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AI FOR VIKSIT BHARAT ROADMAP AND FRONTIER TECH REPOSITORY

Context

- NITI Aayog launched two transformative initiatives, **AI for Viksit Bharat Roadmap: Opportunity for Accelerated Economic Growth** and **NITI Frontier Tech Repository under its Frontier Tech Hub.**

AI for Viksit Bharat Roadmap

- The roadmap lays out a practical action plan to translate AI's promise into outcomes, highlighting two major levers:
  - **Accelerating adoption of AI** across industries to enhance productivity and efficiency;
  - **Transforming R&D with generative AI** to help India leapfrog into innovation-driven opportunities.
- **Vision:** Mainstream AI-assisted technologies across all districts to foster inclusive development and ensure India does not lag in the global tech race.

NITI Frontier Tech Repository

- The Frontier Tech Repository showcases **200+** impact stories from across India in **four sectors** – Agriculture, Healthcare, Education, and National Security.
- It brings to life how states and startups are deploying technology with the purpose to transform livelihoods.
- **Supporting Initiatives:**
  - **Frontier 50 Initiative** wherein NITI Aayog will support 50 Aspirational Districts / Blocks to pick use cases from the Repository and deploy those frontier technologies that have potential to accelerate saturation of services across ADP/ABP themes.
  - **NITI Frontier Tech Impact Awards** for States recognizing three states excelling in use of tech to improve governance, education, healthcare, livelihood etc., and supporting them to scale measurable, transformative outcomes.

How AI Can Transform Key Sectors?

- **Banking and Finance:** Artificial Intelligence has the potential to add **$50–55 billion** to India's banking sector by 2035.
  - It can strengthen fraud detection, ensure regulatory compliance, and make back-office operations more efficient.
- **Manufacturing and Industry:** AI-driven automation in manufacturing is expected to generate **$85–100 billion** in productivity gains by 2035. Generative AI can help design innovative products and optimize factory operations.
- **Pharmaceuticals and Biotech:** AI has the power to transform India's pharmaceutical industry from a generics-based market to an innovation-driven hub.
  - Generative AI and computational biology can reduce drug discovery timelines by **60–80% and lower costs by 20–30%.**
- **Automotive:** By 2035, around **40–50%** of vehicles sold in India could be software-enabled, **adding $6–8 billion in value**.
  - AI can also transform the auto-components industry, creating an additional **$25–30 billion** through faster and cheaper design processes.

Challenges

- Data fragmentation and weak privacy protections.
- Old IT systems in banks and industries.
- Shortage of AI experts in robotics, chip design, and bioinformatics.
- Slow approval processes for new drugs and technologies.
- Cybersecurity risks and ethical issues like algorithmic bias.

Strategic factors necessary for AI Roadmap

- **Digital Infrastructure:** Expansion of AI computing power, cloud services, 5G networks, and robotics test zones under the India AI Mission.
- **Data Governance:** Secure and consent-based data sharing, building sector-specific data grids, and strengthening **AI Kosh** as a national data platform.
- **Skilling and Talent:** AI education at school and university levels, industry certifications, AI Open University, and fellowships to bring back diaspora talent.
- **Regulation:** Clear ethical guidelines, audit systems, regulatory sandboxes, and alignment with international standards.

Concluding remarks

- India's goal of **8% sustained growth** requires a major boost in productivity and innovation, and AI is the key enabler.
- To achieve the goal of Viksit Bharat by 2047, the country must not only adopt AI but also lead globally in setting standards, driving innovation, and building collaborative ecosystems.

Source: PIB

THIRD ANNIVERSARY OF THE NATIONAL LOGISTICS POLICY (NLP)

Context

- The Department for Promotion of Industry and Internal Trade (DPIIT) commemorates the **third anniversary of the National Logistics Policy (NLP),** launched in **2022**.

About

- **Its key objectives are:**
  - to **reduce logistics costs** to global benchmarks and to **bring it below 10% of GDP,**
  - improve India's ranking in the Logistics Performance Index (LPI) to the **top 25 by 2030,**
  - to establish a **robust, data-driven decision support system** to ensure an efficient and integrated logistics ecosystem.

Key Achievements of India's Logistics Sector

- **The Unified Logistics Interface Platform (ULIP)** has facilitated secure Application Programming Interface (API) integration across more than 30 digital systems.
- **Ranking in 2023 Logistics Performance Index (LPI): India was ranked 38th place out of 139 nations,** a notable improvement of six places since the last ranking in 2018.
- **The Inland Waterways Authority of India (IWAI)** recorded cargo movement of 145.5 million tonnes in the year 2024–25.
  - The number of operational national waterways has also increased from 24 to 29 during the same period.

Overview of the Logistics Landscape in India

- India's logistics sector was valued at **USD 215 billion in 2021.** It is well-positioned for strong growth with an expected compound annual growth rate (CAGR) of **10.7% till 2026.**
- In 2017, a **separate logistics unit** was created under the Department of Commerce to oversee the Integrated Development of Logistics Sector.
- **The Logistics Industry supports** manufacturing, retail, e-commerce, and services by managing inventory, transportation, storage, warehousing, and distribution, linking producers to consumers, both domestically and internationally.

Key Advantages of Efficient Logistics Infrastructure

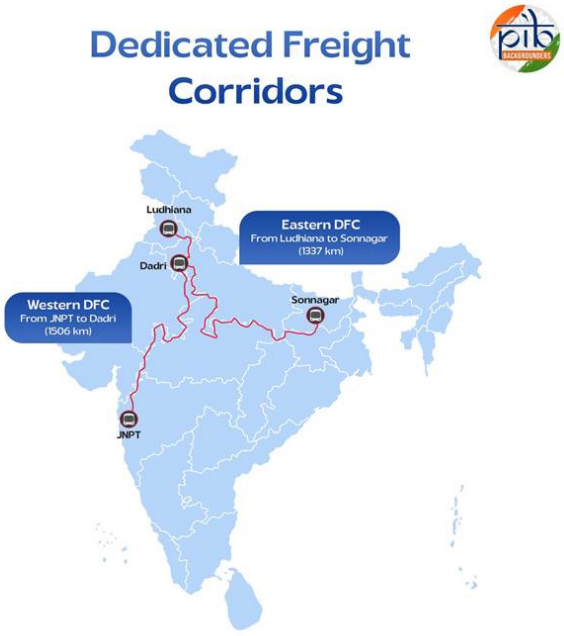
- **Supply chain efficiency:** Logistics ensures a smooth and efficient supply chain, minimising delays and reducing lead times.
- **Connectivity and Accessibility:** Logistics networks enhance connectivity and accessibility, linking various regions and markets.
- **Cost reduction and competitiveness:** Efficient logistics operations contribute to cost reduction in transportation, storage, and distribution.
- **Job creation:** The logistics sector is a significant source of employment, providing jobs in transportation, warehousing, distribution, and related services. The sector is projected to add 1 crore jobs by 2027.
- **Economic integration:** A well-developed logistics sector facilitates economic integration by connecting various economic zones and promoting a seamless flow of goods and services.

Challenges

- **High Logistics Cost:** India's logistics cost is very high at around 13–14% of GDP, making Indian exports less competitive compared to global peers.
- **Infrastructure Gaps:** The sector suffers from infrastructure gaps in warehousing, cold storage, and last-mile connectivity.
- **Overdependence on Road:** There is an overdependence on road transport, which causes congestion, delays, and higher transportation costs.
- **Multimodal Transport Issues:** The low share of railways and inland waterways in freight transport hampers the development of an efficient multimodal system.
- **Environmental Concerns:** Heavy dependence on diesel-based trucking increases carbon emissions and contributes to environmental pollution.

Key Government Initiatives in Logistics

- **PM GatiShakti Master Plan:** It was launched in **2021** to integrate different modes of transport into a coordinated network.
  - It has brought together 57 Central Ministries/ Departments and all 36 states and union territories.
- **Maritime Amrit Kaal Vision 2047:** It is aligned with blue economy principles, lays out a long-term roadmap to transform India's maritime sector.
  - The vision also aims to boost coastal tourism, strengthen maritime skill development, and position India as a global hub for shipbuilding and repair.
- **Dedicated Freight Corridors:** The Ministry of Railways is currently developing two Dedicated Freight Corridors (DFCs).
  - The objectives of these specialized railway lines are to ease congestion on existing passenger routes, lower transportation costs, and improve energy efficiency.



Source: Ministry of Railways (PIB)

- **Multi-Modal Logistics Park:** 35 key locations such as Chennai, Bengaluru, Nagpur, Indore, and others have been approved through both private and public sector efforts for the development of MMLPs. Out of these, 5 are expected to be operational by 2027.
- **Unified Logistics Interface Platform (ULIP):** It is a digital platform that brings together data from various logistics-related ministries and departments on a single interface; it has recorded 100 crore API transactions in 2025.
- **Gati Shakti Vishwavidyalaya (GSV):** The GSV is **India's first university** dedicated to transport and logistics education.
  - GSV plays a key role in preparing skilled professionals to support this national goal.
  - Gati Shakti Vishwavidyalaya has signed Memoranda of Understanding (MoUs) with about 40 different industrial and academic institutions.
- **Sustainability: The Freight Greenhouse Gas (GHG) Calculator** has been developed for calculating and comparing the total cost of transportation and GHG emissions to build awareness and support sustainable development.
  - The Indian Railways has launched **Rail Green Points** for freight customers, allowing them to see potential carbon emission savings.

Source: PIB

MNRE UNVEILED INDIA'S FIRST NATIONAL POLICY ON GEOTHERMAL ENERGY

Context

- Recently, the Union Ministry of New and Renewable Energy (MNRE) launched its **first national policy on geothermal energy**, joining a growing list of countries betting on subterranean heat to achieve **net-zero emissions by 2070.**

National Policy on Geothermal Energy

- **Vision & Goals**: To **establish geothermal energy as a key pillar of India's renewable energy sector**, enhancing energy security, reducing greenhouse gas emissions, and supporting sustainable development.
- **Implementation Framework (By MNRE):**
  - **International collaboration** with leading geothermal nations.
  - **Pilot projects** under the Renewable Energy Research and Technology Development Programme.
  - **Soft loans from IREDA and DFIs** for project financing.
  - Establishment of **Centres of Excellence (CoEs)** for capacity building and technical support.
  - **Periodic progress reports** to track milestones and ensure accountability.

- **Developmental Model and Deployment:** The geothermal development model includes **exploration, drilling, feasibility studies, construction, and operation**.
  - **Fiscal Incentives**: Long-term concessional loans, Sovereign Green Bonds, Viability Gap Funding (VGF).
    - **Import duty and GST exemptions**, tax holidays, and accelerated depreciation benefits.
    - Inclusion in **Renewable Purchase Obligations (RPOs)** and **Carbon Credit Trading**.
  - **Investment Support**: 100% foreign direct investment (FDI), concessional loans, and international collaborations.
  - **Project Duration**: Support for geothermal projects up to 30 years, with extensions based on resource availability.
  - Special funding support for **North-Eastern and high-altitude states**.
  - Conversion of **abandoned oil and gas wells** into geothermal projects.
  - Joint ventures with oil, gas, and mineral companies for resource sharing.

Guidelines for States and Union Territories

- **Allocation of geothermal blocks** with exploration permits (3–5 years).
- **Single-window clearance system** for permits and approvals.
- **Land leasing at concessional prices** for developers.
- **Community engagement and compensatory measures** in tribal and remote regions.
- Provisions for long-term project development (up to 30 years).

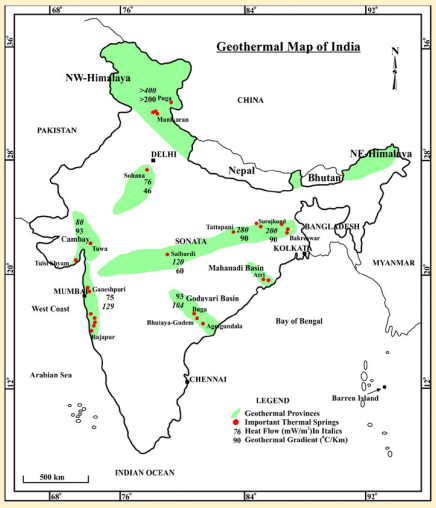
About Geothermal Energy (Geo= Earth, Thermal= Heat)

- It is the heat stored **within the Earth's crust,** and comes from the **natural heat of the Earth** primarily **due to the decay** of the naturally **radioactive isotopes** of uranium, thorium and potassium.
- On average, the **temperature of the Earth increases with depth**, about **25–30°C/ km** above the surface ambient temperature (geothermal gradient).
- The heat is transferred from the interior towards the surface **mostly by conduction.**

- **Types:**
  - **High-enthalpy Resources:** Often associated with volcanic regions, geysers and hot springs are **primarily used for electricity generation.**
  - **Low to Medium-enthalpy Resources:** Such as hot rocks and shallow ground layers, are better suited for **direct-use applications** and **geothermal heat pumps.**
- Geothermal plants offer **high capacity utilization (>80%)**, reliable baseload supply, and **no recurring fuel costs**, making them economically viable in the long term.
  - These are **capital-intensive and site-specific**, requiring high upfront investment in exploration, drilling, and infrastructure.
- **Global Geo-Thermal Capacity** (15.4 GW): United States, followed by Indonesia, the Philippines, Turkey, and New Zealand.

Geothermal Potential Sites in India

- The **Geological Survey of India (GSI),** since 1973, has **identified 381 hot springs** with surface temperatures ranging from 35°C to 89°C.
  - It can be utilized effectively, with advancements in **Enhanced Geothermal Systems (EGS)** and **Advanced Geothermal Systems (AGS).**
- **India** falls **within a medium to low heat enthalpy zone (100–180°C),** spread across **10 geothermal provinces.**
- **'Geothermal Atlas of India, 2022'** estimated the potential of about 10,600 MW of geothermal power in India.



Source: BL

DEFENCE MINISTER URGES ARMED FORCES TO BE READY FOR UNCONVENTIONAL THREATS

Context

- Defence Minister Rajnath Singh encouraged the **armed forces** to remain alert and ready to counter **"invisible" challenges from information, ideological, ecological and biological warfare.**

About

- The **turbulent global order, regional instability and evolving security** landscape demanded constant assessment and preparedness.
- He urged commanders to work towards building the **Sudarshan Chakra vision** articulated by Prime Minister Modi.
  - **It is India's roadmap for building a 21st-century armed force** which is technologically advanced, joint, self-reliant, and strategically agile to secure national interests in a rapidly changing world.
  - A committee had been set up to prepare a medium-term (five-year) and long-term (10-year) road map for the project.

Why Modernisation is Needed?

- **Changing Nature of Warfare:** Shift from traditional wars to hybrid warfare (cyber, space, information, drones, AI-enabled weapons).
- **Regional Security Challenges:** China's military build-up, Pakistan's proxy wars, and terrorism.
- **Technology Gap:** Need to reduce dependence on imports and strengthen indigenous capabilities.
- **Operational Preparedness:** To maintain credible deterrence and ensure readiness for short, high-intensity conflicts.

Decade of Transformation of Indian Army

- The Indian Army is observing **2023–2032** as the **'Decade of Transformation'** and has designated **2024–25 as the 'Years of Technology Absorption'** to pave the way for becoming a **future-ready, technology-driven, lethal, and agile force.**
- **The Transformation Roadmap Focuses On:**
  - **Force Structuring and Transformation:** Building an efficient, combat-ready force.
  - **Modernisation and Technology Induction:** Prioritising cutting-edge technologies.
  - **Jointness and Integration:** Enhancing tri-service synergy through theatre commands.
  - **Multi-Domain Operational Capability:** Preparing for complex and evolving threats.
  - **Infrastructure Development:** Strengthening operational readiness.
  - **Human Resource Development:** Fostering a skilled and motivated workforce.
  - **Atmanirbharta:** Promoting self-reliance in defence manufacturing and technology.

Challenges In Achieving Modernisation:

- **Reorientation to Multi-Domain Conflict:** Multi-domain high-tech operations will require multi-skilling and multi-competencies to prevail in a future conflict.
  - The art of war will need to be elevated along with the science of war.
- **Human Capital & PME (Professional Military Education):** Need for officers trained in strategic thinking, technology adaptation, and joint operations.
  - The current system is still tilted towards traditional, rank-based career progression.
- **Technological Gaps:** The Army lags behind in AI, robotics, drones, cyber, and electronic warfare.
  - Induction of modern systems is not matched by reforms in doctrine, training, and structures.
- **Civil–Military Coordination Issues:** Lack of synergy between MoD, armed forces, and industry.
  - Absence of a fully empowered procurement authority delays decisions.
- **Geopolitical Pressures:** Two-front challenge from China and Pakistan demands rapid modernisation, but pace remains slow.
  - There is a need for indigenous capabilities in case of sanctions or supply chain disruptions.

Government Initiatives

- **Chief of Defence Staff (CDS) & Department of Military Affairs (DMA) (2019)**: It was established to enhance jointness and integration in planning, procurement, and training.
- **Defence Acquisition Procedure (DAP) 2020:** It promotes indigenous design, development & manufacturing, prioritises "Make in India" categories.

- **2025 declared "Year of Reforms":** Focus on enhancing tri service jointness & integration.
  - Simplification and speedier acquisition procedures.
  - **Emphasis on emerging domains:** Cyber, Space, AI, Machine Learning, Hypersonics, Robotics.
- **Integrated Theatre Commands (ITCs):** Push to restructure command structure so that Army, Navy, Air Force in a region operate under unified command.
  - Part of the "jointness" agenda to avoid duplication, improve responsiveness.
- **Joint Doctrine & Technology Perspective & Capability Roadmap (TPCR) 2025:** Released at "Ran Samwad 2025" to lay out standards, capability gaps and technology development for ~10 year horizon.
  - Joint doctrines for multi-domain operations (land, sea, air, space, cyber, cognitive) plus specialised joint doctrines (e.g. Special Forces) to improve interoperability.
- **Defence Industrial Corridors & Indigenous Production Push:** Two defence industrial corridors have been established in **Tamil Nadu and Uttar Pradesh** to bolster its defence manufacturing ecosystem and promote domestic defence production.
- **Joint exercises:** The Indian Armed Forces conduct tri-service integrated multi-domain exercises focused on coordinated operations involving the Army, Air Force, and Navy (Exercise Prachand Prahar, Exercise Desert Hunt).
- **Integrated Air Command and Control System (IACCS):** It provides the backbone for real-time coordination, enabling synchronized responses across multiple units of the Army, Navy, and Air Force.

Way Ahead

- The goal of becoming a modern, adaptive, and tech-savvy force is not just a dream but an imperative in today's world, where technology is fast overtaking warfare and warfighters.
- This transformation will require not just technological innovation, but also a commitment to rethinking force restructuring, adaptive training and tactics, and equipment, to become a future-ready force.

Source: TH

LIGHT POLLUTION IMPACTING BIODIVERSITY

In News

- A recent global study has found that **artificial light** at night is significantly **altering bird behaviour,** causing many species to **stay active for up to an hour longer after sunset**.

What Is Light Pollution?

- Light pollution refers to the excessive or inappropriate use of artificial outdoor lighting, which disrupts natural darkness.
- It disrupts ecosystems, obscures the night sky, and affects human health and energy efficiency.

Causes

- **Urbanisation**: Expansion of cities leads to more streetlights, billboards, and building illumination.
- **Over use:** Use of artificial lighting beyond what is necessary, especially in commercial zones and residential areas.
- **Increase in commercial Activity:** Bright signage and lighting in malls, petrol stations, and industrial zones contribute significantly.
- **Unregulated Use of LEDs:** While energy-efficient, high-intensity LEDs often emit blue light, which scatters more in the atmosphere.

Impacts

- **Environmental and Ecological:** Nocturnal animals, migratory birds, and insects rely on natural light cycles.
  - Birds living in brightly lit areas tend to sing earlier at dawn and later at dusk, disrupting their natural rhythms and negatively impacting migration, feeding, and breeding patterns.
  - Similar effects occur in species like fireflies, whose communication suffers. Artificial lighting confuses navigation and feeding patterns.
  - Altered light exposure affects flowering and photosynthesis cycles of Plant Growth.
- **Human Health:** Exposure to artificial light at night suppresses melatonin production, leading to insomnia and other health issues.
  - Chronic exposure to light pollution has been linked to increased stress and reduced cognitive performance.
- **Astronomy and Scientific Research:** Brightening of the night sky hampers astronomical observations, especially near urban centers.

- **Energy Waste:** Billions of units of electricity are wasted annually due to poorly directed lighting, increasing carbon emissions.

Suggestions and Way Forward

- Light pollution is a rising issue that harms health, environment, and connection to the night sky.
- In urban planning, adopting Dark Sky-compliant lighting and enforcing zoning regulations can reduce unnecessary illumination, especially in residential and ecologically sensitive areas.
- Governments should strengthen the implementation of national lighting codes and incentivize smart lighting systems like motion sensors and timers.
- Public engagement through citizen science initiatives and integrating light pollution topics into educational curricula can raise awareness.

Source :TH

NEWS IN SHORT

SARNATH

Context

- **India** officially nominated **Sarnath for the UNESCO World Heritage List for the 2025-26 cycle.**

About

- **Location:** It is situated near Varanasi, Uttar Pradesh.
  - One of the four major Buddhist pilgrimage sites (others: Lumbini, Bodh Gaya, Kushinagar).
- **Historical Importance:**
  - After attaining enlightenment at Bodh Gaya, Gautama Buddha **delivered his first sermon** at Sarnath (around 528 BCE).
  - This event is called **"Dhammachakrapravartana"** or "Turning of the Wheel of Dharma".
  - It marked the **beginning of the Buddhist Sangha** (community of monks).
- **Monuments & Structures:**
  - **Dhamek Stupa** – built by Ashoka, commemorates the Buddha's first sermon.
  - **Chaukhandi Stupa** – marks the spot where Buddha met his first disciples.
  - **Ashokan Pillar** – erected by Emperor Ashoka; its lion capital is now the National Emblem of India.
  - **Monasteries & remains** – ruins of ancient viharas, temples, and sculptures.
- **Ashoka's Contribution:** Emperor Ashoka visited Sarnath in **3rd century BCE.**
  - Built stupas, monasteries, and inscribed edicts promoting Dharma.
  - The Lion Capital of Ashoka from Sarnath was adopted as India's national emblem in 1950.

Source: IE

CHHATH MAHAPARVA

Context

- India is exploring a multinational nomination of 'Chhath' for inscription in UNESCO's Representative List of Intangible Cultural Heritage of Humanity.

About Chhath

- Chhath Mahaparva, dedicated to the **Sun God** and **Goddess Chhathi Maiya**, is among India's oldest festivals.
- It is celebrated extensively in **Bihar, Jharkhand, Uttar Pradesh, West Bengal**, and by diaspora communities in **Mauritius, Fiji, Suriname, UAE, and the Netherlands**.
- The **four-day festival**, known for its ecological and egalitarian ethos, fosters reverence for nature, sustainability, inclusivity, and community spirit.

India and UNESCO Intangible Heritage

- India already has **15 elements** inscribed (e.g., Yoga, Kumbh Mela, Durga Puja).
- **Nodal Agency:** Sangeet Natak Akademi coordinates India's nominations.
- For inclusion, **state parties** must submit a **nomination dossier** under the 2003 UNESCO Convention.

Do You Know?

- **Intangible Cultural Heritage (ICH):** Includes song, music, drama, skills, crafts, and the other parts of culture that can be recorded but cannot be touched.

Source: PIB

MORAN COMMUNITY

In News

- The **Moran community** launched an indefinite economic blockade demanding **Scheduled Tribe (ST) status.**

About Moran Community

- The Moran community is an **aboriginal tribe of Assam** that once had its own independent kingdom before the advent of **Ahom rule.**
- Historically, they lived in the **southeastern Brahmaputra valley** and had prominent chiefdoms, including the Matak country ruled by chiefs such as Bodousa.
- In the 17th century, **Sri Aniruddhadeva**, a disciple of Srimanta Sankardeva converted the **Morans to Vaishnavism**, leading to the rise of the Moamoria (Mayamara) sect and a period of social and cultural renewal.
- They are predominantly Vaishnava, with the **Moamoria uprising (1769–1799)** acting as a major challenge to Ahom power, stemming in part from their low-caste origins and reformist religious leadership.

Source: TH

PM VISHWAKARMA SCHEME

Context

- On 17 September 2025, the PM Vishwakarma Scheme completed two years.

About the scheme

- It is a **Central Sector Scheme** that provides end-to-end **support to artisans and craftspeople** who work with their hands and tools.
  - The Scheme covers artisans and craftspeople engaged in **18 trades.**
- **Key Benefits:**
  - **Recognition** of artisans and craftspeople through PM Vishwakarma certificate and ID card.
  - **Skill Upgradation:** Basic Training of 5-7 days and Advanced Training of 15 days or more, with a stipend of Rs. 500 per day.
  - **Credit Support:** Collateral free 'Enterprise Development Loans' of upto Rs. 3 lakh in two tranches of **Rs. 1 lakh and Rs. 2 lakh** with tenures of 18 months and 30 months, respectively, at a concessional rate of interest fixed at **5%**, with Government of India subvention to the extent of **8%.**
  - **Marketing Support** in the form of quality certification, branding, onboarding on e-commerce platforms such as GeM, advertising, publicity and other marketing activities to improve linkage to value chain.

Source: PIB

UNIFIED PENSION SYSTEM (NPS)

Context

- **Central government employees** have till September 30 to opt for the **Unified Pension Scheme (UPS) under the National Pension System (NPS).**

Unified Pension Scheme (UPS)

- It was announced in **2024**; effective from **April 1, 2025.**
- **Eligibility:** Central government employees who joined on or **after January 1, 2004** (covered under NPS).
  - New recruits joining central government services on or after April 1, 2025.
  - Former employees who were under NPS but retired or voluntarily retired on or before March 31, 2025.
- **Voluntary Option:** While the NPS was mandatory for all central government employees joining from January 1, 2004, the **UPS is optional.**
- **Features of UPS:**
  - **Assured Pension:** 50% of average basic pay of last 12 months, after 25 years of service.
  - **Family Pension:** Spouses get up to 60% of pension after a pensioner's death.
- **Contributions:**
  - **Employee:** 10% of basic pay + DA.
  - **Employer:** 10% of basic pay + DA.
  - **Govt extra contribution:** 8.5% for pool corpus.
  - **Minimum Guarantee:** At least 10,000 per month pension after 10 years of service.
    - Employees being dismissed from service would not be eligible for the assured payout.
  - **Lump Sum Benefit:** 1/10th of last basic pay + DA for every six months of service.

Source: IE

GENOCIDE

In News

- A UN-mandated investigative body, the Independent International Commission of Inquiry, has concluded that **Israel is committing genocide in Gaza,** accusing its leadership of incitement and intent to destroy the Palestinian population.

What is Genocide?

- The term "genocide" was coined in **1944 by Polish lawyer Raphael Lemkin,** combining the Greek word genos (race/tribe) and Latin cide (killing).
  - He developed the concept in response to the Holocaust and other historical mass killings.
- **Genocide** was first **acknowledged as a crime by the UN General Assembly in 1946**, and formally codified in the **1948 Genocide Convention**
  - Genocide includes any of the following acts, committed with intent to destroy, in whole or in part, a national, ethnic, racial, or religious group:
    - **Killing members of the group**
    - **serious bodily or mental harm**
    - **Inflicting destructive living conditions**
    - **Imposing measures to prevent births**
    - **Forcibly transferring children to another group**
- **The International Court of Justice (ICJ)** affirms that the **prohibition of genocide** is customary international law and a peremptory norm (jus cogens), meaning all states are bound by it, regardless of treaty ratification.
- The **definition of genocide in Article II of the Genocide Convention**—also used in the Rome Statute of the International Criminal Court—was the result of negotiation among UN member states.

RECENT FINDINGS OF INDEPENDENT INTERNATIONAL COMMISSION OF INQUIRY

- The commission found that four out of five acts defined as genocide under the 1948 Genocide Convention have been committed since the war began in October 2023, following the Hamas attack on Israel.
  - These include **killing, causing serious harm, imposing life conditions aimed at physical destruction, and preventing births within the group**.

Response of Israel

- Israel has strongly rejected the report, calling it false and politically biased, and demanded the commission be abolished.

Source :TH

SEX SORTED SEMEN FACILITY UNDER THE RASHTRIYA GOKUL MISSION

In News

- Prime Minister Narendra Modi inaugurated a **Sex Sorted Semen** facility under the **Rashtriya Gokul Mission** in Purnea, Bihar.

Do you know?

- Semen sex-sorting technology increases the chances of female calf births with about 90% accuracy, reducing the economic burden on dairy farmers and boosting their income by producing more replacement heifers.
  - The new facility in Purnea, Bihar, will benefit dairy farmers in the region, especially small, marginal, and landless farmers.

Rashtriya Gokul Mission (RGM)

- The Rashtriya Gokul Mission, launched in 2014 by the **Department of Animal Husbandry and Dairying.**
- It aims to develop and conserve indigenous cattle and buffalo breeds, improve bovine genetics, and boost milk production.
- **Key objectives** include enhancing productivity through advanced technologies, promoting high genetic merit bulls, expanding artificial insemination services, and encouraging scientific rearing and conservation of indigenous breeds.

Updates

- In March 2025,The Union Cabinet approved the **Revised Rashtriya Gokul Mission (RGM) to boost the livestock sector.**
  - It will be implemented as a Central Sector component under the Development Programmes scheme with an increased total outlay of 3,400 crore for the 2021–2026 period, including an additional 1,000 crore.

Source :PIB

ION CHROMATOGRAPHY

Context

- Scientists at the University of Tasmania, Australia have developed a portable ion chromatograph called **Aquamonitrix,** that delivers results comparable to conventional high-cost laboratory instruments.

What is Ion Chromatography?

- Ion Chromatography (IC) is an analytical technique used to **separate and quantify charged particles (ions)** in a sample.
- The process relies on the **interaction of ions with a charged stationary phase** inside a column.

Working Principle of Chromatography

- **Column:** A resin-packed column with a fixed charge (stationary phase) forms the core of IC.
- **Eluent:** A liquid carrier solution is continuously pumped through the column.
- **Sample Injection:** The sample is introduced into the eluent stream.
- **Separation:** Ions in the sample interact with the resin based on their charge and affinity.
  - Oppositely charged ions are attracted to the resin and similarly charged ions are repelled.
  - This causes different ions to move through the column at varying speeds, enabling separation.
- **Detection:** A detector, typically a conductivity meter, measures the changes in the eluent's conductivity as the separated ions pass through.
- **Chromatogram:** This data is plotted as a **chromatogram,** showing peaks that correspond to different ions and their concentrations.

Source: TH