyer, and a relationship to a party.
- **The United Kingdom's law on judicial recusals** evolved through judicial pronouncements.
  - In the landmark case of R v. Gough, the 'real danger' test was adopted as the applicable standard based one of which recusal orders need to be passed.
  - The test entailed disqualification solely on substantive and tangible evidence which conclusively highlights the presence of judicial bias and prejudice.

Problems in the Current Indian System

- **No formal rules:** Judges can recuse without giving any explanation.
- **Possibility of misuse:**
  - Lawyers or parties may pressure judges to recuse to get a "favourable bench".
  - Recusals may be used as a tactic to delay cases.
- **Public distrust:** If reasons are not given, people suspect hidden bias or external pressure.
- **Delays in justice:** Sudden recusals after many adjournments waste court's time and harm litigants.

Recommendations

- **Frame codified rules:** India should have a written law or set of guidelines on recusals.
- **Judges should record reasons:** Even short reasons improve transparency and trust.
- **Uniform standards:** Clear categories such as financial conflict, family ties, political pressure, or prior professional links.
- **Committee approach:** Rules should be framed by a committee of judges and lawyers to ensure balance.

Conclusion

- Recusal is important to maintain judicial fairness and credibility.
- But in India, uncodified rules, lack of transparency, and frequent unexplained recusals have weakened the purpose.
- Clear written rules, and balance between independence and accountability is necessary to maintain judicial fairness.

Source: TH

EXEMPTIONS FOR MINERAL EXPLORATION DRILLING ON FOREST LAND

Context

- The Union Environment Ministry's **Forest Advisory Committee (FAC)** has approved enhanced exemptions for mineral exploration drilling in forest areas.
  - The decision follows requests from the Ministry of Coal and the Ministry of Mines, given the high proportion of mineral-rich zones located within forest cover.

Background

- In 2023, the **Forest Conservation Act 1980**, was amended to provide exemptions for exploratory drilling on forest land.
- The latest decision expands these exemptions to facilitate mineral and coal exploration, critical for India's energy and resource security.

Key Policy Decision

- **Borehole Limit:** The ministry will now allow **62 to 80 bore holes of up to 6-inch** diameter per **10 sq km**, for survey and explorations under the exemption category, depending on the type of mineral deposits or ore explored.
  - Bore holes are narrow, deep holes drilled into the earth to explore minerals, ores or oil and gas.
- **As per the existing guidelines** under the forest conservation law, drilling of up to 25 bore holes per 10 sq km and 80 shot holes per sq km, along with felling of up to **100 trees** in the said area was exempted from forest clearance.

Environmental Safeguards

- **Limited Working Hours:** Drilling allowed only between **9 a.m. and 5:30 p.m**. to align with wildlife activity cycles.
- **Site Restoration:** Boreholes must be plugged with cement after completion.
- **Restriction Zones:** No drilling in ecologically sensitive areas such as:
  - Critical wildlife breeding and nesting habitats
  - Water sources and riparian ecosystems
  - High-biodiversity patches
  - Areas with endangered/endemic species
  - Culturally or religiously significant forest sites

Objectives and Need

- **Critical minerals push:** Many critical minerals (e.g. rare earths, lithium, cobalt, nickel) crucial for clean energy and defence are found in forest regions.
- **Ease of Doing Business:** Removes delays caused by repeated central clearances for temporary surveys.
  - Encourages private sector participation and investment in mining exploration.
- **Support for economic growth:** Minerals feed into infrastructure, manufacturing, defence, and green technologies.
  - Faster exploration leads to quicker project development, cost efficiency and attracts investment in mineral exploration.

What are the Concerns?

- **Ecological impacts:** Drilling noise and vibrations can disturb wildlife movement patterns.
  - Risk of contamination of forest streams through oil/grease or debris.
- **Compensatory measures insufficient:** Current norms require compensatory afforestation for felled trees.
  - But biodiversity loss, old-growth canopy destruction, and cultural value cannot be fully offset.
- **Overlap with the Forest Rights Act (FRA), 2006:** FRA gives legal recognition to the rights of forest-dwelling Scheduled Tribes and other traditional forest dwellers.
  - If exploration is treated as **"forest activity" (not diversion),** then community rights and consent requirements may be bypassed.
- **Bypassing Forest (Conservation) Act, 1980 scrutiny:** Traditionally, any activity on forest land that was not directly linked to forest conservation required central government clearance under the FCA.
  - The reclassification of mineral exploration as a "forest activity" has raised concerns.

Way Ahead

- **Strict enforcement of conditions:** Ensure boreholes are temporary, properly cement-plugged, and sites restored.
  - Conduct independent monitoring using satellites and third-party audits.
- **Adopt advanced exploration technology:** Use remote sensing, ground-penetrating radar, drones, and geophysical imaging.
  - Reduce the need for excessive drilling by narrowing down target zones.
- **Strengthen ecological safeguards:** Develop nationwide maps to identify no-go zones such as biodiversity hotspots, breeding areas, and sacred groves.
  - Impose stricter safeguards in ecologically sensitive regions.
- **Improve compensatory mechanisms:** Ensure compensatory afforestation uses native species and includes long-term monitoring. There is a need to Go beyond tree-count compensation by valuing biodiversity and ecosystem services.

Source: IE

SCHEME TO PROMOTE CRITICAL MINERAL RECYCLING IN THE COUNTRY

Syllabus: GS3/ Economy

Context

- The Union Cabinet chaired by PM Modi approved a **Rs.1,500 crore** Incentive Scheme to develop recycling capacity in the country for the separation and production of critical minerals from secondary sources.

What are Critical Minerals?

- These are minerals that are **essential for economic development and national security.**
- The lack of availability of these minerals or the concentration of extraction or processing in a few geographical locations could potentially lead to "**supply chain vulnerabilities and even disruption of supplies".**

List of Critical Minerals

- **Different countries have their own unique lists** of critical minerals based on their specific circumstances and priorities.
- **A total of 30 minerals were found to be most critical for India,** out of which two are critical as fertilizer minerals: Antimony, Beryllium, Bismuth, Cobalt, Copper, Gallium, Germanium, Graphite, Hafnium, Indium, Lithium, Molybdenum, Niobium, Nickel, PGE, Phosphorous, Potash, REE, Rhenium, Silicon, Strontium, Tantalum, Tellurium, Tin, Titanium, Tungsten, Vanadium, Zirconium, Selenium and Cadmium.

Applications of Critical Minerals

- **Clean technologies initiatives** such as zero-emission vehicles, wind turbines, solar panels etc.
  - Critical minerals such as Cadmium, Cobalt, Gallium, Indium, Selenium and Vanadium and have uses in **batteries, semiconductors, solar panels**, etc.
  - **Electric vehicles (EVs):** Lithium, nickel, and cobalt are key materials used in lithium-ion batteries.
- **Advanced manufacturing inputs and materials** such as defense applications, permanent magnets, ceramics.
  - Minerals like Beryllium, Titanium, Tungsten, Tantalum, etc. have usage in new technologies, electronics and defense equipment.
- **Platinum Group Metals (PGMs)** are used in medical devices, cancer treatment drugs, and dental materials.

About the Scheme to Develop Recycling Capacity

- This scheme is part of the **National Critical Mineral Mission (NCMM).**
- The Scheme will have a **tenure of six years from FY 2025-26 to FY 2030-31**.
- **The eligible feedstock is** e-waste, Lithium Ion Battery (LIB) scrap, and scrap other than e-waste & LIB scrap e.g. catalytic converters in end-of-life vehicles.
- **Expected beneficiaries** will be both large, established recyclers, as well as small, new recyclers (including start-ups), for whom one-third of the scheme outlay has been earmarked.
- **The Scheme will be applicable** to investments in new units as well as expansion of capacity / modernization and diversification of existing units.
- **The incentives** under the Scheme will comprise;
  - **20% Capex subsidy** on plant & machinery, equipment and associated utilities for starting production within specified timeframe, beyond which reduced subsidy applicable; and
  - **Opex subsidy:** Linked to incremental sales beyond FY 2025–26 base year, with 40% disbursed in year 2 and 60% in year 5.

- **Ceilings:** 50 crore per entity for large players (Rs. 10 crore cap on Opex); Rs. 25 crore for small entities (Rs. 5 crore cap on Opex).

Need for the Critical Mineral Recycling

- **Waste generation:** India's **e-waste generation** is poised to surge, driven by rapid growth in solar and wind energy infrastructure and **EV adoption.**
  - The PV module waste will increase from **100 kilotons in FY23 to 340 kilotons by 2030.** Additionally, **500 kt of EV batteries** are expected to reach recycling units in the coming years.
- **Scarce reserves:** Manufacturing renewable energy technologies and transition to electric vehicles would require increasing quantities of minerals, including copper, manganese, zinc, and indium.
  - India possesses rare earth deposits, particularly in **Rajasthan and coastal regions**, but mining, processing, and refining technologies remain underdeveloped.
- **Chinese Dominance in the Supply Chain:** China controls **60–70%** of global rare earth production and **85–90%** of refining, giving it near-monopoly from extraction to high-performance magnets.
  - The recent **export curbs** on key rare earths highlighted India's vulnerability and the need to build domestic recycling capacity.
- **Environmental concerns**, regulatory hurdles, and lack of advanced separation and refining capacity further restrict exploitation of primary sources.

Challenges in Critical Mineral Recycling

- **Technology gaps:** Limited domestic expertise in advanced recycling processes for rare earths and lithium.
- **Environmental risks:** Safe handling of toxic waste and emissions from recycling units remain concerns.
- **Regulatory hurdles:** Delays in approvals and lack of streamlined norms hinder quick adoption.
- **Infrastructure deficits:** Limited specialized recycling units and inadequate collection networks.

Suggestions

- **Strengthen R&D and technology transfer** for efficient mineral extraction from waste.
- **Promote PPPs and start-up participation** to expand recycling ecosystems.
- **Build integrated collection and processing networks** for e-waste and battery scrap.
- **Ensure strict environmental safeguards** to avoid secondary pollution.
- **Skill development programmes** to create a trained workforce in recycling and waste management.

Source: PIB

UNDERUTILIZED RENEWABLE ENERGY POTENTIAL IN THE HINDU KUSH HIMALAYA (HKH) REGION

In News

A new report by the International Centre for Integrated Mountain Development (ICIMOD), launched during the Asia-Pacific Clean Energy Week in Bangkok, highlights the vast but underutilized renewable energy potential in the **Hindu Kush Himalaya (HKH) region.**

The Hindu Kush Himalaya

- It is a region that extends 3500 km over **Afghanistan, Bangladesh, Bhutan, China, India, Myanmar, Nepal and Pakistan.**
- It is the source of ten large Asian river systems – the **Amu Darya, Indus, Ganges, Brahmaputra (Yarlungtsanpo), Irrawaddy, Salween (Nu), Mekong (Lancang), Yangtse (Jinsha), Yellow River (Huanghe), and Tarim (Dayan)** .
- It provides water, ecosystem services, and the basis for livelihoods to a population of around 240 million people in the region

Key Findings of recent report

- **Clean energy share** in total primary energy supply (TPES) is **only 6.1% across HKH countries.**
- **Hydropower** is identified as hugely underexploited, with only 49% of 882 GW potential currently tapped.

- 635 GW of hydropower potential comes from trans-boundary rivers in the HKH.

- **Non-hydro potential (solar and wind)** stands at 3 Terawatts, while regional renewable targets total **1.7 Terawatts.**
- **Country wise data :**
  - Bhutan and Nepal generate 100% of electricity from renewables.
  - Other HKH countries rely heavily on fossil fuels,Bangladesh: 98%, India: 77%,Pakistan: 76%, China: 67% and Myanmar: 51%.
- **Biofuels and waste:** Biofuels and waste remain key sources of energy in rural areas, accounting for two-thirds of TPES in Nepal, half in Myanmar, and a quarter in Bhutan and Pakistan. These traditional fuels contribute to air pollution and poor health outcomes.
- **Climate change** is posing **serious risks to the energy sector**, particularly hydropower, through increased water variability, extreme weather events, and changing streamflows.
  - Notably, two-thirds of current and planned hydropower projects are vulnerable to glacial lake outburst floods (GLOFs) and other climate-induced disasters.
  - Therefore, disaster risk mitigation must be integrated into project planning.
- **Several barriers** are hampering renewable energy progress in the region.
  - These include high capital costs, limited public financing, low private investment, lack of technical knowledge, land constraints, insufficient R&D, and outdated or missing regulatory frameworks.

Suggestions

- The report advocates for regional cooperation beyond trade, emphasizing infrastructure investment, south-south technology exchange, and support from international financial institutions.
- Platforms like SAARC's Energy Centre and the Bay of Bengal Initiative are seen as vital for fostering collaboration.
- The report also positions the HKH region—and especially India and China—as global leaders in clean energy, urging them to leverage their competitive advantage to drive green economic growth, poverty alleviation, and emissions reductions, while ensuring resilience and equity for future generations.
- Social and environmental implications for local communities also need careful management.

Source :DTE

FLOODS IN PUNJAB: NATURE, NEGLECT, AND GOVERNANCE CHALLENGES

Context

- Punjab is under the impact of its worst floods in decades, with **1,902 villages submerged**, **3.8 lakh people affected**, and **11.7 lakh hectares of farmland destroyed**.
  - Across the border, **Punjab province in Pakistan** has suffered parallel devastation.

About the Floods in India

- According to the **National Disaster Management Authority (NDMA)**, floods are a recurrent phenomenon in India, caused by ***heavy rainfall, inadequate drainage, and overflowing rivers.*** They result in loss of lives, damage to property, infrastructure, and public utilities.
- The **World Meteorological Organization (WMO)** describes it as part of the natural variability in river flow and water levels, and deadliest natural hazards globally, exacerbated by climate change, land use changes, and population pressure.
- **In India,** floods are triggered by **monsoon rains, cyclones, cloudbursts, and dam releases.**
  - The frequency of major floods is more than once every five years.
  - More than **40 million hectares (mha) of land in India** are flood prone, and an **average every year, 75 lakh hectare**s of land is affected.

Possible Reasons For Punjab Floods

- **Flood-Prone Land and Geography:** Three perennial rivers — **Ravi, Beas, and Sutlej** — and seasonal rivers like **Ghaggar** and **local *Choes*** swell during the monsoon.
  - Heavy rainfall in **Himachal Pradesh** and **Jammu & Kashmir** overflows into Punjab.
  - **Dhussi Bundhs (earthen embankments)** provide some protection but are often overwhelmed, as seen in the **floods of 1955, 1988, 1993, 2019, 2023, 2024**, and **now in 2025.**

- It is important to note that the **same river system** enriches the soil, making **Punjab India's 'food bowl',** producing **20% of wheat and 12% of rice** despite occupying **only about 1.5% of landmass.**
- **Dam Dilemma:** Dams are designed to balance irrigation, power, and flood control. But, extreme rainfall forces sudden releases **to protect dam safety**. These controlled releases often trigger downstream flooding.
  - **Bhakra Dam (Sutlej)** and **Pong Dam (Beas)**, managed by the **Bhakra Beas Management Board (BBMB)**.
  - **Thein (Ranjit Sagar) Dam (Ravi)**, managed by Punjab authorities.
- **Human Error Compounds Natural Disasters:** The **Madhopur Barrage breach following Thein Dam's** release illustrates how **poor coordination** magnifies flood risks. Key reasons highlighted are:
  - **Lack of communication** between dam and barrage authorities.
  - **Sudden, massive water releases** instead of gradual discharges.
  - **Weak Dhussi bundhs**, often damaged by illegal mining.

Impacts of Floods in India

- **Human Impact:**
  - **Loss of Life:** On average, floods claim around 1,600 lives annually in India. In severe years, such as 1977, fatalities exceeded 11,000.
  - **Displacement:** Thousands are forced to evacuate, often losing homes and access to basic services.
  - **Health Risks:** Floodwaters spread waterborne diseases, increase vector-borne illnesses, and cause mental health stress.
- **Agricultural Damage:**
  - **Crop Losses:** Over 75 lakh hectares of farmland are affected annually, devastating rural economies.
  - **Livestock Deaths:** Animals perish due to drowning, disease, or lack of fodder.
  - **Food Security:** Disruptions in supply chains and harvest cycles lead to inflation and scarcity.
- **Infrastructure Losse:**
  - **Roads and Bridges:** Washed away or damaged, cutting off access to villages and cities.
  - **Urban Disruption:** Cities like Delhi, Faridabad, and Amritsar face traffic chaos, waterlogging, and power outages.
- **Environmental Consequences:**
  - **Riverbank Erosion:** Floods accelerate erosion, altering landscapes and threatening settlements.
  - **Sediment Load:** Rivers carry heavy sediment from catchments, reducing their capacity and increasing flood risk.
  - **Wetland Disruption:** Natural ecosystems are disturbed, affecting biodiversity.
- **Psychological and Social Effects:**
  - **Trauma and Stress:** Survivors often suffer long-term psychological effects.
  - **Community Breakdown:** Displacement and loss of livelihood strain social cohesion.

Related Initiatives & Efforts

- **Environmental and Water Laws:**
  - **Environment (Protection) Act, 1986:** Enables regulation of activities affecting floodplains.
  - **Water (Prevention and Control of Pollution) Act, 1974:** Addresses drainage and water quality during floods.
  - **Forest (Conservation) Act, 1980:** Protects catchment areas that influence flood behavior.
- **High Level Committee On Floods (1957) & Policy Statement of 1958:** It includes **structural control** (like embankments) and **non-structural methods**, incorporating flood plain zoning, flood forecasting, and warnings to mitigate damage, recognizing these as cost-effective measures.
- **National Flood Commission (Rashtriya Barh Aayog) – 1980:** It includes adopting a dynamic flood management strategy, halting large-scale construction of embankments and reservoirs until their efficacy could be assessed, and emphasizing state-center collaboration on research and policy initiatives.
  - It identified that increasing flood frequency was due to anthropogenic factors like deforestation and poor development, not changes in rainfall.
- **R Rangachari Committee:** It was set up by the **Ministry of Water Resources** to review the implementation of recommendations of the **National Flood Commission.**
- **National Water Policy (1987/2002/2012):** These policies aim for integrated water resource planning,

efficient utilization, promoting groundwater regulation, and integrating environmental and human settlement needs.

- Key principles include treating water as an economic good, enhancing water-use efficiency, and ensuring social justice in water access.

- **National Disaster Management Guidelines on Floods:**
  - **Structural measures:** Embankments, reservoirs, drainage improvements;
  - **Non-structural measures:** Flood forecasting, zoning regulations, insurance schemes;
  - **Integrated Water Resources Management:** Promotes sustainable use of river basins;
  - **Dam safety protocols and reservoir regulation** to prevent overflow disasters;
  - **Floodplain zoning:** Legal frameworks to restrict construction in vulnerable areas.
- **Flood Forecasting and Early Warning Systems:** It is managed by the Central Water Commission (CWC) and IMD, focusing on:
  - Expansion of real-time monitoring and predictive models;
  - Coordination between central and state agencies for timely alerts;
- **Urban Flood Risk Management Program (UFRMP):** It was launched in 2021 with 2,500 crore allocated for flood mitigation in 7 major cities, and expanded to 11 additional cities including Guwahati, Patna, and Trivandrum. It focuses on:
  - Upgraded drainage systems;
  - Nature-based solutions like wetland restoration;
  - Community awareness and GIS mapping;

What More Needs to Be Done?

- **Strengthen Floodplain Zoning Laws:** Most Indian states have not enacted floodplain zoning regulations, despite repeated recommendations.
  - NDMA urges legal enforcement to restrict construction in flood-prone areas and incentivize compliance.
- **Shift to Nature-Based Solutions:** It reduces downstream flood risk, enhances biodiversity and water quality, aligns with **global best practices like the Netherlands' 'Room for the River' program**.
- **Modernize Forecasting and Early Warning Systems:** Expand and upgrade the Central Water Commission's flood forecasting network using AI, satellite data, and real-time sensors.
  - Improve coordination between IMD, state agencies, and local bodies for timely alerts and evacuation.
- **Desilting and River Capacity Enhancement:** Regular desilting of rivers and water bodies is essential to maintain flow capacity.
  - NITI Aayog's report stresses the need for catchment area treatment and reservoir operation protocols.
- **Community-Based Disaster Preparedness:** Flood management must include local participation, especially in vulnerable rural and peri-urban areas.
  - Training, awareness campaigns, and school-based disaster education can build resilience.

Source: IE

INDIA'S PUSH TO EXPAND AND LIBERALISE ITS NUCLEAR ENERGY SECTOR

Context

- The government is preparing **two significant legal amendments** aimed at **opening up the civil nuclear energy domain to external players.**
  - **Amid this, the foreign equipment vendors** have **flagged the need for putting in place quality standards** to upgrade the country's mid-and lower-tier nuclear supplier base.

Why India Needs to Expand and Liberalise Nuclear Energy

- **Nuclear Capacity:** India's plans to increase its nuclear power capacity to **100 GW by 2047.**
  - India spends crores annually on petroleum imports. Expanding domestic nuclear capacity reduces this dependency.
- **Energy Demand Growth:** India's electricity demand is expected to increase 4-5 times by 2047, and nuclear power will help meet base-load demand alongside renewables.
- **India's Targets:** To reduce the emission intensity of its GDP by 44% by 2030 from the 2005 level.
  - To achieve 50% cumulative electric power installed capacity from non-fossil fuel-based energy resources by 2030.

Concerns Raised by Foreign Equipment Vendors

- **Quality gaps among mid- and lower-tier suppliers**: Particularly at tiers 2 and 3 that supply

to major companies like L&T, Bharat Forge, Godrej & Boyce, and Walchandnagar Industries

- **Need for standardized quality protocols and a national training program**, especially for new reactor technologies like Light Water Reactors (LWRs) and Small Modular Reactors (SMRs).
- **Cybersecurity concerns,** with vendors warning of risks such as loss of control over vital data, potential operational disruptions, or even ransomware-style hostage scenarios.

India's Nuclear Infrastructure

- India operates **22 nuclear reactors**, all run by **Nuclear Power Corporation of India Limited (NPCIL), with plans for more.**
- Despite signing civil nuclear agreements with the U.S., France, and Japan, **only Russia is currently executing projects (Kudankulam),** largely due to concerns around India's liability regime.
  - Jaitapur Nuclear Plant (with France) has been pending since 2009, the liability concerns remain unresolved.
  - Kovvada Project (Andhra Pradesh): Yet to proceed.
  - Only Russia (Kudankulam) is implementing nuclear projects **due to pre-CLNDA agreements.**
- India has a **robust safety record under NPCIL operations**, with no radiological accidents in 238 reactor-years.
  - However, most of India's expertise is in **Pressurized Heavy Water Reactors (PHWRs),** which differ significantly from the globally prevalent LWR technology.

Reforms Underway in India

- **Easing Nuclear Liability Law (Civil Liability for Nuclear Damage Act, 2010):** Its objective is to limit the liability of equipment vendors in case of a nuclear accident. **Key Proposed Changes:**
  - **Monetary Cap:** Liability may be capped to the original contract value.
  - **Time Limit:** Introduce a statute of limitations for how long liability applies.
- **Amendment to the Atomic Energy Act, 1962:** Its objective is to allow private and foreign players to enter nuclear power generation.
  - **Current Restriction:** Only state-owned entities like NPCIL and NTPC Ltd can operate nuclear plants.
  - **Proposed Change:** Permit minority equity participation by foreign/private entities in upcoming projects.
- **India's Push for Small Modular Reactors (SMRs):** SMRs are advanced nuclear reactors with ~1/3rd the generating capacity of conventional nuclear plants, but still capable of producing large amounts of low-carbon electricity.
  - India is positioning itself as a **leader in SMR technology dissemination**, projecting an ability to export SMRs in the future.
  - **The Bhabha Atomic Research Centre (BARC)** is developing SMRs to phase out retiring coal plants and serve remote areas.
  - **The Department of Atomic Energy** is also exploring high-temperature gas-cooled reactors and molten salt reactors, tapping India's thorium reserves.
- **Nuclear Energy Mission for Viksit Bharat:** A major initiative introduced as part of the budget, this mission includes R&D for Small Modular Reactors (SMRs).
  - 20,000 crore has been allocated to ensure the development of at least five indigenously designed and operational SMRs by 2033.
- **Bharat Small Reactors (BSRs):** These are 220 MW PHWRs being modernized to reduce land use and intended for industrial use (e.g., steel, aluminium plants).
  - **The structure:** private partners contribute land, water, and capital; NPCIL handles design, quality assurance, and operations.

Global Templates for Quality Upgrades in Nuclear Sector

- **Japan's Experience (1970s–1980s):**
  - **National Push:** After declaring nuclear energy a national strategic priority in 1973, Japan expanded its nuclear power programme.
  - **Parallel Quality Movement:** This coincided with a broader industrial quality revolution in Japan. Companies like Toyota and Sony became global benchmarks of reliability and quality.
  - **International Influence:** The IAEA (International Atomic Energy Agency) published "Quality Assurance for Nuclear Power Plants: A Code of Practice" in 1978, providing detailed safety and quality standards.

- **Impact:** Japan's regulators adopted these principles, embedding quality assurance into both industrial culture and nuclear regulation.

- **China's Approach (2000s onwards)**
  - **Regulatory Institution:** The National Nuclear Safety Administration (NNSA) became the central authority to oversee nuclear safety and quality.
  - **Programme Characteristics:**
    - Comprehensive national quality assurance programme.
    - Framework aligned with international standards but adapted to domestic conditions.
    - Standardisation of manufacturing processes across all nuclear suppliers.
  - **Outcome:** Helped China expand its nuclear sector rapidly while building a globally competitive supply chain.

Way Ahead

- **National Training Programme:** Suggested for equipment suppliers, especially mid- and lower-tier vendors.
  - Focus on new technologies like Light Water Reactors (LWRs) and Small Modular Reactors (SMRs).
- **Role of DAE:** Needs to enforce strict codes and standards across all systems and equipment.
  - Must institutionalise a culture of rigorous quality inspection and management.
- **Professional Expertise:** Build a cadre of highly qualified professionals capable of timely decision-making in inspection, certification, and quality control.
- **Expanding Vendor Capacity:** Invest in new vendors and expand manufacturing capacity in these specialised areas.
  - Encourage public–private partnerships and technology tie-ups to speed up capability development.

Conclusion

- Without supplier training, quality upgrades, and expanded capacity, India risks:
  - Delays in reactor construction.
  - Cost overruns due to late detection of quality issues.
  - Loss of credibility in international collaborations.
- With reforms, India can build a globally competitive nuclear supply chain and become a major player in the SMR market.

Source: IE

NEWS IN SHORT

TECHNOLOGY PERSPECTIVE AND CAPABILITY ROADMAP (TPCR-2025)

In News

The Ministry of Defence has released the Technology Perspective and Capability Roadmap (TPCR-2025)

India's Technology Perspective and Capability Roadmap (TPCR-2025)

- It outlines a **15-year plan** to bolster its military preparedness by enhancing nuclear deterrence and expanding drone warfare capabilities.
- It focuses on sustaining credible nuclear deterrence through survivability systems and advanced delivery platforms, including command-and-control infrastructure and **chemical, biological, radiological and nuclear (CBRN)** reconnaissance vehicles.
- It also emphasizes the **development of stealth drones with ranges of up to 1,500 km and altitudes of 60,000 feet** for electronic warfare, detection, and artillery guidance.
- It also addresses the threat of hostile drone swarms by planning adaptive jamming systems and **electronic denial zones with a 15 km radius.**
- It prioritizes loitering munitions with AI-enabled targeting and reusable warheads, integrated surveillance drones, and countermeasures against hostile drone swarms using electronic jamming and denial systems.

Importance

- It aligns with India's goal of self-reliance in defense production and reflects a strategic shift toward integrated deterrence combining nuclear resilience, electronic warfare, and unmanned strike platforms to enhance national security over the coming decades.

Source :TH

CLINICAL TRIAL FOR ENVAFOLIMAB

In News

Glenmark has started a multi-country Phase 3 clinical trial for Envafolimab, targeting Stage III **non-small cell lung cancer (NSCLC).**

Do you know ?

- **Envafolimab** is a **novel drug** for **third-stage non-small cell lung cancer.**
- It has received approval from the Drugs Controller General of India to begin patient enrolment and dosing in the country.

Lung cancer

- **Lung cancer** is a type of cancer that starts when abnormal cells grow in an uncontrolled way in the lungs.
- It is a **serious health issue** that can cause **severe harm and death.**
- **Symptoms** of lung cancer include a cough that does not go away, chest pain and shortness of breath.
- The **most common** types of **lung cancer** are **non-small cell carcinoma (NSCLC)** and **small cell carcinoma (SCLC).**
  - NSCLC is more common and grows slowly, while SCLC is less common but often grows quickly.
  - **Common types of non-small cell lung cancer (NSCLC):** Adenocarcinomas are often found in an outer area of the lung.
    - Squamous cell carcinomas are usually found in the center of the lung next to an air tube (bronchus).
    - Large cell carcinomas can occur in any part of the lung.
- **Common types**: **Adenocarcinomas** – usually found in the outer areas of the lung.
  - **Squamous cell carcinomas** – typically located in the center of the lung near the bronchus.
  - **Large cell carcinomas** – can appear in any part of the lung.

Source :TH

RENAMING OF US DEPARTMENT OF DEFENSE (DOD)

Context

US President Donald Trump signed an executive order to rename the Department of Defense (DoD) as the Department of War

Department of War

- Historically, the Department of War, established in 1789, oversaw the Army, Navy, and Marine Corps until the Navy and Marine Corps were reassigned to separate departments.
- The War Department remained central until **World War II**, when operational inefficiencies prompted **President Truman** to unify the military branches under the **National Military Establishment (NME) in 1947**, later renamed the **Department of Defense (DoD)** to avoid the negative connotation of "NME."
  - The reorganisation aimed to streamline command and reduce inter-service rivalry, especially after the fragmented efforts during WWII.

Rationale behind recent of Decision of Donald Trump

- Trump's decision to revert to the historical name linked to desire for a more assertive image and referencing America's historical military successes
- The move reflects Trump's broader aim to reshape the military's identity around war-fighting capabilities.

Source :IE

EMERGING SCIENCE, TECHNOLOGY AND INNOVATION CONCLAVE

In News

The Department of Science and Technology (DST) is scheduled to host the inaugural Emerging Science, Technology and Innovation Conclave (ESTIC) in November 2025, potentially marking a shift away from the traditional Indian Science Congress.

Do you know ?

The Indian Science Congress (ISC), a historic gathering of scientists in India dating back to the pre-Independence era, was last held in 2023.

- However, due to funding constraints and organizational challenges, the Department of Science and Technology (DST) has withdrawn its support from the Indian Science Congress Association (ISCA), which traditionally organized the event.

The Emerging Science, Technology, and Innovation Conclave (ESTIC)

- It is positioned as **India's leading platform for science, technology, and innovation**, uniting government ministries, global thought leaders, and innovators.
- Unlike the India International Science Festival (IISF), which aims to popularize science among youth, ESTIC is envisioned as a **serious forum**

for scientific dialogue, innovation, and policy deliberation.

- It will include technical sessions, showcase 75 deep-tech start-ups, and feature participation from global scientific luminaries

Objectives

- It fosters collaboration, celebrates disruptive innovation and it aims to position India as a global scientific leader in line with the Viksit Bharat 2047 vision.

Source :TH

Z-PLUS SECURITY COVER FOR VICE-PRESIDENT

Context

- The Union Government is considering transferring the Z-plus security cover of the Vice-President (V-P) from the Delhi Police to the Central Reserve Police Force (CRPF).

About

- As per the **"Blue Book"** guidelines issued by the **Union Home Ministry** under the **Special Protection Group (SPG) Act**, the **President, Vice-President, and Prime Minister** are entitled to specific security protocols.
- The Vice-President of India currently receives Z-plus security cover provided by the Delhi Police Security Division.
  - This category includes **around 50 personnel working in shifts,** with enhanced arrangements for the V-P's residence and cavalcade.
  - Traditionally, three officers of the rank of Assistant Commissioner of Police (ACP) serve as Personal Security Officers (PSOs).

Security Categories in India

- **X Security:** Provides the most basic security, typically with 2 security personnel.
- **Y Security:** Offers a slightly higher level of protection, usually with 11 personnel, including police officers and commandos.
- **Y+ Security:** An enhanced version of the Y category, providing a greater number of personnel and more comprehensive security.
  - **Who gets it?:** MPs, MLAs, or public figures with moderate threat levels.
- **Z Security:** Around 22 personnel (NSG/CRPF commandos + local police).
  - **Who gets it?:** Union Ministers, Governors, Chief Ministers, and some high-profile leaders or individuals under credible threat.
- **Z+ Security Cover includes:** Personal Security Officers (PSOs), Residence security, Escort vehicles in cavalcade, Surveillance and access control measures.
  - **Who gets it?:** Vice-President, Union Home Minister, Chief Justice of India, and individuals facing high security threats.
- **Special Protection Group (SPG):** It is Provided under the SPG Act, 1988.
  - **Who gets it?:** Exclusively for the Prime Minister of India and immediate family members.
  - **Status:** After 2019 amendments, it is restricted only to the sitting PM and his/her immediate family residing with them.

Sources: IE

NATIONAL TEACHERS AWARDS

Context

- The President of India conferred **National Awards** on 81 teachers from across the country at a function held in New Delhi on **Teachers' Day (5th September)**.

About National Teachers Awards

- **Selection Process:** Teachers are chosen through a **three-stage transparent, online process** at the District, State, and National levels, coordinated by the **Department of School Education & Literacy**.
- **Organiser:** Ministry of Education and It was Instituted in 1958.
  - They are given away by The President of India (or) The Vice President of India on 5th September (Teacher's Day) every year to give public recognition to meritorious teachers working in primary, middle and secondary schools.
- **Purpose:**
  - To celebrate the unique contribution of outstanding teachers.
  - To recognize those who, through **commitment and innovation**, have improved school education and enriched the lives of their students.
- **Occasion:** Awards are conferred every year on **Teachers' Day**, observed on the **birth**

anniversary of Dr. Sarvepalli Radhakrishnan, former President of India and a great philosopher-educationist.

- **Exclusion** : Retired teachers who have not served at least a part of the calendar year - at least for four months i.e. up to 30th April in the year to which the National Award relates. Teacher/ Headmasters who have indulged in tuitions.
  - Contractual Teachers and Shiksha Mitras are also not eligible.

Do you know?

- **National Education Day** is observed on **11th November** in honour of **Maulana Abul Kalam Azad**, India's first Education Minister.

Source: PIB

REVISED SUSPENSION OF OPERATIONS PACT TIGHTENS NORMS FOR KUKI-ZO GROUPS

Context

- The revised Suspension of Operations (SoO) agreement was signed between the Ministry of Home Affairs, Manipur government and **24 Kuki-Zo insurgent groups which is valid for one year.**

About

- **Among other provisions, the revised ground rules reiterated:**
  - The territorial integrity of Manipur.
  - Need for a negotiated solution to bring lasting peace and stability to the State of Manipur.
- **KNO and UPF have also agreed to:**
  - Relocate seven designated camps away from areas vulnerable to conflict.
  - Reduce the number of designated camps.
  - Relocate the weapons with nearest CRPF/ BSF camps.
  - Stringent physical verification of cadres by Security Forces to de-list foreign nationals, if any.
- **2008 SoO Pact:** It was signed in the aftermath of the Kuki-Naga clashes in the 1990s.
  - Under the umbrella of the Kuki National Organisation (KNO) and United People's Front (UPF) were entitled to a stipend of 6,000 per month, which was stopped since ethnic violence erupted in the State in 2023.
- **Other provisions of the Revised SoO Agreement:** The pact bars groups from having association with any other armed group, within the country or outside; from recruiting new cadres; and carrying out offensive operations.
  - The Army, Assam Rifles, Central Armed Police Forces and the State Police shall not launch operations against the groups "as long as they abide" by the agreement.

Who are the Kuki-Zo groups?

- The Kuki-Zo people are an ethnic community spread across **Manipur, Mizoram, Nagaland, Assam, and Myanmar.**
- They share close ethnic and cultural ties with other **Chin–Mizo groups of Myanmar and Mizoram.**
- Since the 1980s–90s, various Kuki-Zo insurgent groups have taken up arms, mostly demanding:
  - Greater autonomy/self-determination;
  - Protection of tribal rights and land;
  - In some cases, separate statehood.

Source: TH

NATIONAL HEALTH MISSION (NHM)

Context

- Over 14,000 contractual employees of the **National Health Mission (NHM)** in Chhattisgarh have resigned en masse.
  - **Trigger:** Termination of 25 protesting employees by the State Health Department.
  - The NHM employees have been demanding regularisation of services, better pay, and other perks.

National Health Mission (NHM)

- **Launched:** 2013 (by subsuming the **National Rural Health Mission, 2005** and **National Urban Health Mission, 2013).**
- **Nodal Ministry:** Ministry of Health & Family Welfare (MoHFW).
- **Aim:** To provide accessible, affordable, and quality healthcare to the rural and urban population, especially the vulnerable groups.
- **Implementation strategy:** The Ministry is to provide financial and technical support to States / Union Territories (UTs) enabling them to provide accessible, affordable, accountable, and effective healthcare up to District Hospitals (DHs).
  - It has also aimed to bridge the gap in rural healthcare services through improved health

infrastructure, augmentation of human resource and improved service delivery in rural areas.

- It has envisaged decentralization of programme to district level to facilitate need-based interventions, improve intra and inter-sectoral convergence and effective utilization of resources.

Source: TH

ANGIKAAR 2025

Context

- The Minister for Housing and Urban Affairs, launched "Angikaar 2025", under **Pradhan Mantri Awas Yojana - Urban 2.0 (PMAY-U 2.0)**, in New Delhi.

What is Angikaar 2025?

- It is an **outreach campaign** to accelerate the implementation of **PMAY-U 2.0** by creating widespread awareness about the scheme across the country.
- **Duration & Coverage:** The campaign will run from **4th September 2025 to 31st October 2025** across **5,000+ Urban Local Bodies (ULBs)** in the country.
- It will also **fast-track verification of applications** under the scheme and expedite the completion of already sanctioned houses under PMAY-U.
- It includes promoting the Credit Risk Guarantee Fund Trust for Low Income Housing (CRGFTLIH), integrating benefits from schemes like **PM Surya Ghar: Muft Bijli Yojana, and prioritizing housing for Special Focus Groups.**

Source: PIB

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