PREFACE

Welcome to our monthly current affairs magazine! We are thrilled to provide you with the latest information and updates on the most important events that happened in our country and around the world in the month of Sep 2023. Our magazine is designed to help you prepare for competitive examinations like UPSC and other State PSC Exams, and we hope that you will find it informative, engaging, and useful.

In this magazine, you will find a wide range of topics covering current affairs, including politics, economics, sports, science and technology, and many more. Our team of writers and editors work hard to bring you the most accurate and up-to-date information, so you can stay informed and prepared for any competitive exam.

We understand that preparing for competitive exams can be a daunting task, but we are here to make it easier for you. Our magazine is designed to be easy to read and understand, with clear and concise articles that will help you stay on top of the latest news and events.

We believe that knowledge is power, and we are committed to helping you achieve your goals. Whether you are preparing for a government job, entrance exam, or any other competitive exam, our magazine will provide you with the information and insights you need to succeed.

Thank you for choosing our magazine, and we hope that you find it helpful and informative.

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POLITY

I. SALIENT FEATURES / PREAMBLE / BASIC CONCEPTS

1. BASIC STRUCTURE DOCTRINE - STRONGEST SAFEGUARDS FOR INDIAN DEMOCRACY

SOURCE: INDIAN EXPRESS

The Basic Structure doctrine, a significant aspect of India's constitutional jurisprudence, acts as a safeguard against potential threats to democratic principles and constitutional integrity.

This legal doctrine, evolved through landmark judicial decisions, restricts Parliament's authority to amend the Constitution in ways that could undermine fundamental values or lead to authoritarian rule.

What is the Basic Structure Doctrine?

*   It is a legal principle developed by Indian courts, asserting that certain fundamental features of the Constitution are beyond the scope of parliamentary amendments.
*   These essential features, known as the "Basic Structure," are crucial for the functioning of the state and cannot be altered by legislative action.

CONSTITUENTS OF THE BASIC STRUCTURE

Federal & secular character of the Constitution	Democratic character of our policy	Liberty of thought, expression, belief, faith and worship
Welfare state and egalitarian society	Equality of status and opportunity	Separation of powers
Dignity of the individual	Unity and integrity of the nation	Sovereignty of India

Evolution of the Basic Structure Doctrine in India:

*   **Early Cases**: Initial cases like Shankari Prasad (1951) and Sajjan Singh (1964) allowed Parliament broad amendment powers but sparked discussions on constitutional limitations.
*   **Introduction of "Basic Features":** In Sajjan Singh case, Justice J.R. Mudholkar introduced the term "basic features," inspired by the Fazlul Chowdhury case in Pakistan, laying the groundwork for the Basic Structure doctrine.
*   **Influence of Professor Dieter Conrad**: In his 1965 lecture at BHU, he discussed about implied limits on constitutional amendments, shaping Indian legal thought.
*   **Shift in Golaknath Case:** The 1967 Golaknath verdict declared fundamental rights unamendable, laying the foundation for the Basic Structure concept.
*   **Establishment in Kesavananda Bharati Case:** The 1973 Kesavananda Bharati case officially recognized the Basic Structure Doctrine, asserting that Parliament's cannot alter essential constitutional elements.

Importance of the Basic Structure Doctrine:

*   **Protection Against Tyranny:** Prevents Parliament from making amendments that could lead to authoritarianism or undermine democratic principles.
*   **Checks Unlimited Power:** Safeguards against the absolute dominance of the majority in Parliament, ensuring compliance with core constitutional values.
*   **Guarantees Constitutional Consistency:** Ensures the preservation of essential constitutional features, including fundamental rights and democratic ideals.
*   **Balances Judiciary and Legislature:** Maintains a delicate equilibrium between legislative authority and constitutional integrity by permitting judicial review of amendments.
*   **Upholds Democratic Ideals**: Crucial for sustaining democracy by preventing the institutionalization of tyranny, even if

amendments enjoy widespread parliamentary support.

Way Forward:

- Upholding the Basic Structure doctrine is imperative to safeguard democratic principles and prevent authoritarian encroachments.
- **Judicial oversight is crucial to ensuring that parliamentary amendments align with constitutional values** and do not undermine fundamental rights.

> **Fact-** The word basic structure is nowhere mentioned in constitution.

UPSC MAINS QUESTION

Q. Discuss the developments and importance of the Basic Structure Doctrine within the framework of India's Constitution. (150 WORDS)

II. RIGHTS ISSUES

2. ANGANWADI WORKERS AND HELPERS GO ON INDEFINITE FAST IN ANDHRA PRADESH

SOURCE: THE HINDU

Anganwadi workers in Andhra Pradesh are currently on strike, demanding improved wages and benefits.

The State government, in response, has enforced the Essential Services and Maintenance Act (ESMA), prohibiting strikes for six months due to the impact on the Integrated Child Development Services (ICDS) at Anganwadi Centres.

Anganwadi Services and Role of Anganwadi Workers:

ICDS Scheme and Anganwadi:

- **Initiated in 1975,** the ICDS scheme now operates as Anganwadi Services, offering comprehensive early childhood care.
- **It is Centrally Sponsored, and it caters to children** (0-6 years), pregnant women, and lactating mothers through Anganwadi workers (AWWs) and Helpers (AWH).

Services Provided by Anganwadi:

- Services encompass immunization, health check-ups, referral services, and nutritional support.
- **ICT platform Poshan tracker monitors and captures real-time data on Anganwadi services implementation.**

Integrated Child Development Services (ICDS) Scheme — Government of India, Ministry of Women & Child Development. Serving Children of 0-6 years and Pregnant & Lactating Mothers. Supplementary Nutrition, Immunization, Pre-School Education, Health Check-ups, Health & Nutrition Education, Referral Services.
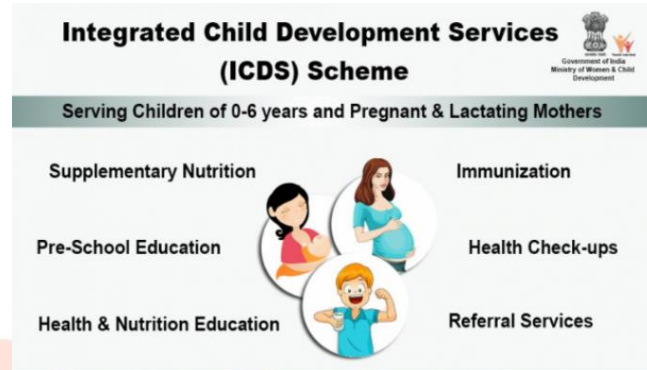
Major Roles and Responsibilities of AWWs:

- **Community Outreach and Mobilization:** Identifying eligible beneficiaries. Promoting community participation and awareness about ICDS programs.
- **Childcare and Early Childhood Education:** Managing Anganwadi Centers, ensuring hygiene. Conducting pre-school education and growth monitoring.
- **Health and Nutrition:** Distributing supplementary nutrition and conducting health check-ups. Assisting in immunization drives and raising health awareness.

Challenges Encountered by AWWs:

Meagre Remuneration:

- Monthly honorarium below minimum wage, often between Rs. 5,000 and Rs. 10,000.
- Frequent delays in receiving payments contribute to financial insecurity.

Overburdened with Work:

- Assigned additional tasks without additional benefits, leading to burnout.
- Extensive workload compromises the quality of services provided.

Lack of Proper Training and Resources:

- Initial training inadequately prepares them for complex tasks.

- Shortage of resources like infrastructure and teaching materials hampers effectiveness.

Lack of Social Recognition and Respect:
- Faces societal stigma and lacks recognition for valuable contributions.
- Absence of respect negatively impacts morale and motivation.

Way Forward:
Elevated Compensation and Benefits:
Fair and timely salary revisions aligned with the cost of living.
Robust social security packages, including health insurance, provident fund, and maternity leave.

Professional Growth and Recognition:
- Dedicated career progression pathways with promotion opportunities.
- Regular, intensive training programs for skill enhancement.
- Formalized qualifications and certifications acknowledging their expertise.

Enhanced Working Conditions and Resources:
- Optimal staffing levels with additional Anganwadi helpers.
- Modernized Anganwadi centres with improved infrastructure and equipment.
- Tech-enabled solutions for efficient record-keeping, monitoring, and communication.

III. LEGAL ISSUES

3. DIFFERENT DRUGS, IDENTICAL BRAND NAMES – INDIA'S PROBLEM

SOURCE – THE HINDU
The issue of drug naming in India poses significant challenges, leading to confusion among consumers and healthcare professionals. This complexity arises from the use of identical or similar names for drugs serving different purposes.

Issues Related to Drug Naming:
Use of Identical or Similar Names:
- Drugs with distinct purposes often share identical or similar names, causing confusion among users.
- Examples include 'Linamac,' drug name is used for both cancer and diabetes treatment.

Phonetic and Visual Similarity:
- Similar-sounding drug names, such as 'Medpol,' 'Medrol,' and 'Metrozole,' contribute to confusion, potentially leading to prescription errors.

Reasons Behind the Issues:
Lack of Prescription Error Data:
- India lacks a comprehensive data collection system for prescription errors, hindering a thorough understanding of the problem's extent and the implementation of effective solutions.

Challenges in Pharmacy Regulation:
- Inadequate regulation of Indian pharmacies, coupled with the dispensation of drugs without proper prescriptions, increases the risk of providing incorrect medications due to name confusion.

Language Barrier:
- Drug packaging primarily uses English, a language spoken by less than 10% of the population, further complicating matters for a significant portion of patients.

Initiatives to Overcome Issues:
Judicial Initiatives:
Supreme Court Ruling (2001):
- The Supreme Court emphasized the necessity for distinct drug names, urging the Ministry of Health to implement measures to prevent confusion.
- The Parliamentary Standing Committee on Health and Family Welfare's 59th report echoed similar recommendations.

Legal and Regulatory Measures:
Drugs and Cosmetics (Thirteenth Amendment) Rules, 2019:

- Introduced a system requiring pharmaceutical companies to provide an "undertaking" that their drug's brand name would not cause market confusion.
- Emphasized checking trademarks registry, a central database for drug names, literature, and internet sources.

Recommendations for Resolution:

- Establish a centralized database for drug names in India to ensure comprehensive coverage and effectiveness of naming regulations.
- Enforce naming regulations rigorously and provide better training for pharmacists to minimize medication errors stemming from similar drug names.
- Improve pharmacy regulation to ensure compliance with prescription laws and encourage the employment of trained pharmacists.

Addressing these recommendations will contribute to a safer and more efficient pharmaceutical landscape, mitigating the risks associated with confusing drug names in India.

IV. EXECUTIVE

4. JUDICIAL CONTRADICTION IN DELHI CHIEF SECRETARY'S EXTENSION

SOURCE – THE HINDU

The National Capital Territory of Delhi (NCT of Delhi) holds a unique position as the seat of both the central government and the government of Delhi.

This distinctive status necessitates special provisions to facilitate cooperation between the elected Delhi government and the central government.

The Lieutenant Governor (LG) serves as the constitutional head of NCT of Delhi, representing the President of India in the territory.

However, conflicts over the distribution of powers, particularly in the administration, have been a persistent constitutional and political issue.

Ongoing Tussle in NCT of Delhi:
Notification of 2015:

- **The central government's 2015 Notification added Entry 41, granting the LG authority in matters related to services, public order, police, and land.**
- The Supreme Court invalidated this notification, emphasizing the elected Delhi government's legislative and executive powers over administrative services, excluding public order, police, and land matters.

Government of NCT of Delhi (Amendment) Act, 2023:

- **The Central Government responded with an ordinance and later an Act, establishing the National Capital Civil Service Authority (NCCSA) and granting overriding powers to the Centre.**
- The Act allows the LG to have the final say in matters related to services, undermining the elected government's control.

Extension of Chief Secretary's Tenure:

- **The recent conflict involves the central government's exercise of power in extending the Chief Secretary's tenure without the elected government's recommendation.**
- This move raises concerns about the violation of the triple chain of accountability, undermining the principles of representative democracy.

Issues with Government of NCT of Delhi Act, 2023:
Undermining Democracy:

- The Act undermines representative democracy by diminishing the elected government's control over services.
- **The NCCSA, headed by the Chief Minister, Chief Secretary, and Principal Secretary, empowers bureaucrats over elected representatives.**

Constitutional Violation:

- The Act violates the SC's judgment, nullifying the Delhi government's legislative and executive powers.
- **It contradicts Article 239AA, disrupting the harmonious relationship envisioned between the Centre and Delhi government.**

Concerns in Recent Supreme Court Judgment:

- The Court's recent judgment on the Chief Secretary's tenure extension deviates from constitutional logic and contradicts past decisions.
- **Selective application of rules, conflict of interest allegations, and evasion of established precedents raise concerns about the legitimacy of the extension.**

Way Forward:

Expert Committee Formation:

- Forming an expert committee with legal, constitutional, and administrative experts to provide unbiased recommendations.
- **The committee should thoroughly analyse legal aspects, review precedents, and propose practical solutions respecting democratic principles.**

Dialogue and Negotiation:

- Facilitating meaningful dialogue and negotiation between the central and Delhi governments.
- **Both parties should engage in constructive discussions to address concerns and find a mutually agreeable solution.**

Respect for Constitutional Principles:

- All stakeholders should demonstrate a commitment to upholding constitutional principles throughout the resolution process.
- **Respecting democratic governance, separation of powers, and the rights of elected representatives is crucial.**

UPSC MAINS QUESTION

Q. Examine the constitutional complexities associated with the Government of National Capital Territory of Delhi (Amendment) Act, 2023, and analyse its impact on the dynamic between the elected government of Delhi and the central government. (150 WORDS).

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5. THE SPEAKER'S COURT: ON THE MAHARASHTRA ASSEMBLY SPEAKER'S RULING

SOURCE: THE HINDU

The recent ruling by the Maharashtra Assembly Speaker on disqualification petitions within the Shiv Sena has brought attention to the powers of Presiding Officers under the anti-defection law.

Anti-Defection Law Overview:

Enactment and Purpose:

- Introduced in 1985 by the 52nd Constitutional Amendment as the Tenth Schedule of the Constitution.
- Aims to prevent party members from violating party mandates; violation leads to the loss of House membership.

Applicability:

- Applies to both Parliament and State Assemblies.
- Allows the Presiding Officer to disqualify defectors based on petitions by other members.

Grounds for Disqualification:

- Giving up party membership.
- Violating party whip.
- Independently elected member joining another party.
- Nominated member joining a political party after six months.

Automatic Ministerial Disqualification:

- Any individual disqualified under the Tenth Schedule is automatically disqualified from a ministerial post.

Exceptions:

- Merger of parties exempts members from disqualification.
- Valid merger requires two-thirds of the party's elected strength to agree.

- The use of a split (1/3rd members) to avoid disqualification was removed by the 91st Amendment in 2003.

Speaker's Ruling and Supreme Court Observations:

Recognition of Shinde Faction:

The Speaker recognized the Eknath Shinde faction as the legitimate Shiv Sena.

No disqualification case against Shinde or Uddhav B. Thackeray (UBT) faction members.

Observations by Supreme Court:

- Criticized the Speaker's recognition of Shinde faction's whip.
- Emphasized that no faction can argue as the original party to avoid disqualification.
- The percentage of members in each faction is irrelevant and determining the real party is crucial.
- Suggested consideration of party constitution and leadership structure submitted to the Election Commission.

Legal Remedies Against Speaker's Decision:

- The UBT faction can approach the Supreme Court again.
- **Grounds:** Speaker's decisions seemingly contradict Supreme Court observations.
- This legal step seeks a reevaluation of the Speaker's decisions in light of the Court's guidance.

V. JUDICIARY

6. GOVERNMENT BACKS VERDICT DENYING AMU MINORITY STATUS

SOURCE: INDIA TODAY

The recent observations by the Supreme Court (SC) on the minority status of Aligarh Muslim University (AMU) bring attention to the long-standing dispute surrounding its character.

The SC asserted that the administration of an educational institution regulated by a statute doesn't affect its minority status.

History of AMU:

Roots of AMU:

- Founded in 1875 as the Muhammadan Anglo-Oriental (MOA) College by Sir Syed Ahmad Khan to address Muslim educational backwardness.
- Attained University status in 1920 through an Act of the Indian Legislative Council, becoming Aligarh Muslim University (AMU).

Origin of Dispute:

- Dispute emerged in 1967 due to amendments in 1951 and 1965, challenging the exclusive Muslim character of AMU.
- Legal challenges argued that Muslims, having initiated AMU, had the right to manage it.

Supreme Court's Ruling (1967):

- SC held that AMU, being a central university, couldn't be considered a minority institution.
- Emphasized that the Act establishing AMU aimed at government recognition, not solely rooted in Muslim minority efforts.

Why Does the Dispute Persist?

1981 Amendment:

- Nationwide protests by Muslims led to the 1981 amendment affirming AMU's minority status.
- Union government added Section 2(l) and Subsection 5(2)(c) to explicitly recognize its minority status.

Subsequent Challenges:

- In 2005, AMU reserved medical course seats for Muslims, nullified by the

- Allahabad High Court, citing the 1967 SC ruling.
- In 2016, the Union government withdrew its appeal, citing contradictions with the principles of a secular state.
- In 2019, the matter was referred to a seven-judge Bench by the SC.

Observations of the Supreme Court:

Doesn't Lose Minority Status if Regulated by Statute:

- SC emphasized that a statute regulating an institution doesn't diminish its minority status.
- Article 30 of the Constitution doesn't mandate exclusive administration by the minority community.

Can have Secular Administration:

- Minority institutions can have a secular administration and admit students from diverse communities.
- The institution need not exclusively offer religious courses.

Majority Community in Administration:

- Presence of office-bearers from the majority community doesn't dilute the minority character.

Supreme Court Cases Related to Minority Community:

- **TMA Pai Case:** Religious and linguistic minorities considered state-wise for Article 30 purposes.
- **Bal Patil Case:** Clarification in 2005 that the unit for determining minority status would be the 'state.'
- **Inamdar Case:** SC ruled that the state cannot impose its reservation policy on minority and non-minority unaided private colleges.

Constitutional and Statutory Provisions:

- **Article 29:** Protects the right of any section of citizens having a distinct language, script, or culture. Applies to both religious and linguistic minorities.
- **Article 30 (1):** Empowers religious and linguistic minorities to establish and administer educational institutions. Doesn't aim to ghettoize the minority; it reinforces the commitment to aid Minority Institutions without discrimination.
- **Other Relevant Articles:** Articles 25, 26, 27, and 28 collectively ensure freedom of religion, establishment of religious institutions, tax exemption, and freedom in educational institutions.
- **National Commission for Minorities (NCM):** Established in 1992 to advise the government on minority welfare. Initially covered Muslims, Christians, Sikhs, Buddhists, Parsis, and later Jains in 2014.

Conclusion:

The SC's recent observations on AMU's minority status provide a nuanced perspective on the interaction between statutory regulations and minority character. **While the AMU case reflects a specific instance, it intertwines with broader principles safeguarded by the Constitution for the protection and development of minority communities in India.**

UPSC MAINS QUESTION

Q. Can the National Commission for Scheduled Castes (NCSC) ensure the application of constitutional reservations for Scheduled Castes within religious minority institutions? Evaluate the scenario. (150 WORDS).

VI. INSTITUTIONS

7. FINANCE PANEL SHOULD CURB POPULISM

SOURCE: THE HINDU

The constitution of the 16th Finance Commission (FC) is imminent, and charged with the critical task of recommending the devolution of central taxes and grants to states.

A recent RBI report on state finances highlights potential challenges, such as states reverting to the Old Pension Scheme (OPS) and unsustainable subsidies tied to electoral promises.

Constitution of Finance Commission:
Constitutional Body:
- Established under Article 280 of the Indian Constitution.
- Comprises a chairman and four members appointed by the President.
- Mandated to make recommendations on tax revenue distribution and grants-in-aid between the Centre and states.

Five-Year Term:
- Constituted every five years or earlier, as deemed necessary by the President.

Need to Curb Populism in India:
Fiscal Imbalance:
- Rising state debts and fiscal deficits.
- Tax revenues lagging behind populist spending.

Economic Distortions:
- Decline in foreign direct investment and job growth stagnation.
- Market inefficiencies due to populist policies.

Erosion of Governance:
- Increase in corruption and declining transparency.
- Populist rhetoric undermining institutional checks and balances.

Populist Policies Aggravating the Debate:
Reversion to Old Pension Scheme (OPS):
- Some states abandoning the New Pension Scheme (NPS) for OPS.
- OPS incurs indefinite liabilities and results in 4.5 times more liability compared to NPS.

Rising States' Fiscal Deficit:
- Deficits due to subsidies for populist measures like free electricity.
- Average spending on subsidies is 0.87% of Gross State Domestic Product (GSDP).

How the Finance Commission can Help Curb Populism:
Performance-Based Incentives:
- Link financial transfers to states with specific outcomes.

- Encourage responsible governance and discourage populist measures.

Objective Criteria for Populist Measures:
- Develop criteria in collaboration with Centre and States.
- Categorize schemes objectively as populist or non-populist.

Fiscal Efficiency Parameters:
- Give more weightage to fiscal efficiency in transfer criteria.
- Emphasize fiscal consolidation and tax effort measurement.

Public Awareness:
- Contribute to informed public discourse on populist measures.
- Highlight strains on finances and long-term impacts on economic growth.

Stress on Future Implications:
- Draw attention to long-term consequences of populist measures.
- Recommend measures preventing states from borrowing beyond capacity.

Consensus Building:
- Act as a mediator between Centre and States.
- Foster dialogue and cooperative federalism on fiscal matters.

Regular Review and Recommendations:
- Continually review financial health of states.
- Make periodic recommendations based on evolving economic scenarios.

Conclusion:
The rise of populism in India demands a strategic approach. The Finance Commission, with its **constitutional mandate, can act as a guiding force to curb populist tendencies.**

UPSC MAINS QUESTION

Q. Examine the contribution of the Finance Commission in mitigating populist trends within the Indian context. (150 WORDS).

VII. POLICIES/ SCHEMES/ ACTS/ REPORTS/ COMMITTEES IN NEWS

8. POST-GRADUATE MEDICAL EDUCATION REGULATIONS, 2023

SOURCE: TIMES OF INDIA

The recently introduced Post-Graduate Medical Education Regulations, 2023, have faced criticism from doctors, particularly for not addressing key concerns related to working hours, mental health, burnout issues, and irregularities in stipends.

Post-Graduate Medical Education Regulations, 2023

The Post-Graduate Medical Education Regulations, 2023 (PGMER-23) were introduced by the National Medical Commission (NMC) to revamp postgraduate medical education in India. Launched on January 1, 2024, these regulations aim to cater to the evolving healthcare demands by setting a comprehensive framework for postgraduate medical training.

Key Objectives:

- **Community Health Needs:** Recognizing and addressing community health needs.
- **Competency Mastery:** Ensuring the mastery of competencies in respective specialties.
- **Adaptation to Advancements:** Staying updated with the latest advancements in the medical field.
- **Research Promotion:** Fostering a culture of research among postgraduate medical students.
- **Teaching Skills:** Developing effective teaching skills among medical educators.
- **Exemplary Citizenship:** Cultivating exemplary citizenship qualities in medical professionals.

Qualifications and Duration of Courses:

- The PGMER-23 outlines the qualifications and durations for various courses:
- Broad-specialty, super-specialty, diploma, PDCC, PDF courses, D.M./M. Ch are detailed.

Establishment of Post-Graduate Medical Institutions:

- Institutions require NMC permission to initiate any course.
- They must align with the Maintenance of Standards of Medical Education Regulations, 2023.

Minimum Standards of Requirements:

- Institutions must adhere to standards related to infrastructure, faculty, clinical material, and facilities.
- Periodic updates aligned with PGMSR-2023 are mandatory.

Criticisms:

- **Long Working Hours:** Dissatisfaction among doctors due to vague guidelines on working hours. Lack of specific limits, posing potential risks of burnout.
- **Mental Health:** Absence of dedicated measures for mental health and burnout prevention.
- **Irregular Stipends:** Ongoing concern about irregular stipends not being addressed in the regulations.
- **AI in Curriculum:** Lack of guidelines for integrating Artificial Intelligence in the curriculum, seen as a significant gap.
- **Inclusivity Issues:** 5% reservation for doctors with disabilities is provided but criticized for not incorporating recommendations from "Doctors with Disabilities: Agents of Change." Introduction of terms like 'moderate' dyslexia and exclusion of mental illness and autism raise inclusivity concerns.

NMC's Perspective:

- **Groundbreaking Reforms:** NMC sees the regulations as bringing groundbreaking reforms, emphasizing quality enhancement in postgraduate medical education.
- **Inclusivity and Ethics:** Emphasis on fostering inclusivity and ethical practice within the medical fraternity.

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- **Non-migration Policy:** Support for prohibiting student migration between institutions, considered a crucial aspect of the reforms.
- **Alignment with Laws:** Seat reservations align with existing state and union territory laws, ensuring conformity with prevailing regulations.

Conclusion:

While the PGMER-23 aims at comprehensive reforms, **Collaborative efforts between the medical community and regulatory bodies are essential to strike a balance between regulations and the well-being of medical professionals.**

9. VIJAY RAGHAVAN PANEL RECOMMENDATIONS

SOURCE: INDIAN EXPRESS

Context: The 9 Member Vijay Raghavan panel, addressing DRDO (defense research development organization) concerns, submits its recommendations.

- **Background:** Parliamentary standing committee report highlights delays in 23 of 55 DRDO projects; CAG report notes 67% project delays.
- Multiple Extensions were caused due to design changes, user trial delays, and supply order issues.

Major Recommendations:

- **Refocus on R&D:** Suggests DRDO should return to its primary goal of defence research and development.
- **Avoid Involvement in Production:** Advises against involving itself in productization, production cycles, and product management; tasks which are more suitable for the private sector.
- **Narrow Focus and Expertise:** Emphasizes identifying specific areas of expertise, and questions DRDO's role in drone development.

- **Role of DTC:** Advocates Defence Technology Council's pivotal role in steering defence technology development.
- **Creation of Dedicated Department**: Proposes a new Department of Defence Science, Technology, and Innovation, acting as the secretariat for the Defence Technology Council.

About DRDO:

DRDO is R&D wing of the Ministry of Defence, Govt of India.

- **Established** in 1958.
- **Vision:** Empower India with cutting-edge defence technologies.
- **Mission**: Achieve self-reliance in critical defence technologies.

Objective:

- Develop indigenous defence technologies.
- Enhance national security capabilities.
- Reduce dependence on foreign defence equipment.

Major Issues Related to DRDO:

Project Timelines and Cost Overruns:

- DRDO is well known for exceeding estimated timelines and budgets.
- Examples include Light Combat Aircraft Tejas, taking over 30 years for development.

Lack of Synergy with Armed Forces:

- Internal decision-making processes hinder innovation.
- Reported lack of collaboration with Armed Forces in defining requirements and incorporating feedback.

Technology Transfer and Private Sector Integration:

- Inefficient transfer of technologies to private industries.
- Hinders faster deployment and commercialization, leading to dependence on imports.

Transparency and Public Perception:

- Limited public awareness and transparency.

- Results in negative public perception and criticism.

Way Forward:

Stronger Project Management:

- Implement stricter project management methodologies.
- Include clear milestones, resource allocation, and accountability measures.

Enhanced Collaboration with Armed Forces:

- Establish dedicated communication channels.
- Involve Armed Forces personnel in development stages.

Streamlined Technology Transfer:

- Develop clear protocols and incentives for technology transfer.
- Foster closer public-private partnerships.

Foster a Culture of Experimentation and Open Innovation:

- Collaborate with universities, startups, and international partners.
- Leverage diverse expertise and access cutting-edge technologies.

Increase Public Awareness:

- Actively engage with the media.
- Organize public outreach events.
- Share success stories to raise awareness about DRDO's contributions to national security.

10. AYUSHMAN BHARAT - PRADHAN MANTRI JAN AROGYA YOJANA

SOURCE – THE HINDU

Ministry of family and welfare has recently released **statistics** regarding Ayushman Bharat - Pradhan Mantri Jan Arogya Yojana

Ayushman Cards:

- Approximately **49% of Ayushman cards are held by women.**
- Women also account for around 48% of total authorized hospital admissions.
- **Over 28.45 Crore Ayushman Cards have been created**, with 9.38 Crore added in 2023.

Health Coverage:

- The scheme covers 55 Crore individuals, representing 12 Crore families.
- States and Union Territories have independently expanded the beneficiary base beyond the initial coverage.

Hospital Admissions:

- A total of 6.11 Crore hospital admissions have been authorized, amounting to Rs 78,188 Crores.
- In 2023 alone (Jan-Dec), 1.7 Crore hospital admissions were authorized, valued at over Rs 25,000 Crores.

About Ayushman Bharat-PMJAY:

- Launched in 2018, it stands as the **world's largest government-financed health insurance scheme.**
- **Offers a sum insured of Rs. 5 lakh per family for secondary and tertiary care.**
- Health Benefit Packages cover surgeries, medical treatments, day care procedures, medicines, and diagnostics.

Beneficiaries:

- **An entitlement-based scheme targeting beneficiaries identified by the latest Socio-Economic Caste Census (SECC) data.**
- Flexibility for states to use non-SECC beneficiary family databases with similar socio-economic profiles.

Funding:

- Funding is shared based on the region: **60:40 for states and UTs with legislatures, 90:10 in Northeast states, Jammu and Kashmir, Himachal Pradesh, and Uttarakhand.**
- UTs without legislatures receive 100% central funding.

Nodal Agency:

- The **National Health Authority (NHA) functions as an autonomous entity under the Society Registration Act, 1860.**
- Collaborates with state governments for effective PM-JAY implementation.
- **State Health Agencies (SHAs) at the state level oversee AB PM-JAY implementation.**

11. POSITIVE IMPACT OF JAL JEEVAN MISSION

SOURCE – THE HINDU

The Jal Jeevan Mission launched in 2019, aims to provide piped water in sufficient quantities and prescribed quality to every rural household in India.

The mission has achieved significant milestones, addressing various challenges with a region-specific approach.

Achievements:

Increased Tap Connections:
- **Tap water has been provided to 73% of rural households**, with over 14 crore households having tap connections compared to 3.23 crore in 2019.

Village Committees and Action Plans:
- **More than 5.29 lakh village water and sanitation committees have been formed**, developing 5.17 lakh village action plans.

Women Training:
- Approximately **22.98 lakh women have been trained** for testing water samples using field testing kits.

Challenges and Solutions:

Addressing Regional Needs:
- Varied regional needs were considered, using insulated pipes in hilly and cold regions, and implementing multi-village schemes in areas with water quality issues.

Transparency and Efficiency:
- **A real-time dashboard provides updates and progress reports**, ensuring transparency and efficient water resource management. Continuous monitoring is done through advanced technologies.

Water Quality Management:
- A **proactive Water Quality Management Information System detects contamination promptly,** enabling quick corrective actions and grievance redress.

Positive Impacts:

Infant Mortality Reduction:
- Providing safe water can reduce infant deaths by nearly 30%, preventing approximately 25% of under-five deaths in India (1,36,000 child deaths annually).

Diarrhoea Prevention:
- **Offering tap water in every household can avert 4 lakh diarrhoeal deaths, according to a WHO study.**

Economic Savings:
- The mission can lead to **economic savings of up to $101 billion or ₹8.37 lakh crore due to reduced health-related expenditures.**

Community-Building:
- Strengthening the socio-economic fabric of rural communities by fostering a sense of community.

Skill Building and Employment Generation:
- **Initiatives like Nal Jal Mitra equip villagers with skills for piped water supply maintenance**, fostering skill development and generating employment.

Conclusion:

The Jal Jeevan Mission not only ensures clean water supply but also brings forth a myriad of positive impacts, spanning from health benefits to economic savings and community development. **It is a pivotal step in India's journey towards achieving UN Sustainable Development Goal 6 – clean water and sanitation for all.**

UPSC MAINS QUESTION

Q. What positive outcomes can result from the Jal Jeevan Mission, beyond the assurance of a clean water supply? (150 WORDS)

VIII. PRELIMS POINTERS IN NEWS

12. SALWA JUDUM

SOURCE: THE HINDU
The National Human Rights Commission (NHRC) has issued directives to the Ministry of Home Affairs and six states, urging them to provide information concerning the victims of Salwa Judum.

- Salwa Judum, which is "Purification Hunt" in the local Gondi language, operated as a militia during anti-Maoist operations in Chhattisgarh from 2005 to 2011.
- **Banned by the Supreme Court in the Nandini Sundar vs State of Chhattisgarh case, Salwa Judum faced allegations of human rights abuses, including forced displacement and arbitrary arrests.**
- NHRC's move reflects an ongoing commitment to ensure accountability for past actions and protect human rights.

13. MEDTECH MITRA

SOURCE: PIB
The Ministry of Health and Family Welfare has initiated 'MedTech Mitra,' strategically empowering young MedTech innovators.
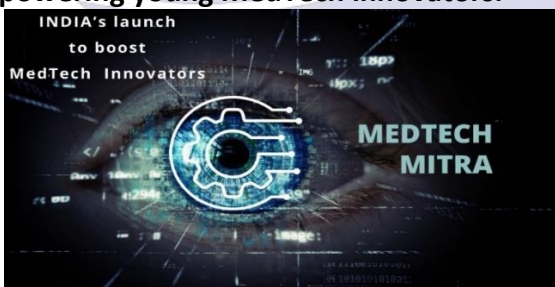
- The platform supports talent in research shaping and regulatory approval processes. Focused on indigenous development, it aims to reduce the current 80% import dependence in MedTech.
- **Complementary initiatives include production-linked incentives, investments in medical drug parks, and the implementation of research policies**

and incentive schemes to foster innovation in the MedTech sector.
- 'MedTech Mitra' reflects a comprehensive approach toward advancing healthcare solutions and fostering self-sufficiency.

14. FAST TRACK SPECIAL COURTS (FTSCS) SCHEME

SOURCE: PIB
The Union Cabinet approves the extension of the Fast Track Special Courts (FTSCs) Scheme until March 31, 2026.
About FTSCs:

- Launched in 2019, a Centrally Sponsored Scheme by the Department of Justice, Ministry of Law & Justice.
- Funded from the Nirbhaya Fund of centre share to enhance women's safety.
- Dedicated courts for rape and POCSO Act cases.
- Established after the Criminal Law (Amendment) Act 2018 for stringent punishments in sexual offense cases.
- 761 FTSCs operational in 30 States and Union Territories.
- Linked to the National Judicial Data Grid, resolving over 1.95 lakh cases swiftly.

Benefits:

- Addresses sexual and gender-based violence.
- Reduces pending cases.
- Eases the burden on the judicial system.

Concerns and Challenges:

- Lack of IT infrastructure and specialized training for judges.
- Inadequate number of judges impacting efficiency.

15. GRAM MANCHITRA

SOURCE: INDIAN EXPRESS
The Ministry of Panchayati Raj (MoPR) is promoting Gram Manchitra to empower Gram Panchayats for spatial planning.

About Gram Manchitra:
- Launched in 2019.
- Developed by the National Informatics Centre (NIC).
- Enables spatial planning at the Gram Panchayat level.
- Utilizes geo-spatial technology for planning.
- Provides a single platform for visualizing developmental works.
- Acts as a decision support system for Gram Panchayat Development Plans.

16. YUVAi INITIATIVE

SOURCE: PIB

YUVAi is a collaborative effort by the National e-Governance Division (NeGD), Ministry of Electronics & Information Technology (MeitY), Government of India, and Intel India.

Key Points:

Objective: Foster a deeper understanding of Artificial Intelligence (AI) among school students.

Target Audience: Focuses on students from class 8 to 12 nationwide.

Skill Empowerment:
- Aims to equip students with AI skills.
- Empowers them to engage as human-centric designers and users of AI technology.

Curricular Integration:
- Includes AI education in the school curriculum.
- Promotes the integration of modern technologies in educational frameworks.

17. PRADHAN MANTRI RASHTRIYA BAL PURASKAR 2024

SOURCE: PIB

The President of India honoured 19 children with Pradhan Mantri Rashtriya Bal Puraskar 2024 for their outstanding achievements in various categories.

About the Award

Criteria: Awarded to children aged 5 – 18 years for outstanding achievements in seven categories: Bravery, Art & Culture, Environment, Innovation, Science & Technology, Social Service, and Sports.

Objective: Recognize and encourage exceptional accomplishments in various fields such as academics, arts, culture, and sports among children.

Award Categories

Bal Shakti Puraskar (National Child Award)
- Recognizes children displaying exceptional abilities in innovation, academics, sports, arts & culture, social service, and bravery.
- Each recipient receives a medal, a cash prize of Rs. 1,00,000, book vouchers worth Rs. 10,000, along with a certificate and citation.

Bal Kalyan Puraskar (National Child Welfare Award)
- **Individual**: Acknowledges individuals contributing significantly to child development, child protection, and child welfare for at least seven years, impacting children's lives positively.
- Includes a cash prize of Rs. 1,00,000, a citation, and a certificate.
- **Institution:** Recognizes institutions making remarkable contributions to child welfare.
- Three awards are granted, each comprising a prize of Rs. 5,00,000, along with a citation and certificate.

INTERNATIONAL RELATIONS

I. INDIA AND ITS NEIGHBOURHOOD

1. INDIA-MYANMAR BORDER TO RESTRICT FREE MOVEMENT

SOURCE: INDIAN EXPRESS

The decision to fence the 1,643-km border between India and Myanmar and end the Free Movement Regime (FMR) has sparked discussions concerning security, refugee influx, and diplomatic relations.

This move highlights the complex dynamics between the two countries and raises questions about its impact on local communities and regional stability.

What is The Free Movement Regime (FMR)?

- The **FMR allowed tribes along the India-Myanmar border to travel up to 16 km inside each other's territory without visas.**
- **Implemented in 2018 under India's Act East policy** to promote people-to-people contact and boost local trade.
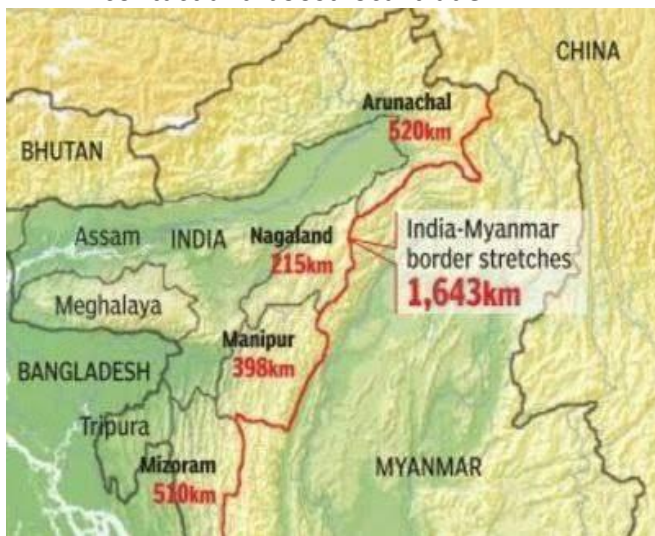
Why FMR Was Conceptualized:

- The British demarcated the India-Myanmar border in 1826 without consulting the local people, dividing communities without their consent.
- FMR **aimed to bridge the gap by allowing cross-border travel**, promoting cultural ties, and supporting local trade.

Major Concerns Related to India-Myanmar Border:

- **Security Concerns:** Rising concerns about arms and drug trafficking prompted India's decision to fence the border.
- **Refugee Influx:** The military coup in Myanmar led to conflict in the Chin province, causing refugees to enter India's Northeast.
- **Local Opposition to Fencing:** Tribal groups like the Kuki's opposed fencing due to kinship ties with Myanmar's Chin community, fearing increased ethnic tensions.
- **Varied State Responses:** While Mizoram provided refuge, Manipur's response varied, showcasing diverse political reactions within India.
- **Disruption of Local Lives:** Suspension of FMR may disrupt the lives of border residents who could travel without a visa.

India's Stance on Myanmar:

- **Engagement with Military Regime:** India chose engagement over isolation with Myanmar's military government.
- **Look East Policy:** Myanmar is crucial to India's Look East Policy, emphasizing economic and strategic interests.
- **Limited Condemnation:** India refrained from strong opposition against Myanmar's actions affecting its interests.
- **Balancing Security and Diplomacy:** India's approach balances security concerns with maintaining diplomatic ties with Myanmar.

Way Forward:

A balanced approach considering security and humanitarian concerns is crucial.

India must address the impact of border fencing on local communities.

Maintaining diplomatic relations while handling the refugee crisis and ethnic tensions in the Northeast is imperative.

UPSC MAINS QUESTION

Q. Examine India's approach towards the Free Movement Regime (FMR) with Myanmar and its implications for the border region. (150 WORDS)

II. INDIA RELATIONS WITH MAJOR POWERS

2. CABINET APPROVES THE MIGRATION AND MOBILITY AGREEMENT BETWEEN INDIA AND ITALY

SOURCE: THE HINDU

The Union Cabinet has given ex-post facto approval to the Migration and Mobility Agreement between India and Italy, reflecting a commitment to fortify ties and address irregular migration.

Key Provisions:

Temporary Residence for Indian Students:

- Graduates seeking professional exposure in Italy post-academic or vocational training can secure temporary residency for up to 12 months.

Reserved Quotas for Workers:

- The **agreement outlines quotas for non-seasonal and seasonal Indian workers**. There is a reserved quota range over the years 2023-2025 under Italy's existing Flows Decree.
- The **"Flow Decree" sets the maximum number of non-EU citizens entering Italy for work and self-employment.**

Implementation:

- The agreement is **valid for 5 years**, with automatic renewal unless terminated.
- A **Joint Working Group (JWG) will oversee implementation,** convening periodically to evaluate progress and propose supportive measures.

Key Facts About Italy:

Geography:

- Italy is a boot-shaped peninsula in southern Europe, surrounded by the Adriatic Sea, Tyrrhenian Sea, and Mediterranean Sea.
- Borders with Austria, France, the Holy See, San Marino, Slovenia, and Switzerland, and maritime borders with several countries.

Government: Republic

Capital: Rome

Currency: Euro

Geographical Features:

- **Major Mountains:** Alps, Apennines
- **Major Rivers:** Po, Adige, Arno, Tiber
- **Major volcanoes:** mt.etna,mt.vesuvius,mt.stromboli

Other Areas of Cooperation:

Historical Ties:

- Italy's ancient port cities were significant trading posts on the spice route.
- Marco Polo, a Venetian merchant, travelled to India in the 13th century, leaving behind records of his experiences.

Political Relations:

- Established in 1947, political relations were elevated to a Strategic Partnership in March 2023.

Economic Ties:

- Bilateral trade valued at USD 14.25 billion in 2022-23.

- Italy is among India's **top 5 trading partners in the European Union.**

Security Collaboration:

- The India-Italy Military Cooperation Group (MCG) enhances defence cooperation.

Other Initiatives:

- India-Middle East-Europe Economic Corridor
- Global Biofuel Alliance
- Blue-Raman project

Conclusion:

The Migration and Mobility Agreement marks a strategic step for India and Italy, enhancing collaboration and fostering deeper connections. This agreement reflects the commitment of both nations to facilitate the movement of people and promote shared prosperity.

UPSC MAINS QUESTION

Q. "Discuss the significance and key provisions of the Migration and Mobility Agreement recently approved by the Union Cabinet between India and Italy. Assess the role of such agreements in addressing irregular migration and fostering cooperation between nations." (150 WORDS).

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3. WHY CANADA HAS PUT CURBS ON FOREIGN STUDENTS, AND HOW INDIANS ARE IMPACTED

SOURCE: INDIAN EXPRESS

Canada's recent decision to cap international student visas has sparked discussions about its implications, particularly for Indian students.

Decisions by the Canadian Government:

- **Reduction in Student Permits:** Canada has announced a 35% reduction in new international student permits for the academic session starting on September 1, 2024.
- **Modifications to PGWP:** Modifications to the Post-Graduation Work Permit Program (PGWP) have been introduced, affecting international students' ability to work in Canada after completing their studies.

- **Restriction on Spousal Work Permits**: Work permits for spouses of international students will no longer be issued, except for those enrolled in master's and doctoral programs.

Implications for Foreign Students, Especially Indians:

- **Scope of Cap**: The two-year cap on student permits applies only to undergraduate courses, exempting Masters, PhD, and elementary/secondary school programs.
- **Impact on Current Students**: The restrictions apply to new applicants, meaning current international students in Canada, regardless of their program, are not affected.
- **Effect on Indian Students:** Indian students, who form a significant portion of international applicants to Canada, are expected to be particularly impacted by the visa cap.

Reasons Behind the Decision:

- **Housing Crisis:** The influx of foreign students has exacerbated Canada's housing crisis, leading to increased rental and living costs in student-populated areas.
- **Quality of Education**: Concerns have been raised about the quality of education provided by some private institutions charging high tuition fees while delivering subpar education.

III. INDIA'S RELATIONS WITH OTHER NATIONS

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4. INDIA'S LITHIUM EXPLORATION AGREEMENT WITH ARGENTINA

SOURCE: INDIAN EXPRESS

Through Khanij Bidesh India Limited (KABIL), India signs deal with Argentina's CAMYEN.

- Focus on exploration and development of five lithium brine blocks in Argentina.

- Agreement grants KABIL rights for evaluation, prospecting, and exploration.
- Exploitation rights for commercial production secured upon lithium mineral discovery.

Significance:
- First-ever lithium exploration and mining project by a government company in India.
- Lithium, known as 'white gold,' crucial for India's shift to green energy.

Lithium Applications:
- Essential for energy storage, mobile phone batteries, and Electric Vehicles (EVs).
- Plays a key role in advancing sustainable and renewable energy solutions.

LITHIUM

01 Third element in the periodic table	03 Lightest and the least dense metal
02 Grey, shiny, non-ferrous alkali metal	04 Dubbed as 'White Gold'
05 Highly reactive	
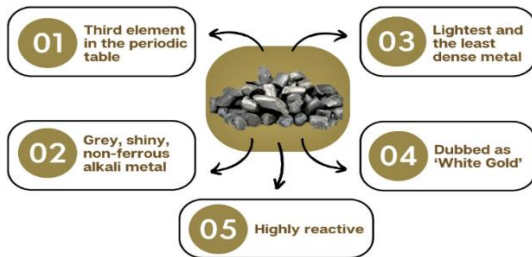
Argentina's Lithium Status:
- Part of the world's "Lithium Triangle" with Chile and Bolivia.
- Collectively, they possess over half of the world's lithium resources.
- Argentina ranks 2nd in lithium resources, 3rd in reserves, and 4th in production globally.

Global Lithium Dynamics:
- Highlights the global importance of lithium-rich regions in meeting rising demand for clean energy technologies.
- Strengthens India's position in securing resources crucial for future energy transitions.

IV. AGREEMENTS INVOLVING INDIA AND/OR AFFECTING INDIA'S INTERESTS.

5. A REVIVAL OF THE IMEC IDEA AMID CHOPPY GEOPOLITICS

SOURCE: THE HINDU

The **India-Middle East-Europe Economic Corridor** (IMEC) is a proposed trade route, aiming to connect Asia, the Arabian Gulf, and Europe through a network of transport corridors.

India-Middle East-Europe Corridor (IMEC)
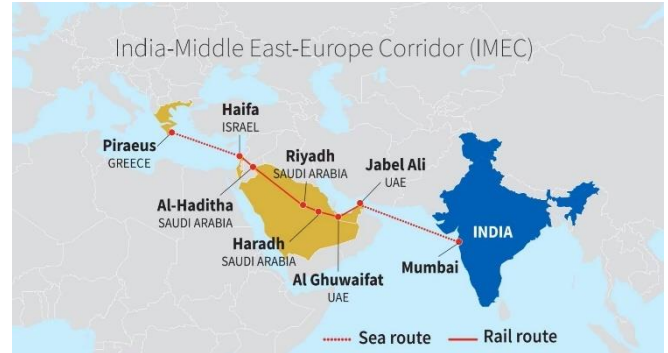
What is the IMEC Project?
- IMEC is a network of transport corridors comprising railway lines and sea lanes.
- It aims to promote economic integration between Asia, the Arabian Gulf, and Europe.

Challenges Facing IMEC:

Geopolitical Tensions:
- Conflicts in Yemen and Gaza disrupt regional stability crucial for IMEC.
- Yemen conflict undermines confidence in the Suez Canal, highlighting the need for alternatives.

Turkey's Exclusion and Alternative Proposal:
- Turkey, excluded from IMEC, proposes an alternative route through Iraq to the Mediterranean.

Saudi Israeli Link Controversy:
- Connecting Saudi Arabia to Israel faces opposition due to regional disputes.
- Concerns about Arab Street's acceptance post-Gaza war.

Uncertain U.S. Support:
- Potential political changes, like Donald Trump's return, raise doubts about sustained U.S. commitment to IMEC.

How does IMEC benefit India?

Enhanced Container Shipping:
- Potential to reduce delivery schedules by up to 40%, particularly in southern India.

- Requires development of dedicated freight corridors for comprehensive network.

Reduced Logistics Costs:

- Aligns with India's National Logistics Policy of 2022, aiming to reduce costs to global levels by 2030.

Optimizing Transport Modes:

- Aims to shift container transport from road to a balanced split among road, rail, and coastal shipping.

Integration with Indian Ports:

- Plans to integrate with major ports like Mundra and Jawaharlal Nehru Port Trust, enhancing global connectivity.

Support for the Hydrogen Economy:

- Includes plans for hydrogen pipelines, aiding India's transition to a decarbonized economy.

Way Forward:

- The future of IMEC depends on overcoming geopolitical hurdles and infrastructure challenges.
- Resolution of issues such as Turkey's exclusion and the Saudi Israeli link is crucial.
- Global financing and support, especially from the U.S., Europe, and Saudi Arabia, can transform IMEC into a major trade route.
- Success in addressing challenges will benefit regional economies and enhance global trade connectivity.

In conclusion, the India-Middle East-Europe Economic Corridor (IMEC) has the potential to reshape trade routes, providing alternatives in the face of geopolitical challenges.

The success of IMEC depends on navigating geopolitical complexities and securing international support, which could lead to transformative impacts on regional and global trade.

Note – Please refer map of IMEC for prelims questions.

6. ORGANISATION OF ISLAMIC COOPERATION

SOURCE: THE HINDU

The Organisation of Islamic Cooperation (OIC) recently condemned comments made by two Indians regarding Prophet Muhammad.

The Ministry of External Affairs rejected the OIC's remarks, stating they did not represent the Indian government's views.

This incident follows India's criticism of the OIC's stance during the Karnataka hijab row.
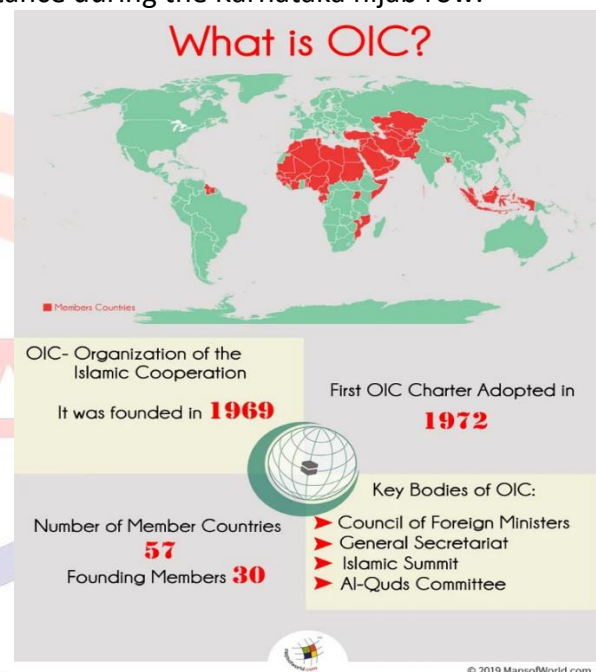
What is the Organisation of Islamic Cooperation?
About:

- Claims to be the "collective voice of the Muslim world."
- Established in 1969 after the alleged 'criminal arson' of Al-Aqsa Mosque in Jerusalem.

Members:

- 57 member countries; **India is not** a member.

Objectives:

- Aims to establish solidarity among member states.
- Supports the restoration of sovereignty and territorial integrity of occupied member states.

- Focuses on protecting, defending, and combating defamation of Islam.
- Aims to prevent dissension in Muslim societies and promote united stands at international fora.

Headquarters:
- Located in J**eddah,** Saudi Arabia.
- Aspires to move its headquarters to East Jerusalem once the city is 'liberated.'
- Aspires to hold Israel accountable for 'War Crimes' and violations of international law.

OIC Charter:
- Adheres to a charter outlining objectives, principles, and operational mechanisms.
- First adopted in 1972, revised multiple times, with the present charter adopted in 2008 in Dakar, Senegal.
- Enshrines commitment to noble Islamic teachings and values and aligning with the purposes and principles of the U.N. charter.

How does OIC Function?
Membership:
- Open to U.N. members with a Muslim majority.
- Membership and observer status ratified with full consensus at the OIC's Council of Foreign Ministers.

Decision Making:
- **Requires a quorum defined by two-thirds of member states and complete consen**sus for decision-making.
- Council of Foreign Ministers, the chief decision-making body, meets annually to decide on general policies.

Finance:
- Financed by member states proportionate to their national incomes.
- Voting rights suspended if arrears equal or exceed contributions due for the preceding two years.

Islamic Summit:
- Composed of Kings and heads of state, the supreme authority of the organization.

- Convenes every three years, deliberates, takes policy decisions, and provides guidance.

Council of Foreign Ministers:
- Chief decision-making body; meets annually to decide on general policies.
- Approves programs, budgets, reviews progress, and considers specific issues.

Standing Committees:
- Address cooperation on information, cultural affairs, economic and commercial matters, scientific and technological initiatives, and issues related to Jerusalem.

Criticism of the OIC:
Prioritizing Rights of Muslim Minorities:
- Criticized for focusing more on the rights of Muslim minorities in places like Palestine or Myanmar than human rights violations within member states.

Incompetence in Investigating Human Rights Violations:
- Lacks power and resources to investigate violations or enforce decisions through treaties and declarations.

Centred around Quranic Values:
- Restricted to conflicts involving Muslims due to its centred Quranic values, limiting its arbitration scope.

Failed Cooperative Venture:
- Failed to establish cooperation among members, lacking influence in international politics or economic cooperation.

Status of India's Relationship with OIC:
- India, with the world's second-largest Muslim community, was invited to the founding conference but did not join due to concerns about the organization being based on religion.
- In 2018, a proposal for India to have observer status was opposed by Pakistan.
- India, confident in bilateral ties with key members, sees OIC statements as not impacting its position.

- India attended the OIC Foreign Ministers' meeting in 2019 as a "guest of honour," marking a diplomatic victory.
- India emphasizes Jammu and Kashmir as an internal matter, stating that OIC has no standing on the issue.

Conclusion:

The OIC's recent condemnation and India's response underscore the complexity of diplomatic relations and the challenges faced by multilateral organizations.

As India navigates its ties with the OIC, the organization's role in addressing internal and external challenges will continue to shape the dynamics of international relations in the Muslim world.

V. GLOBAL ISSUES

7. GOLDEN GATE DECLARATION OF APEC

SOURCE: THE HINDU

The Golden Gate Declaration, adopted at the 30th APEC Economic Leaders' Meeting in San Francisco, USA, marks a significant commitment by member countries of the Asia-Pacific Economic Cooperation (APEC) forum.

APEC is a r**egional forum established in 1989,** aiming to foster economic growth and cooperation in the Asia-Pacific region, comprising 21 member economies.

Commitments in the Golden Gate Declaration:

Key Areas of Focus:

- The declaration emphasizes **fiv**e critical areas: **resilience, sustainability, interconnection, innovation, and inclusion.**

Resilience and Sustainability:

- A primary objective is to create a resilient and sustainable future, addressing economic, environmental, and social challenges.

San Francisco Principles:

- Includes principles centred on i**ntegrating inclusivity and sustainability into trade and investment policies.**
- Ensures economic growth benefits all segments of society without harming the environment.

Trade and Investment Environment:

- APEC leaders commit to a trade and investment environment that is free, open, fair, non-discriminatory, transparent, inclusive, and predictable.

Support for WTO:

- Expresses support for the World Trade Organization (WTO) and commits to reform it by 2024 to ensure effectiveness and relevance.

Economic Integration:

- Reaffirms commitment to economic integration, focusing on market-driven approaches and reducing trade barriers.

Open Markets and Supply Chains:

- Commits to keeping markets open and addressing supply chain disruptions.
- Aims to build secure, effective, resilient, sustainable, and open supply chains.

Renewable Energy:

- Commits to tripling global renewable energy capacity by 2030, aligning with sustainable development goals.

Food Security Roadmap:

- Commits to fully implementing the Food Security Roadmap Towards 2030.
- Aims to make agri-food systems more resilient, productive, innovative, and sustainable.

Support for MSMEs:

- Pledges support for Micro, Small, and Medium-sized Enterprises (MSMEs) to expand into regional and global markets.
- Includes integration into global value chains and leveraging digital tools for growth.

About APEC:

- Established in 1989, APEC consists of 21 member economies.

- APEC represented approximately 62% of global GDP and 48% of world trade in 2021.
- Operates on a voluntary basis, focusing on sustainable, balanced, and innovative economic growth.
- **India holds an 'observer' status in APEC** since it ceased accepting new memberships in 1997.

VI. PRELIMS POINTERS IN NEWS

8. MIGRATION AND MOBILITY AGREEMENT

SOURCE: THE HINDU
India and Italy have approved the Migration and Mobility Agreement, aiming to boost people-to-people contacts and facilitate mobility for students, skilled workers, business professionals, and young talents.

Emigration   Immigration   Resettlement of persons

- The agreement emphasizes strengthening cooperation on irregular migration. Notable provisions include granting Indian students' temporary residence of up to 12 months in Italy after completing academic or vocational training.
- **Additionally, Italy has allocated a quota for non-seasonal and seasonal Indian workers for the years 2023, 2024, and 2025, demonstrating a commitment to collaborative migration policies between the two nations.**

9. GENOCIDE CONVENTION 1948

SOURCE: NDTV
South Africa recently approached the International Court of Justice (ICJ), seeking an **urgent order declaring Israel in violation of its obligations under the 1948 Genocide Convention.** The move is based on allegations of actions by Israel that might qualify as genocide under the convention.

Countries That Haven't Ratified the Genocide Convention

Countries/states neither signatories nor parties to the 1948 Genocide Convention*

Genocide Convention 1948:
- **The UN's Convention on the Prevention and Punishment of the Crime of Genocide, established in 1948, precisely defines genocide.**
- Genocide includes acts committed with the **intent to destroy, in whole or in part, a national, ethnic, racial, or religious group, such as killing, causing bodily or mental harm, inflicting conditions leading to physical destruction, imposing measures to prevent births, and forcibly transferring children.**

India's Stand on Genocide Convention:
- **India ratified** the convention in **1959**, signifying acknowledgment of the defined criteria.
- However, **there is NO specific legislation on the subject within India.**

International Court of Justice (ICJ):
- **Established in June 1945 by the UN Charter**, the ICJ is the principal judicial organ of the United Nations.
- **French and English are its official languages.**
- **The Court has two roles:** dealing with legal disputes between States (contentious cases) and providing advisory opinions on

legal questions referred by UN organs and specialized agencies.

- Its **judgments in contentious cases are final and binding**, while advisory opinions are not binding.
- The **ICJ comprises 15 judges elected by the UN General Assembly and the Security Council for nine-year terms**.
- **One-third of the Court's composition is renewed every three years**, and **judges act independently f**rom their respective governments.

10. GREEN GROWTH ACCELERATOR

SOURCE: LIVEMINT

The Green Growth Accelerator was launched **by African leaders during the third day of COP28.**

Objective:

- The initiative aims to accelerate green growth in African industries.

Building on Existing Investment:

- It builds on the existing $4.5 billion Africa green investment from the UAE.

De-risking for Green Industrialization:

- Leaders stress the importance of de-risking for green industrialization to attract investment.

Sustainable Green Growth:

- The initiative emphasizes developing long-term plans for sustainable green growth.

Country Aspirations:

- Djibouti aims for 100% green energy.
- Zambia highlights the importance of a shared resource pool for the continent's benefit.

Positioning Africa Globally:

- Aims to position Africa as a global supplier of green energy and resources.
- Highlights the continent's priorities for industrial transition.

Equitable Partnerships:

- Emphasizes the need for just and equitable partnerships to achieve sustainable development goals.

Relevance of Geneva Conventions:

- The reference to the Geneva Conventions of August 12, 1949, highlights the global commitment to improving conditions for those affected by conflict and war.

ECONOMY

I. GROWTH AND DEVELOPMENT, INCLUSION

1. WORLD ECONOMIC SITUATION AND PROSPECTS 2024

SOURCE: UNCTAD

The recent release of the United Nations' World Economic Situation and Prospects (WESP) report for 2024 provides insights into the global economic landscape.

Despite projecting a decline in global inflation, the report raises concerns about a simultaneous rise in food inflation, especially in developing nations.

This complex scenario, coupled with climate challenges and geopolitical tensions, poses threats to food security, poverty alleviation, and economic growth.

Key Highlights of the World Economic Situation and Prospects Report 2024:

Global GDP Growth:

- **Predicts a slowdown in global GDP growth from 2.7% in 2023 to 2.4% in 2024.**
- Developing economies, grappling with pandemic-induced losses, face challenges such as high debt and investment shortfalls.
- **Persistent issues include high-interest rates, geopolitical conflicts, sluggish international trade, and increased climate-related calamities.**

India's Perspective:

- **South Asia grew by 5.3% in 2023, projected to increase by 5.2% in 2024**, driven by robust expansion in India.
- **India's growth estimated at 6.2% in 2024, supported by domestic demand, manufacturing, and services.**

Inflation:

- Global inflation shows signs of easing, dropping from 8.1% in 2022 to an estimated 5.7% in 2023.
- **Food price inflation remains critical, exacerbating food insecurity and poverty in developing countries.**
- Climate-related shocks, weak local currencies, and limited pass-through from international prices contribute to rising food inflation.
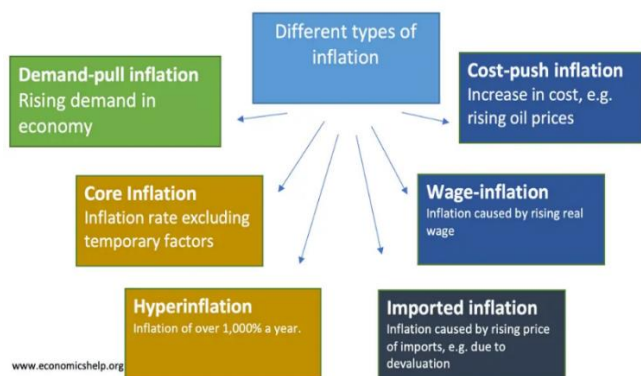
Climate Change:

- 2023 witnessed extreme weather conditions, impacting infrastructure, agriculture, and livelihoods.
- **Climate change projections indicate potential 10% reduction in global GDP by 2100 and 23% decrease in global incomes without mitigation.**
- Urgent need for massive scaling up of climate finance and operationalization of the Loss and Damage Fund.

Investment:

- Global investment growth expected to remain low due to uncertainties, high debt, and rising interest rates.
- Developed nations prioritize sustainable sectors, while developing countries face capital flight and reduced foreign direct investment.
- **Insufficient investment in clean energy poses challenges to achieving net-zero-emissions goal by 2050.**

Labour Market:

- Divergent trends between developed and developing countries post-pandemic.
- **Developed countries experience a robust recovery with low unemployment rates, while developing nations face challenges in informal employment, gender gaps, and high youth unemployment.**
- Global decline in female labour force participation raises concerns.

Artificial Intelligence (AI) Impact on Global Employment:

- **Rapid advancement in AI adoption, impacting global employment.**
- AI could reduce demand for low-skilled jobs, posing challenges for women and lower-income countries.

Trade:

- **Global trade growth weakened in 2023 but expected to recover in 2024.**
- Factors hindering trade include shifting consumer spending patterns, geopolitical

tensions, supply chain disruptions, and lingering pandemic effects.

International Finance and Debt:

- **Rising external debt and increased interest rates hinder developing countries' access to international capital markets.**
- Debt sustainability emerges as a critical concern, requiring debt restructuring and relief efforts.

Multilateralism and Sustainable Development:

- **Emphasis on strengthened global cooperation for climate action, sustainable development financing, and addressing debt sustainability challenges.**
- Multilateralism plays a crucial role in navigating the complex global economic landscape and achieving Sustainable Development Goals (SDGs).

UPSC MAINS QUESTION

Q. Discuss the key findings and implications of the United Nations' World Economic Situation and Prospects (WESP) report for 2024.

II. POVERTY

2. MULTIDIMENSIONAL POVERTY IN INDIA

SOURCE: LIVEMINT

Multidimensional poverty, a concept acknowledging various factors beyond income, has witnessed a significant decline in India.

The NITI Aayog's discussion paper titled 'Multidimensional Poverty in India since 2005-06' sheds light on this progress and the hurdles encountered in addressing it.

Understanding Multidimensional Poverty:

Historical Perspective:

- Traditionally, poverty assessments focused on income, neglecting non-monetary aspects.

- Recognizing the limitations, a shift towards considering **qualitative factors like access to basic services emerged.**
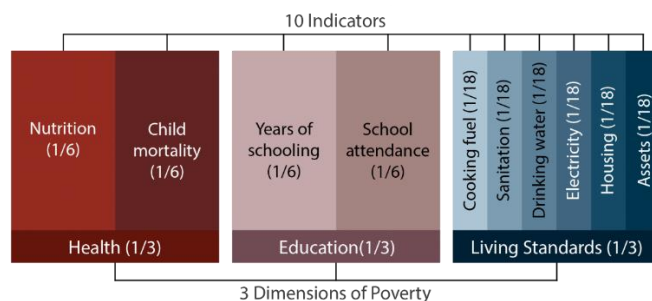
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Human Development Intiative (OPHI)

Status of Multidimensional Poverty in India:

Substantial Reduction:

- Multidimensional poverty **dropped** from 29.2% in 2013-14 to 11.3% in 2022-23.
- A notable achievement, with approximately 248.2 million people escaping extreme poverty since 2013.

Government Goals: India aims to reduce the poverty metric to 1%, demonstrating a commitment to further alleviating poverty.

Global Recognition: World Bank figures indicate India's poverty rate decreased from 19% in 2015 to 11.9% in 2021.

Factors Contributing to Reduction:

- **Digital Integration:** 'JAM' trio (Jan Dhan accounts, Aadhaar identities, and mobile phones) streamlined welfare distribution.
- **Direct Cash Transfers:** Efficient coverage of benefit schemes with reduced leakages.
- **Expanded Welfare Budgets:** Economic growth facilitated increased funding for welfare programs.
- **Targeted Measures:** Focused efforts on health, education, and living standards addressed key areas of deprivation.
- **Multidimensional Approach:** Adoption of the Multidimensional Poverty Index (MPI) enhanced targeting and measurement.
- **Data-Driven Decisions:** Utilization of National Family Health Surveys for accurate assessments and strategy formulation.

Challenges in Countering Multidimensional Poverty:

- **Data Quality Concerns:** The rejection of the 2017-18 consumer expenditure survey by the government raised concerns about the reliability of data.
- **Regional Disparities:** Significant variations in poverty levels across states highlight the need for region-specific policies.
- **Educational Outcomes:** While education is part of the index, it does not fully consider the quality of education, reflecting in suboptimal learning outcomes.
- **Policy Direction and Spending:** Questions raised about the efficiency of current government expenditure, emphasizing the necessity for more focused spending on areas like education quality.

Way Forward:

- **Sustained Economic Growth:** To further reduce poverty, India requires continued economic growth that is inclusive and benefits all sections.
- **Targeted Policies:** Policies must be tailored to address the multidimensional aspects of poverty, ensuring inclusivity.
- **Accurate Data Collection:** Reliable data is crucial for effective policymaking; efforts should focus on improving data quality.
- **Quality Education Focus:** A shift in government spending towards enhancing the quality of education is vital for holistic development.
- **Addressing Regional Disparities:** Balanced and inclusive progress can be achieved by addressing regional disparities and ensuring uniform development.

India's National multi dimensional poverty index has 2 additional indicators -maternal health and bank account.

Conclusion:

India's progress in reducing multidimensional poverty is commendable, but challenges persist. **A concerted effort towards data accuracy, targeted policies, and a focus on education quality will be** instrumental in achieving balanced and inclusive development.

Highlights: MPI Progress Report 2023
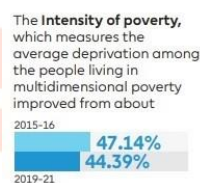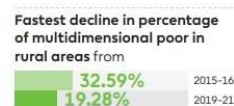
UPSC MAINS QUESTION

Q. Analyse the methods employed by India in significantly reducing multidimensional poverty and explore the obstacles it encounters in addressing this concern. (150 WORDS)

III. BANKING AND FINANCIAL INTERMEDIARIES

3. BANKS ARE FINE, BUT THERE ARE RISKS

SOURCE: THE HINDU

In recent times, India's banking system has experienced a noteworthy resurgence after grappling with bad loan challenges for nearly a decade.

This positive transformation is attributed to the collective efforts of policymakers and proactive measures taken by banks, positioning the sector on a more secure footing.

However, historical patterns and external uncertainties, such as geopolitical risks, pose potential challenges to the positive trajectory.

Evolution of Indian Banks Over the Years:

- **First Generation Banking:** Pre-Independence era led to the establishment of small, local banks due to the Swadeshi Movement, facing challenges like internal frauds and interconnected lending.
- **Second Generation Banking (1947-1967):** Indian banks consolidated resources towards a limited number of business families, overlooking credit flow to the agriculture sector.
- **Third Generation Banking (1967-1991):** Nationalization of major private banks and introduction of priority sector lending led to 'mass banking,' expanding branch networks and credit flow to agriculture.
- **Fourth Generation Banking (1991-2014):** Significant reforms included new licenses to private and foreign banks, leveraging technology, adopting prudential norms, and fortifying the capital base.
- **Current Model (2014 onward):** Embracement of the JAM (Jan-Dhan, Aadhaar, and Mobile) trinity and granting licenses to Payments Banks and Small Finance Banks for financial inclusion.

Current Status of the Indian Banking Regime:
Background:
- **Recent history saw bad loans** causing stressed assets, particularly affecting government-owned banks with **gross NPAs reaching 14.6%.**
- A **4R strategy—Recognize NPAs transparently, Resolution and recovery, Recapitalization of PSBs, and Reforms**—was implemented by the government and RBI.

Profitability and Asset Quality Improvement:
- Gross NPA ratio in FY23 dropped to 4.41%, the lowest since March 2015.
- PSBs collectively crossed the Rs 1 lakh crore-mark in profit.
- **RBI's Financial Stability Report indicates a robust Capital-to-Risk-Weighted Assets Ratio (CRAR) of 16.8%.**

Policy Reforms and Financial Discipline:

- Eight years of reforms focused on credit discipline, responsible lending, improved governance, and technology adoption.
- Mergers of PSBs contributed to reducing NPAs.

Robust Financial Indicators:
- Banks exhibit strong liquidity levels despite the RBI's recent monetary stance.
- Major banks demonstrate a capacity to lend "higher for longer."

Obstacles Ahead for the Indian Banking Sector:
Infrastructure and Capital Investments Risk:
- Bank lending for infrastructure and capital investments poses risks due to stretched State finances.
- Internal exposure limits based on fiscal assessments of States are advised.

Stock Market and Retail Exposure Risk:
- Runaway stock market poses risks to retail exposures.
- Integrated supervision and stress tests on retail portfolios are recommended.

Interconnected Lending and Governance Challenges:
- Default contagion risk due to interconnected lending and lax governance norms.
- Focused risk monitoring emphasizing good governance is necessary.

SME Challenges in a Re-Globalizing World:
- Re-globalization and geopolitical shifts may challenge Small and Medium sized Enterprise (SMEs).
- Banks need to assess and prepare for potential risks, considering disruptions to cash flows.

Changing Liabilities Landscape:
- Digitization and evolving consumption trends impact retail deposits.
- Structural shift in Indian savings requires caution and prudence.

Fortifying the Indian Banking Sector Moving Ahead:
Building Big Banks:

- Implementation of Narasimhan Committee Report (1991) to establish three or four prominent commercial banks.
- Consolidation of PSBs and establishment of entities like Development Finance Institution (DFI) and Bad Bank.

Differentiated Banks:
- Establishment of distinct banking entities to address the unique needs of diverse customers and borrowers.
- Specialized banks for retail, agriculture, and MSMEs to facilitate financial access.

Blockchain Banking:
- Implementation of Blockchain for enhanced risk management and digital financial inclusion.

Addressing Moral Hazard:
- Emphasis on increased individual deposit insurance and efficient orderly resolution mechanisms. Reducing moral hazard and systemic risks.

ESG Environmental, Social, and Governance Integration:
- Distinctive Banks listing on reputable stock exchanges and embracing ESG framework.

Enhancing Banking Institutions:
- Refining regulatory measures to enable diversified loan portfolios. Granting regulators increased authority to handle deliberate defaults.

Facilitating Corporate Bond Market Growth:
- Promotion of corporate bond market growth for a responsive banking system.

Enhancing Risk Management Models:
- Development and implementation of internal risk models tailored to individual States.

Addressing Changes in Liabilities:
- Recognition of changing liabilities influenced by digitization. Strategies to adapt to shifts in retail deposits.

Conclusion:
While celebrating the current success of the banking sector, a proactive and vigilant stance is crucial to navigate the complexities and uncertainties of the times.

The recommendations for fortifying the sector emphasize adaptability, innovation, and responsible governance to ensure sustained growth and stability in the dynamic economic landscape.

UPSC MAINS QUESTION

Q. Despite the recent strong performance of the Indian Banking sector, there are specific risk factors that could present potential challenges. Discuss these challenges in detail and propose appropriate measures to address them. (150 WORDS)

4. SBI GREEN RUPEE TERM DEPOSIT (SGRTD) SCHEME

SOURCE: ECONOMIC TIMES
The State Bank of India (SBI) has recently launched the SBI Green Rupee Term Deposit (SGRTD) scheme, aiming to gather funds dedicated to supporting environmentally friendly projects and initiatives.

About SGRTD Scheme:
- **Initiative**: Introduced by SBI to raise funds for financing eco-friendly projects.
- **Eligibility**: Open to resident individuals, non-individuals, and non-resident Indian (NRI) customers.
- **Currency:** Green deposits are denominated in Indian Rupees.
- **Tenors:** Investors can choose from three tenors - 1,111 days, 1,777 days, and 2,222 days.

Interest Rate:
- Offers interest rates 10 basis points below the card rate for retail and bulk deposits, varying with tenors.
- Additional interest for Senior Citizens, Staff, and Staff Senior Citizens.
- NRI Senior Citizens/NRI Staff excluded from additional interest.

Flexibility: Allows pre-mature withdrawals and offers a loan/overdraft facility against the deposit.

Green Deposit:
- **Definition:** An interest-bearing deposit with proceeds earmarked for green finance.
- **Coverage:** Deposits under this framework are protected by the Deposit Insurance and Credit Guarantee Corporation (DICGC).

IV. AGRICULTURE AND ALLIED

5. PM-KISAN BENEFICIARIES DWINDLING, GOVT ADDS 34 LAKH IN SPECIAL DRIVE

SOURCE: INDIAN EXPRESS

The Pradhan Mantri Kisan Samman Nidhi (PM-Kisan) scheme, designed to financially assist landholding farmers, has witnessed a decline in beneficiaries from 10.47 crore to 8.12 crore.

The government's responded with proactive measures under the Viksit Bharat Sankalp Yatra, a campaign aimed at saturating government schemes across the country. This drive has added 34 lakh farmers back to the beneficiary list.

Viksit Bharat Sankalp Yatra:

Objective:
- Raise awareness and achieve scheme saturation across Gram Panchayats, Nagar Panchayats, and Urban Local Bodies.
- Whole-of-government approach involving various ministries, state governments, and central organizations.

Activities:
- Outreach initiatives to reach vulnerable eligible individuals.
- Dissemination of information and awareness generation about government schemes.
- Interaction with beneficiaries through personal stories and experience sharing.
- Enrolment of potential beneficiaries identified during the yatra.

PM-Kisan Samman Nidhi Yojana:

Objective:
- Launched to supplement the financial needs of landholding farmers.
- Operational since December 2018.

Financial Benefits:
- Rs 6000 per year in three equal instalments transferred through Direct Benefit Transfer.
- Initially for Small and Marginal Farmers, extended to cover all landholding farmers.

Funding and Implementation:
- Central Sector Scheme with 100% funding from the Government of India.
- Implemented by the Ministry of Agriculture and Farmers Welfare.

PM-KISAN Mobile App:
- Developed by the National Informatics Centre in collaboration with the Ministry of Electronics and Information Technology.

Challenges:

Mandatory Provisions and Aadhaar Linkage:
- Complexity introduced by mandatory land seeding and Aadhaar linkage.

- Challenges for farmers, especially in remote areas, to comply with these prerequisites.

Awareness and Outreach:

- Many eligible farmers may lack awareness or sufficient information about the PM-Kisan scheme.
- Outreach struggles to cover all farming segments, particularly in remote or marginalized areas.

Technology Accessibility:

- Disparities in technology access, hindering farmers' engagement with online processes for PM-Kisan enrolment.

Way Forward:

- **Review Provisions:** Conduct a comprehensive review of mandatory land seeding and Aadhaar linkage for simplicity and efficiency.
- **Technology Integration:** Utilize technology to create user-friendly platforms, ensuring seamless compliance.
- **Community Engagement:** Establish community-level programs to engage with vulnerable farmers directly.
- **Collaboration:** Collaborate with local authorities, agricultural services, and NGOs to identify and support eligible farmers unaware of PM-Kisan benefits.

Conclusion:

The decline in PM-Kisan beneficiaries highlights the need for ongoing evaluation and responsiveness.

The government's initiatives, especially under the Viksit Bharat Sankalp Yatra, demonstrate a commitment to inclusivity.

Addressing challenges, particularly those related to awareness and technology accessibility, is crucial for ensuring the effective and widespread implementation of schemes benefiting India's farming community.

UPSC MAINS QUESTION

Q. Discuss the challenges faced by the Pradhan Mantri Kisan Samman Nidhi (PM-Kisan) scheme and suggest comprehensive measures for the government to enhance its effectiveness. Examine the role of initiatives like the Viksit Bharat Sankalp Yatra in addressing the identified challenges. (150 WORDS).

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6. HORTICULTURE BOOST: LITCHI CULTIVATION HAS EXPANDED TO 19 INDIAN STATES, ACCORDING TO OFFICIALS

SOURCE: DOWN TO EARTH

The expansion of Litchi cultivation across 19 Indian states shows a remarkable boost in the horticulture sector. Spearheaded by the efforts of the National Research Centre on Litchi (NRCL) in Muzaffarpur, Bihar, this development is transforming the traditional landscape of litchi cultivation.

About Litchi:

- **Botanical Classification:** Litchi, belonging to the Sapindaceae family, is renowned for its delectable, juicy, translucent aril or edible flesh.
- **Climatic Requirements:** Thriving in sub-tropical climates, litchi prefers moist conditions and flourishes in areas with low elevation, up to approximately 800 meters.
- **Soil Preference:** Ideal soil for litchi cultivation is deep, well-drained loamy soil enriched with organic matter.
- **Temperature Sensitivity:** Litchi is sensitive to extreme temperatures, intolerant of temperatures exceeding 40.5 degrees Celsius in summer or freezing temperatures in winter.

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- **Rainfall Impact:** Prolonged rain, particularly during flowering, can disrupt pollination and adversely affect the crop.
- **Geographical Cultivation:** Initially confined to the northern Himalayan foothills, plains of Uttar Pradesh, and Madhya Pradesh, commercial cultivation has expanded to states like Bihar, Jharkhand, and Chhattisgarh.
- **Production Distribution:** Bihar leads with nearly 40% of India's litchi production, followed by West Bengal (12%) and Jharkhand (10%).
- **Global Standing:** India, ranking **second globally in litchi production**, follows China. Other significant producers include Thailand, Australia, South Africa, Madagascar, and the United States.

What is Horticulture?
Horticulture encompasses the science, art, and practice of cultivating fruits, vegetables, flowers, ornamental plants, and various crops for human use and enjoyment.

Initiatives for Horticulture:
Mission for Integrated Development of Horticulture (MIDH):
- A Centrally Sponsored Scheme fostering holistic horticultural growth, MIDH covers fruits, vegetables, and related areas.
- **Government of India contributes 60% of the total outlay for developmental programs,** with state governments contributing 40% (90% in Northeastern and Himalayan states).

Horticulture Cluster Development Programme:
- A central sector initiative aiming to develop and grow identified horticulture clusters to enhance global competitiveness.
- A horticulture cluster refers to a regional/geographical concentration of targeted horticulture crops.

Conclusion:
The burgeoning litchi cultivation across diverse Indian states signifies a paradigm shift in the horticulture landscape.

This shift not only boosts agricultural productivity but also promises economic prosperity and sustainability in the agricultural domain.

7. BURIED IN CEMENT DUST: KASHMIR'S SAFFRON PRODUCTION TAKES A HIT, FARMERS FORCED TO SWITCH OCCUPATION

SOURCE: THE HINDU
The saffron fields of Kashmir, renowned for producing the world's most expensive spice, are facing a critical crisis due to the encroachment of cement factories.
Despite being the second-largest global saffron producer after Iran, Kashmir's saffron industry is in decline, posing economic challenges for local farmers.

Benefits of Kesar(Saffron)

1 Protect against Cancer
2 Busts mood swings
3 Protects from vision loss
4 Encourages healthy sleep
5 Boost memory
6 Relieves sore gums
7 Improves hair growth.
8 Efficient cure for asthma
9 Helps in digestion
10 Beat the dark circles
11 Removes bald patches
12 Better mental functioning
13 Gas and acidity regulator.
14 Pain reliever
15 Battles weakness and increases immunity
16 Helps in menstrual problems

Factors Contributing to Decline in Saffron Production:
Proximity to Cement Factories:
- Cement factories near saffron fields emit dust, leading to a 60% decline in cultivation in the last two decades.
- Cement dust adversely affects delicate saffron flowers, impacting quality and quantity.

Impact of Cement Dust:
- Harmful gases in cement dust damage saffron flowers, reducing chlorophyll and inducing early leaf fall.

- Negative effects on crocin content, affecting colour, medicinal properties, and cosmetic benefits.

Environmental Factors:
- Climate change, unexpected rainfall, land diversion, and machine ploughing contribute to reduced saffron production.
- Saffron cultivation is highly climate dependent.

Lack of Government Intervention:
- Farmers opposed cement factories since 2005 due to environmental concerns.
- Authorities permitted industries near saffron cultivation despite protests.

Market Challenges:
- Saffron farmers face financial difficulties with declining prices, quantity, and quality.
- The spice's market becomes less lucrative, raising concerns about the industry's future.

Key Facts About Kashmiri Saffron:
Saffron Production and Price:
- Mainly cultivated in the Pampore region, known as the Saffron bowl of Kashmir.
- Kashmiri kesar is highly valued, selling at Rs 3 lakhs per kilogram.
- Requires extensive labour, with a gram obtained from approximately 160-180 flowers.

Season and Cultivation Conditions:
- Safron Corms cultivated in June and July (August and September in some places).
- Flowering begins in October.
- Thrives at an altitude of 2000 meters, requiring specific soil, climate, and rainfall conditions.

Crocin Content and Colour:
- Kashmiri kesar contains 8% of crocin, higher than other varieties.
- Crocin is responsible for the colour of saffron.

Benefits of Kashmiri Saffron:
- Medicinal properties include lowering blood pressure, treating anaemia, migraines, and aiding insomnia.

- Cosmetic benefits enhance skin quality, reduce pigmentation, and minimize spots.
- Integral part of traditional dishes, used in beverages, confectionery, dairy products, and food colouring.

Recognition:
- Granted Geographical Indication (GI) certification in 2020.
- Recognized as one of the Globally Important Agricultural Heritage systems (GIAHS) by the Food and Agriculture Organization.

Initiatives to Promote Saffron Production:
National Saffron Mission (NSM):
- Launched in 2010-11 under the Rashtriya Krishi Vikas Yojana to support saffron cultivation in Jammu and Kashmir.

Northeast Centre For Technology Application and Reach (NECTAR):
- Conducted a pilot project to explore saffron cultivation feasibility in the Northeast with the same quality and higher quantity.

Way Forward:
- **Implement strict environmental regulations for cement factories near saffron fields.**
- Monitor and penalize industries contributing to pollution.
- Facilitate collaboration between government and saffron growers.
- **Support diversification of saffron farmers' livelihoods.**
- Allocate funds for research in resilient saffron varieties.
- Invest in technology minimizing pollutants' impact on saffron crops for sustainable growth.

Conclusion:
The decline in Kashmir's saffron production demands urgent attention and action. **Sustainable practices and technological interventions can mitigate the adverse impacts, ensuring the continued excellence of Kashmiri saffron.**

V. INDUSTRY AND INDUSTRIAL POLICIES

8. THE NEED TO OVERHAUL A SEMICONDUCTOR SCHEME

SOURCE – THE HINDU

The mid-term evaluation of the Design-Linked Incentive (DLI) scheme, a key component of India's Semiconductor Mission, is on the horizon.

With a goal to support 100 startups over five years, the scheme has approved only seven, prompting a call for reassessment and potential revamping.

As India aspires to become a global semiconductor hub, challenges like the semiconductor chip shortage underscore the need for enhancing domestic manufacturing capacity.

Semiconductors:

- **Definition:** Crystalline solids with intermediate electrical conductivity, between conductors and insulators.
- Used in electronic devices like diodes, transistors, and Integrated Circuits (ICs) for their compactness, reliability, efficiency, and low cost.
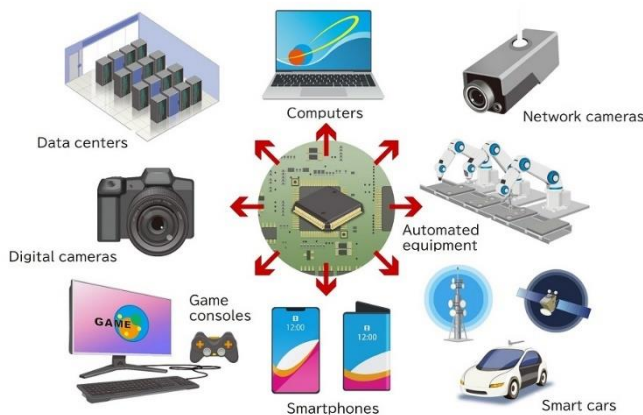
Common Elemental Semiconductors:

- Silicon and germanium, both crystalline solids with four valence electrons.

India Semiconductor Mission (ISM):

- Launched in 2021 with a financial outlay of Rs. 76,000 crores under the Ministry of Electronics and IT (MeitY).

- Aims to develop a sustainable semiconductor and display ecosystem in India.

Components:

- Schemes for setting up Semiconductor Fabs, Display Fabs, and Compound Semiconductors facilities.
- Design-Linked Incentive (DLI) Scheme.

DLI Scheme:

- **Objective:** Offers financial incentives and design infrastructure support for semiconductor design.
- **Nodal Agency:** Centre for Development of Advanced Computing (C-DAC) under MeitY.
- **Components:**
    - Chip Design Infrastructure Support.
    - Product Design Linked Incentive.
    - Deployment Linked Incentive.
- **Vision:** Build a vibrant semiconductor and display design ecosystem for India's emergence as a global electronics manufacturing hub.

Overall Semiconductor Market Scenario:

Global Scenario:

- Dominated by Taiwan, South Korea, and the U.S.
- Global semiconductor industry valued at USD 500-600 billion.

Indian Scenario:

- Valued at USD 23.2 billion, projected to reach USD 150 billion by 2029.
- Initiatives like Semicon India Program and Scheme for Promotion of Manufacturing of Electronic Components and Semiconductors (SPECS).

Challenges in the Semiconductor Industry in India:

- **Data Latency:** Issues in managing co-products from the same wafer, triggering data latency.
- **Customer-Specific Needs:** Varied demands based on customer-specific material, site, shipment size, and quality manufacturing.

- **Front-End (FE) and Back-End (BE) Challenges:** FE outputs like wafers require additional manufacturing steps, posing complexities in the supply chain.
- **Restricted End-to-End Supply Chain Visibility:** Challenges in managing abundant materials, in-house and contractual manufacturing sites, leading to excess inventory growth.
- **High Investments and Expensive Fab Setup:** Setting up semiconductor fabs involves substantial capital, with costs running into billions of dollars.

Issues in the Implementation of DLI Scheme:

- **Low Uptake:** Lack of interest and uptake by startups, despite the scheme's financial incentives.
- **Ownership Barriers:** Restrictions on ownership, limiting foreign capital, and a less mature startup ecosystem hinder participation.
- **Global Competition:** India competes with established players like the U.S., South Korea, Taiwan, and China in the highly competitive semiconductor industry.
- **Intellectual Property Challenges:** Access to intellectual property, patents, and licenses for advanced chip technologies poses hurdles.

Suggestions for Overhauling ISM and DLI Scheme:

- **Integration of Semiconductor Strategy Goals:** Integrate Semicon India Program's goals to reduce dependence, build resilience, and leverage design capabilities.
- **Prioritizing Investment:** Focus on maximizing benefits, with emphasis on stimulating the design ecosystem for strong forward linkages.
- **Delinking Ownership from Development:** Delink ownership from semiconductor design development to attract more startups.
- **Broadening the Focus of DLI Scheme:** Shift focus to facilitate design capabilities for

various chips, with increased financial support.

- **Establishing a Capable Institution:** Implement a recalibrated policy led by a capable institution tolerant of some failure.
- **Utilizing Existing Facilities:** Leverage Public Sector Enterprises (PSEs) for semiconductor fab foundry setup.
- **Collaboration:** Explore collaborations with other technologically advanced nations to promote domestic manufacturing.

Conclusion:

The semiconductor industry's growth in India depends on a recalibrated policy, collaborative efforts, and a focus on cultivating design capabilities.

With strategic revisions, India can position itself as a key player in the high-tech semiconductor sector, advancing towards its goal of becoming a global hub for electronics manufacturing and design.

UPSC MAINS QUESTION

Q. Discuss the challenges and suggested policy measures to promote the expansion of India's semiconductor sector, with a specific emphasis on the Design-Linked Incentive scheme and potential reform initiatives. (150 WORDS)

VI. INFRASTRUCTURE

9. MEGA INFRASTRUCTURE PROJECTS IN KOCHI

SOURCE – ECONOMIC TIMES

In a significant stride towards transforming India's maritime landscape, the Prime Minister recently inaugurated three groundbreaking projects in Kochi, Kerala.

These projects align with the vision to enhance India's ports, shipping, and waterways sector, fostering capacity-building and self-sufficiency.

The trio of initiatives includes the New Dry Dock (NDD) at Cochin Shipyard Limited (CSL), the

International Ship Repair Facility (ISRF) of CSL, and the LPG Import Terminal of Indian Oil Corporation Limited (IOCL).

Three Different Projects Inaugurated:

New Dry Dock (NDD):

- **Engineering Marvel:** The NDD, spanning 310 meters, adheres to international standards and emerges as a marvel capable of handling aircraft carriers double the size of INS Vikrant or other larger ships.
- **Flagship Endeavor:** Representing India's engineering prowess and project management capabilities, the NDD stands as a flagship project and one of the region's largest marine infrastructures.
- **Technological Advancements**: Equipped with the latest technology, the NDD prioritizes efficiency, safety, and environmental sustainability, reflecting a commitment to cutting-edge innovation.

International Ship Repair Facility (ISRF):

- **Capacity Enhancement:** Positioned as India's first fully developed ship repair ecosystem, the ISRF contributes 25% to the country's ship repair industry capacity.
- **Strategic Investment:** With an investment of ₹970 crores, the ISRF facilitates rapid turnaround for refits of India's Naval and Coast Guard ships during planned refits.
- **Global Hub Aspiration**: The ISRF aims to modernize and expand CSL's existing ship repair capabilities, envisioning its transformation into a global ship repair hub.

LPG Import Terminal for IOCL:

- **Infrastructure Excellence**: The LPG Import Terminal at Kochi, linked to a state-of-the-art infrastructure, boasts a Multi-User Liquid Terminal Jetty connected through a 3.5 km Cross Country Pipeline.
- **Strategic Turnover**: Targeting a turnover of 1.2 million metric tons per annum (MMTPA), the terminal ensures efficient LPG distribution through road and pipeline transfers.

- **Energy Infrastructure Boost:** Enhancing India's energy infrastructure, the project guarantees a steady supply of LPG, directly benefiting bottling plants in Kerala and Tamil Nadu, aligning with the vision for accessible and affordable energy.

Significance of These Projects:

Strategic Vision for Maritime Development:

- **Global Benchmark**: The projects align with the 'Sabka Saath, Sabka Vikaas' vision and emphasize India's commitment to set global benchmarks in the maritime sector.
- **Maritime Amrit Kaal Vision 2047:** Reflecting an ambitious roadmap, the vision aims to elevate Kochi into a prominent Maritime Cluster and a Global Hub for Green Ship, embracing excellence and innovation.

Investment and Employment in Maritime Sector:

- **Economic Boost:** The initiatives anticipate a substantial investment of Rs 45,000 Crores, contributing significantly to the economy.
- **Employment Generation:** Over 50,000 jobs are expected to be generated, demonstrating a concerted effort to promote self-sufficiency and minimize dependency on foreign ships.

National Pride and Environmental Impact:

- **Symbol of National Pride:** Beyond economic significance, the projects symbolize India's engineering prowess, expected to lead to substantial logistic savings.
- **Environmental Responsibility**: The initiatives are anticipated to reduce CO2 emissions, reinforcing India's commitment to environmental responsibility.

Alignment With Global Vision:

G20 Presidency Agreements: The Prime Minister underscored the alignment of these projects with agreements made during India's G20 Presidency, emphasizing the strengthening of coastal economies through the Middle East-Europe Economic Corridor (MEEEC).

Future Plans for Maritime Infrastructure:

Centre of Excellence and Ship Repair Clusters:

- **Strategic Planning:** Future plans involve establishing a Centre of Excellence in Shipbuilding & Repair, fostering innovation and skill development.
- **Cluster Formation:** The creation of ship repair clusters in strategic locations aims to consolidate infrastructure resources efficiently.

Trade Conditions and Vadinar Facility:

- **Relaxation for Growth:** Planned relaxation of trade conditions will propel the Ship Repair Sector, fostering growth and sustainability.
- **Vadinar Ship Repair Facility:** Discussions are underway for a Ship Repair facility at Vadinar, highlighting the commitment to expanding infrastructure capabilities.

Government Initiatives Related to Infrastructure:

PM Gati Shakti Scheme:

- **Integrated Infrastructure Planning:** The scheme emphasizes integrated planning for holistic infrastructure development, aligning various sectors for comprehensive growth.

National Infrastructure Pipeline:

- **Project Pipeline:** The National Infrastructure Pipeline outlines a robust pipeline of projects across sectors, driving economic development and job creation.

Urban Infrastructure Development Fund:

- **Urban Renewal:** The Urban Infrastructure Development Fund focuses on rejuvenating urban infrastructure, enhancing livability and sustainability.

National Logistics Policy and Dedicated Freight Corridors:

- **Efficient Logistics:** The National Logistics Policy aims at creating a seamless logistics network, while Dedicated

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Freight Corridors enhance freight transportation efficiency.

Sagarmala Projects:

- **Coastal Economic Development:** Sagarmala projects focus on harnessing the potential of India's coastline, driving economic development through port-led initiatives.

Conclusion:

As the nation navigates towards becoming a maritime powerhouse, these initiatives become cornerstones of sustainable development, self-sufficiency, and global competitiveness.

UPSC MAINS QUESTION

Q. Examine the strategic significance and potential socio-economic impact of the recently inaugurated maritime infrastructure projects in Kochi, Kerala, by the Prime Minister.

VII. PRELIMS POINTERS IN NEWS

10. ONATTUKARA SESAME

Kerala is actively promoting the cultivation of GI-tagged Onattukara sesame, recognized for its uniqueness and value in agriculture.

About Onattukara Sesame (Ellu):

- **Cultivation Region**: Primarily cultivated in the Onattukara region, spanning Alappuzha, Kollam, and Pathanamthitta districts in Kerala, India.
- **Medicinal Significance**: Renowned for its medicinal properties and consistently high quality.
- **Traditional Ayurvedic Use**: Local ayurvedic practitioners have used Onattukara sesame oil for centuries to treat ailments like rheumatism and for skin protection, dating back to the 18th century.
- **Nutrient-Rich Composition:** Rich in essential nutrients, including vitamin E and antioxidants. Contains vital fatty acids such as oleic acid, linoleic acid, and palmitoleic acid.

- **Varietal Diversity:** Grown in various distinctive varieties developed by ORARS in Kayamkulam, including 'ayali,' Kayamkulam-1, thilak, thilathara, and thilarani.
- **Market Impact:** The GI tag is expected to enhance its popularity and market value, resulting in higher prices for both sesame seeds and sesame oil.

11. CARD-ON-FILE TOKENISATION (COFT)

SOURCE: LIVEMINT

The Reserve Bank of India (RBI) has introduced the option of tokenization directly through card-issuing banks.

How does payment tokenization work?
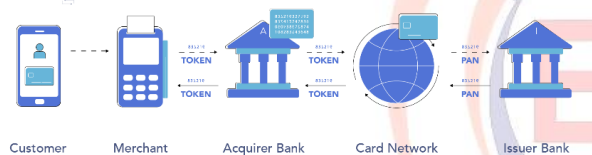
- This facilitates cardholders to tokenize their cards for various merchant sites through a unified process, enhancing user convenience and security.
- **Tokenization involves substituting actual card details with a unique code, or token, specific to the card, token requestor, and device.**
- This measure, introduced by RBI, addresses data security concerns by replacing Card-on-File details stored with merchants, ensuring a more secure and resilient financial ecosystem.

12. ELECTRONIC SOIL (E-SOIL)

SOURCE: THE HINDU

Researchers have unveiled a groundbreaking advancement in agriculture by development of 'electronic soil' or e-Soil, designed specifically for hydroponic cultivation.

This innovative growth layer operates as a low power bioelectronic system, providing a unique approach to enhancing plant growth.

Bioelectronic Stimulation: E-Soil introduces a pioneering concept by electrically stimulating the root system and growth environment of plants, promoting optimal conditions for cultivation.

Hydroponics

Hydroponics, a soil-free plant cultivation method, utilizes water, nutrients, and a substrate for root attachment, offering various advantages over traditional soil-based methods.

Benefits of Hydroponics:

- **Precise Nutrient Control:** Hydroponics enables precise control over nutrient levels, ensuring faster plant growth, higher yields, and superior-quality produce.
- **Vertical Cultivation:** The innovation facilitates vertical cultivation in large towers, optimizing space efficiency and expanding possibilities for urban agriculture.
- **Water Efficiency:** Hydroponics utilizes significantly less water compared to conventional methods, addressing concerns related to water scarcity.
- **Reduced Pests**: Plants cultivated through hydroponics exhibit fewer pests, contributing to a more sustainable and eco-friendly agricultural practice.

This breakthrough in electronic soil technology not only transforms agricultural practices but also signifies a promising step towards addressing challenges in food production, resource efficiency, and environmental sustainability.

13. RoDTEP SCHEME

SOURCE: PIB
The Ministry of Commerce & Industry has expanded the Remissions of Duties and Taxes on Export Products (RoDTEP) scheme to include sectors such as gems and jewellery, pharma, leather, textiles, and handicrafts.

- It aims to neutralize taxes and duties on exported goods, promoting exports in sectors not covered earlier.
- Introduced under the Foreign Trade Policy 2015-20 (effective since 2021), RoDTEP **facilitates the reimbursement of taxes, duties, and levies, providing a mechanism to boost the export sector** by addressing financial challenges faced by exporters.
- It replaced MEIS scheme.

14. NHPC HONOURED WITH SCOPE'S 'COMMENDATION CERTIFICATE

SOURCE: PIB
NHPC Limited (National hydroelectric power corporation), a leading hydropower company, achieves a milestone with SCOPE's 'Commendation Certificate' for RTI Act, 2005.
- The award recognizes NHPC's commitment to transparency in information.
- **NHPC is a Mini Ratna Category-I PSU, established in 1973.**

Standing Conference of Public Enterprises (SCOPE's):
- SCOPE, formed in 1973, is the apex body for Public Sector Enterprises (PSEs) in India.

- **SCOPE aims to enhance competitiveness and excellence in its PSE members.**
- It collaborates with national bodies like the Department of Public Enterprises, Ministry of Finance, and interfaces with statutory bodies such as CIC and CVC.
- **Internationally, SCOPE represents employers on forums like ILO, UN, and OECD.**

GEOGRAPHY

I. GEOLOGICAL PHENOMENON

## 1. OVER 100 ACTIVE PERMAFROST STRUCTURES IDENTIFIED IN JHELUM BASIN,

SOURCE: DOWN TO EARTH
A recent study has unveiled the existence of more than 100 active permafrost structures, specifically rock glaciers, in the Jhelum basin of the Kashmir Himalayas.

These rock glaciers, composed of a blend of rock fragments and ice, hold implications for regional hydrology and pose potential threats as global temperatures rise.

What are Rock Glaciers?

- Rock glaciers form in mountainous regions where permafrost, rock debris, and ice converge.
- Permafrost, a permanently frozen layer, consists of soil, gravel, and sand held together by ice.
- Rock glaciers develop when debris-covered ice from receding or thawing glaciers transforms into a distinct landform.
- Typically found in highly elevated areas with steep slopes, they require a geomorphological perspective for accurate identification.
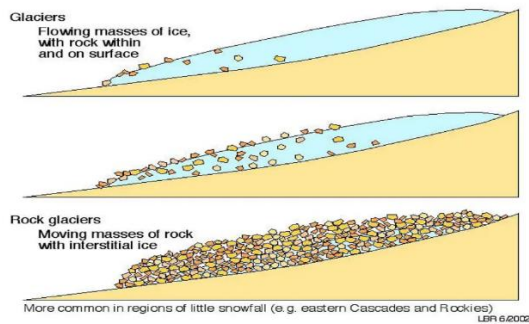
Classification:

- Classified as active or relict, with active ones being more dynamic and potentially hazardous.
- Active rock glaciers indicate mountain permafrost.

Importance:

- Serve as vital indicators of mountain permafrost.
- Store substantial water amounts in frozen cores, offering a valuable resource in water-scarce regions amid glacial retreat.

Potential Impacts of Active Rock Glaciers:

Glacial Lake Outburst Floods (GLOFs):

- Active rock glaciers near glacial lakes heighten the risk of GLOFs by destabilizing slopes or dams.

- Notable risk to lakes like Chirsar and Bramsar in the region.

Landslides:

- Melting permafrost weakens slopes, making areas prone to landslides.
- Increased risk to settlements and infrastructure.

Jhelum Basin of the Kashmir Himalayas:

- Drained by the upper Jhelum River, originating at Vernag in the Pir Panjal range.
- Contributes to the Indus River system, flowing through Jammu and Kashmir into Pakistan.
- Significant tributaries include Kishenganga (Neelum) and Kunhar River.

Way Forward:

Permafrost Research:

- Emphasize the importance of permafrost research in comprehending and mitigating climate change impacts in the Himalayan region.

Resource Allocation:

- Allocate resources for in-depth studies on the hydrological potential of active rock glaciers, exploring sustainable water use in water-scarce regions.

Early Warning Systems:

- Develop and implement early warning systems in areas with identified active rock glaciers to forewarn communities and authorities about potential disasters.

Integration into Climate Adaptation Plans:

- Integrate findings from permafrost studies into regional and national climate change adaptation plans, recognizing the challenges posed by transitioning from glaciers to rock glaciers.

Awareness Campaigns:

- Raise awareness among local communities, planners, and policymakers regarding the risks associated with permafrost degradation.

2. INDIAN TECTONIC PLATE

SOURCE: DOWN TO EARTH

Recent seismic data reveals the splitting of the Indian tectonic plate beneath the Tibetan plateau.

Indian Tectonic Plate:

- **Location:** A minor tectonic plate in the northeast hemisphere.
- **Boundaries:** Surrounded by the Eurasian, Australian, African, and Arabian plates.
- **Plate Movements:** Drifts northward, creating convergent, divergent, and transform boundaries.

Plate Boundaries:

- **Convergent Boundary:** Collision with the Eurasian plate formed the Himalayan Mountains.
- **Divergent Boundary:** Indo-African boundary.
- **Transform Boundary**: Western Indo-Arabian boundary.

Evolution of the Indian Plate:

- **Historical Collision**: Collision with the Eurasian plate 50 million years ago.
- **Result:** Formation of the Himalayan Mountains.
- **Current Activity:** Active plate drifting at approximately 5 cm per year, leading to seismic activity.

Mining Significance:

- **Geological Impact:** Collision led to low-grade metamorphism.
- **Resource Extraction:** Northern India is the leading producer of mica blocks and splitting due to mining of micaceous minerals.

Plate Tectonics:

Plate tectonics refers to the scientific concept explaining how Earth's crust, known as the lithosphere, consists of sizable pieces termed "plates."

These plates, composed of **solid rock, float atop the asthenosphere**, a semi-fluid layer located beneath the lithosphere.

The asthenosphere, maintained in a malleable state by intense heat deep within the Earth, acts as a lubricant for the movement of these tectonic plates.

As a result, the lithospheric plates can shift and interact with one another.

This theory elucidates the dynamic nature of Earth's surface, detailing the processes behind phenomena like continental drift, earthquakes, and volcanic activity.

II. PRELIMS POINTERS IN NEWS

3. RIVER DEVIKA REJUVENATION PROJECT

SOURCE: THE INDIAN EXPRESS

The 'Devika' river rejuvenation project, modelled after 'Namami Ganga,' is in its final stages in Jammu and Kashmir, marking North India's first such initiative.

Launched in February 2019, the project aims to improve the condition of the Devika River, a significant tributary considered the sister of the sacred Ganga.

Implementation and Features:

- **Included in the National River Conservation Project (NRCP)**, the project focuses on the Devika River's revitalization.
- **Initiatives under the project include developing bathing ghats, removing encroachments, restoring natural water bodies, developing catchment areas, and improving cremation grounds.**
- Infrastructure involves three sewage treatment plants, a sewerage network of 129.27 km, development of cremation ghats, protection fencing, landscaping, small hydropower plants, and solar power plants.

Cost and Funding:

Executed at a **cost exceeding Rs 190 crore, the funding is shared with a 90:10 ratio by the central government and the Union Territory, respectively.**

Impact and Significance:

- Completion of the project anticipates **reduced pollution and improved water quality** in the Devika River.
- The rejuvenated river is expected to become a **unique destination for pilgrim and recreational tourists,** along with serving as a modern cremation centre.

Devika River Facts:

- Considered the sister of the sacred Ganga, **Devika has religious significance.**
- **Originating from the Suddha Mahadev temple in Udhampur, Jammu and Kashmir**, it flows towards western Punjab, merging with the Ravi River.
- **Also known as Gupt Ganga due to its appearances and disappearances in different places.**

4. KARMAN LINE

SOURCE: THE HINDU

The Karman Line, situated 100 km (62 miles) above sea level, marks the boundary between Earth's atmosphere and outer space.

Established in the 1960s by the Federation Aeronautique Internationale (FAI), it was named after aerospace pioneer Theodore von Karman.
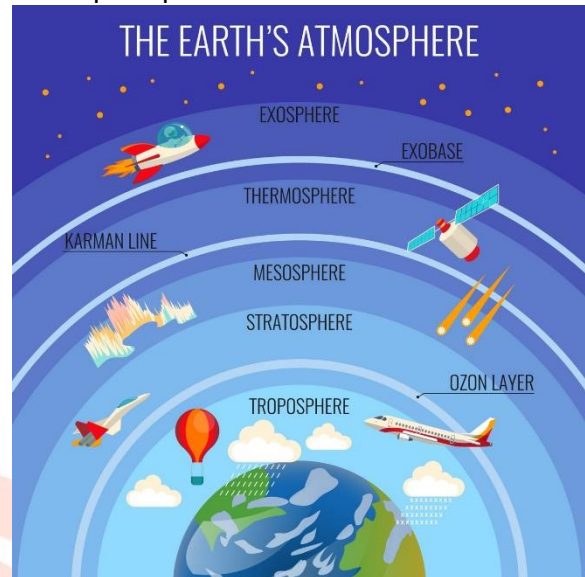
Recognition and Controversy:

- **Some disagreement exists as not all scientists agree on its precise location. The Federal Aviation Administration, NASA, and the U.S. military place it at 80 km (50 miles) above Earth.**
- Despite discrepancies, most countries and space organizations recognize the Kármán Line as the boundary between Earth's atmosphere and space.

Physical Basis:

- It reflects a practical altitude where traditional aircraft can no longer effectively fly due to the thinning atmosphere.
- **Craft above this line need a propulsion system independent of Earth's atmospheric lift.**

Qualification as Astronaut:

- Crossing the Karman Line qualifies an individual as an astronaut.
- This line signifies the shift in physical laws governing a craft's ability to fly.

Importance and Legal Aspect:

- **Defined by the 1967 Outer Space Treaty, the Karman Line ensures space accessibility for all countries and encourages scientific investigation.**

- Establishing a legal boundary helps prevent disputes, facilitates tracking of space activities, and regulates human space travel.

5. KAVARATTI ISLAND

SOURCE: THE HINDU

The Prime Minister received a warm welcome in Kavaratti, Lakshadweep, where he arrived to inaugurate and lay the foundation for various development projects.

About Kavaratti Island:

- **Capital:** Kavaratti serves as the capital of Lakshadweep, India's smallest Union Territory, and is its most developed island.
- **Location**: Situated 360 km off the coast of Kerala, **it lies in the centre of the Lakshadweep archipelago**, positioned between Agatti Island and Andrott Island.

- **Geography:** Kavaratti covers an **area of 4.22 sq km**, with a maximum length of 5.8 km and a width of 1.6 km. The **island's elevation ranges from 2 to 5 m above sea level on the western side and 2 to 3 m on the eastern side.**
- **Natural Features:** The island features a **shallow lagoon on the western side**, coconut palms on the northern side, 12 atolls, five submerged banks, three coral reefs, and a small inland lake at its northern end.
- **Cultural Significance:** Kavaratti town is known for **carved wooden pillars and roofs in its mosques**, along with carved stones in its graveyards.
- **Language:** Malayalam and Mahl are spoken in Kavaratti.
- **Smart City Initiative**: Kavaratti is selected as one of the hundred Indian cities to be developed as a smart city under the Smart Cities Mission.

6. CABO VERDE

SOURCE: INDIAN EXPRESS

Cabo Verde, also known as Cape Verde, has achieved the prestigious **status of being malaria-free**, making it the third country in the World Health Organization's African region to attain this distinction.

About Cabo Verde:

- **Geographical Location**: Cabo Verde, also known as Cape Verde, is a group of islands **situated off the west coast of Africa.**
- **Proximity**: It is located near Senegal and is the nearest point to the African continent.
- **Island Composition:** The archipelago consists of ten islands and five islets, divided into windward (Barlavento) and leeward (Sotavento) groups.
- **Climate:** Cabo Verde experiences a moderate climate characterized by stable temperatures and extreme aridity.
- **Terrain:** The islands vary in terrain, with older, flatter islands in the east and newer, more mountainous ones in the west.
- **Population:** The majority of the population, known as mestiço or Crioulo, is of mixed European and African descent.

- **Capital:** The capital city is Praia.
- **Languages:** Portuguese and Cape Verdean Creole are widely spoken.

Key Facts about Malaria:

- **Cause:** Malaria is a life-threatening disease caused by parasites transmitted through the bites of infected female Anopheles mosquitoes.
- **Parasite Species**: Five parasite species cause malaria in humans, with Plasmodium falciparum and Plasmodium vivax posing the greatest threat.
- **Prevalence:** Common in tropical areas with hot and humid climates.
- **Most Vulnerable Group:** Children under 5 years old are the most vulnerable to malaria.
- **Symptoms**: Symptoms include fever, sweating, chills, headache, and muscle aches.
- **Treatment**: Malaria is preventable and curable, with early treatment leading to full recovery in most cases.

HISTORY

I. PRELIMS POINTERS IN NEWS

1. ANCIENT 'CHEWING GUM' REVEALS STONE AGE DIET

SOURCE: SCIENCEDAILY
Recent study analyses DNA from a 10,000-year-old chewing gum found in West coast of Scandinavia.

MESOLITHIC AGE TOOLS
- Bones and Ivory used
- Blade
- Core
- Knives
- Chisels
- Triangle
- Burin
- Dagger
- points
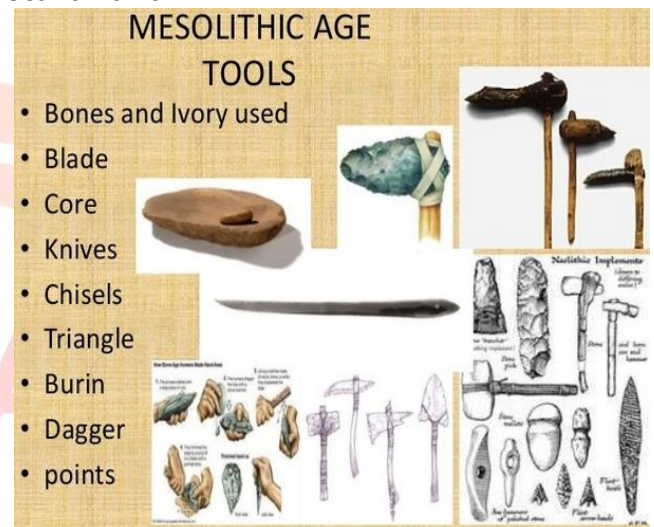
- Chewed resin, alongside stone tools, indicates activities like fishing and hunting, marking a Mesolithic era.
- Findings reveal that Inhabitants around 9,700 years ago had a **diet of deer, trout, and hazelnuts.**
- Mesolithic Age, between Palaeolithic and Neolithic, varies in starting time by region.
- Transition from large, chipped stone tools to smaller ones (microliths) occurred.
- Mesolithic Age saw the **domestication of dogs.**

2. MAHAYOGI VEMANA

SOURCE: PIB
Indian Prime Minister honors Mahayogi Vemana on Vemana Jayanti, January 19, 2024.
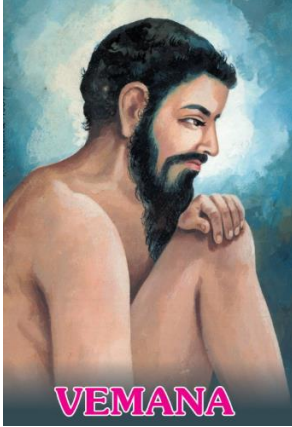
VEMANA

- Mahayogi Vemana, also called Yogi Vemana, an **Indian philosopher and Telugu poet.**
- Poems famous for simple language and native idioms.
- **Topics include yoga, wisdom, and morality.**
- Signature line in many poems: **"Viswadaabhi Raama Vinura Vema."**
- The tribute recognizes Vemana's contributions to philosophy and poetry, emphasizing his impact on Telugu literature through accessible language and insightful discussions on profound subjects.

3. WARLI TRIBE

SOURCE: THE HINDU
The Warli Tribe, an indigenous adivasi community, residing near Sanjay Gandhi National Park in Maharashtra, provides a lesson in peaceful coexistence with leopards.
The Warli people live in mountainous, coastal, and border regions of Gujarat and Maharashtra.
About Warli Tribe:
- The term 'Warli' is derived from 'Warla,' meaning 'piece of land.'
- **Language**: They speak Varli or Warli, an Indo-Aryan language, often classified as Marathi, Konkani, or Bhil.
- **Culture**: Rooted in animistic beliefs, Warli culture revolves around Mother Nature, depicted prominently in Warli paintings.

- **Folk Art**: Women play a significant role in creating Warli paintings, showcasing their traditional way of life, customs, and traditions.

Style and Attire:
- **Warli Tribe women wear Lugden**, a knee-length sari influenced by Maharashtrian rural regions.

Festival and Celebration:
- **Bohada, a three-day mask festival**, involves mask owners wearing masks and performing various rituals.

Dance and Music:
- The Warli Tribes engage in **Tarpa Dance, accompanied by Tarpa music instruments.**
- Tarpa dance involves a musician playing the Tarpa instrument in the centre while others form a circle and dance in groups.

4. SAQQARA

SOURCE: BBC
Archaeologists in **Egypt have recently made significant discoveries at Saqqara,** unearthing tombs containing mummy masks and a statue representing the 'god of silence.'

About Saqqara:

- **Location**: Situated on the western bank of the Nile, 40 kilometres south of Cairo, Saqqara is part of the necropolis of the ancient Egyptian city of Memphis.
- **Significance:** It served as an active burial ground for over 3500 years and is Egypt's largest archaeological site.
- **Historical Transition:** Saqqara witnessed the transition from mastaba tombs to the iconic pyramid design.
- **Step Pyramid:** Best known for the Step Pyramid, built around 2700 BC for King Djoser of the 3rd Dynasty by the renowned architect Imhotep.
- **Architectural Feat:** Imhotep's design marked the first use of limestone in monumental construction, making it one of the oldest stone structures and a testament to ancient engineering prowess.
- **Preservation:** Despite being constructed from lower-quality limestone, Djoser's Pyramid has endured for over 4700 years, highlighting its remarkable preservation.

5. 2,800-YEAR-OLD HUMAN SETTLEMENT DISCOVERED IN VADNAGAR

SOURCE: LIVEMINT

Remains of a 2,800-year-old human settlement discovered in Vadnagar.

This discovery sheds light on the ancient and rich cultural heritage of the region, providing valuable insights into its history and civilization.

About Vadnagar:

Location and History:

- Situated in the Mehsana district of North Gujarat, India.
- Traces its history back to the 8th Century BCE, known by various names like Vridhanagar and Anartapur.
- Mentioned in ancient texts like the Puranas and travelogues of Chinese traveller Hieu-en-Tsang.

Urban Landscape:

- Multi-layered and multi-cultural mercantile settlement.
- Represents an evolving historic urban landscape integral to Western India's trade network.
- Features Sharmishtha Lake on its northeastern edge and an L-shaped layout.

Structures and Features:

- Built over an ancient mound, with its highest point at Darbar Ghat.
- Divided into blocks called Mohallas or Madhs, named after temples, communities, or occupations.
- Fortifications, arched gateways, temples, wells, residential structures, Buddhist monasteries, and stupas showcase architectural influences from various periods.

Architectural Heritage:

- **Ambaji Mata Temple**, dating back to the 10th-11th Century CE, is the oldest temple.
- Other Hindu and Jain temples date from the 17th Century onwards.
- Current residential layer dates from the late Gaekwad period (late 18th Century CE).
- Surrounding fortifications cover an area of 1km east-west and 700m north-south.

6. THIRUVALLUVAR DAY

Prime Minister of India paid tributes to Saint Thiruvalluvar on Thiruvalluvar Day, acknowledging the poet's significant influence on Tamil culture and philosophy.

Thiruvalluvar Day pays tribute to Saint Thiruvalluvar, a revered poet and philosopher.

Initially celebrated on May 17 and 18 in 1935, it is now typically observed on January 15 or 16 in Tamil Nadu as part of Pongal celebrations.

About Thiruvalluvar

- Saint Thiruvalluvar, often referred to as Valluvar, is considered a cultural icon by Tamils.

- His renowned **work, Thirukkural,** consists of 1330 couplets divided into 133 sections covering **ethics, politics, economy, and love.**
- Thirukkural is structured around the principles of dharma, artha, and kama, offering moral, ethical, and practical guidance.
- The couplets are concise yet poetic, making them easily memorable and widely quoted.
- Thiruvalluvar's teachings encompass a broad spectrum of topics, providing readers with insights into virtuous living and societal harmony.
- His profound wisdom continues to inspire people across generations, emphasizing the timeless relevance of his teachings in contemporary society.

7. JAGANNATH TEMPLE

Chief Minister of Odisha recently inaugurated a heritage corridor surrounding the Jagannath Temple in Puri.

About Jagannath Temple:
- **Location:** Situated in Puri, Odisha, India.
- **Significance:** One of the most revered Hindu temples globally, dedicated to Lord Jagannath, a form of Vishnu.
- Nagara style of temple architecture
- **Historical Origin**: Believed to be constructed during the **12th century under King Anantavarman Chodaganga Deva of the Eastern Ganga dynas**ty.

Architecture:
- **Architectural Style:** Exemplifies Kalinga architecture, a distinctive style prevalent in Odisha.
- **Main Structure:** Garbhagriha (sanctum sanctorum) houses idols of Lord Jagannath, Balabhadra, and Subhadra.

Ratha Yatra Festival:
- **Occasion:** Celebrates Jagannath's annual visit to Gundicha Temple via Mausi Maa Temple, Puri.
- **Timing:** Begins on the second day of the lunar month of Ashadha (June–July) and spans nine days.
- **Ritual:** Deities are placed on massive chariots and paraded through Puri.

Cultural Significance:
- **'Yamanika Tirtha'**: The temple is referred to as a place where the power of Yama, the god of death, is nullified due to Lord Jagannath's presence.

ENVIRONMENT

I. BIODIVERSITY AND CONSERVATION

1. WHY 2024 MAY SEE ACTION ON BIODIVERSITY CREDITS

SOURCE: THE HINDU

Biodiversity Credits (Biocredits) have emerged as a financial tool garnering attention for funding initiatives outlined in the Kunming-Montreal Global Biodiversity Framework (KMGBF).

Instituted during the 15th Conference of Parties (CoP15) of the Convention on Biological Diversity (CBD), the KMGBF sets ambitious goals for biodiversity conservation globally.

Biodiversity Credits:

- Biodiversity credits function as financial instruments, akin to carbon credits, but with a primary **focus on preserving biodiversity.**
- They aim to attract private investments directed toward initiatives aligned with international biodiversity conservation agreements, such as the KMGBF under CBD.
- The **Biodiversity Credit Alliance, launched at CoP15, actively promotes bio credits, engaging various stakeholders, including governmental bodies, non-profits, and private enterprises.**

Biodiversity credits finance positive biodiversity impact towards nature net positive goals.
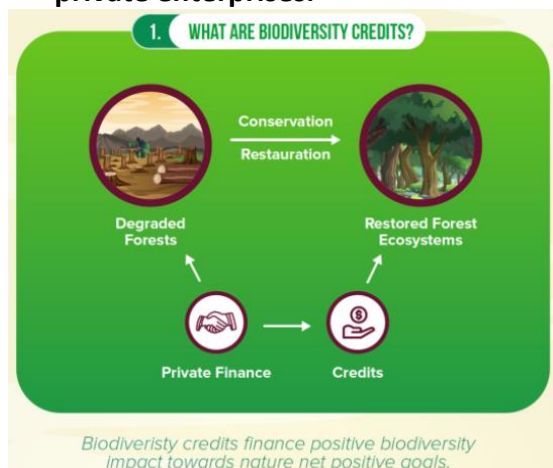
Implementation and Noteworthy Initiatives:

Ocean Conservation Commitments (OCCs):

- Launched in September 2023, OCCs are linked to Niue's Moana Mahu Marine Protected Area.
- Each OCC, priced at USD 148, represents a 20-year commitment to support conservation efforts.
- Notable investments have come from NGOs like the Blue Nature Alliance and Conservation International, along with private donors.

Wallacea Trust:

- A UK-based organization focusing on biodiversity and climate research, the Wallacea Trust has committed 5 million biodiversity credits.
- This commitment underscores growing interest from research-oriented entities in utilizing biocredits for conservation.

Challenges and Uncertainties:

- **Regulatory Frameworks:** Establishing robust regulatory frameworks is essential to ensure the fair and effective functioning of biodiversity credits.
- **Pricing Structures:** Ensuring fairness in pricing for both buyers and sellers is a challenge that needs careful consideration.
- **Alignment with Conservation Goals:** There is a need to ensure that biodiversity credits genuinely serve biodiversity conservation rather than corporate interests.

Initiatives Related to Biodiversity Conservation:

India:

- India Business & Biodiversity Initiative (IBBI)
- Wetland (Conservation and Management) Rules 2010
- National Plan for Conservation of Aquatic Ecosystem
- Wildlife Crime Control Bureau
- Biological Diversity Act, 2002

Global:

- Nagoya Protocol

- Convention on International Trade in Endangered Species of Wild Fauna and Flora
- Worldwide Fund for Nature (WWF)

Way Forward:

- **Regulation and Monitoring:** There is an urgent need to establish effective regulation and monitoring mechanisms for biodiversity credits.
- **Fair Pricing:** Ensuring that pricing structures are fair for both sellers and buyers is crucial for the success and credibility of biodiversity credits.
- **Government Leadership:** Governments, especially those of the United Kingdom and France, play a pivotal role in creating a roadmap for a high-integrity biodiversity credits market.

Conclusion:

The concept of biodiversity credits presents a promising avenue to address the financial challenges.

However, the success of this approach hinges on meticulous regulation, fair pricing, and a genuine commitment to biodiversity conservation.

While private sector involvement is notable, it is imperative to navigate potential conflicts of interest to ensure the integrity of biodiversity credit initiatives.

II. POLLUTION

2. A CLIMATE-RESILIENT FUTURE

SOURCE: INDIAN EXPRESS

The issue of air pollution in India, particularly in the **National Capital Region (NCR), has evolved into a persistent problem requiring difficult choices and tough decisions at both societal and governmental levels.**

Addressing this complex challenge involves navigating various trade-offs between development and environmental preservation.

Trade-offs in Addressing Air Pollution:
Definition:

- Trade-offs involve sacrificing something to gain something else, representing a compromise between competing priorities.

Development vs. Environment:

- Choices must be made regarding policies impacting economic growth and environmental conservation.
- Balancing industrial expansion with pollution control measures requires careful consideration of trade-offs.

Decision Makers in Trade-off Scenarios:
Role of Politicians:

- Politicians, as elected representatives, are responsible for making decisions on behalf of the populace.
- Academicians provide evidence, while activists advocate for specific positions, but ultimate decision-making lies with politicians.

Examples of Political Decision-making:
Bus Rapid Transit (BRT) Corridor:

- Segregated traffic to prioritize public transport over private vehicles.
- Enhanced public transport efficiency but faced resistance from car users, leading to discontinuation.

Odd-Even Scheme:

- Implemented to reduce vehicular pollution temporarily.
- Despite mixed effectiveness, it was politically acceptable due to its short duration.

Smog Towers:

- Installed despite doubts regarding effectiveness.
- Projects a political image of responsiveness to public concerns.

Effective Addressing of Crop Burning:
Multifaceted Approach:

- Requires a comprehensive strategy involving technical, regulatory, fiscal, and informational interventions.

Marketing of Solutions:

- Effective communication is crucial to garner support from stakeholders.

Political Narrative:

- Politicians must craft a narrative that emphasizes the importance of addressing the issue despite potential political consequences.

Role of the Public:

- **Support for Solutions:** Public backing is essential for politically acceptable solutions.
- **Incentivization:** Policies should incentivize public cooperation, balancing short-term inconveniences with long-term benefits.

III. GLOBAL WARMING AND CLIMATE CHANGE

3. BALANCING CLIMATE GOALS AND BIODIVERSITY PROTECTION

SOURCE: FRONTIERS
A recent study titled "Balancing climate goals and biodiversity protection" explores the intricate relationship between land-based Carbon Dioxide Removal (CDR) strategies and the establishment of protected areas.
The study delves into the conflicts arising from these strategies and their legal implications within the framework of international environmental law.
Key Highlights:
Limited Land Availability:

- The study **highlights the critical challenge posed by limited land availability** in executing biodiversity targets and land-based climate mitigation strategies.
- Countries dedicating significant portions of land for CDR activities face hurdles in establishing protected areas due to land scarcity.

Global Targets and Current Status:

- Nations have committed to the **"30x30" biodiversity target, aiming to protect 30%**

of the world's terrestrial and marine areas by 2030.

- As of 2023, protected areas cover **only around 16% of terrestrial areas and 8% of marine areas, falling short of the 30x30 goal.**

Land Use and Conflict:

- Certain land-based mitigation strategies clash with the imperative to establish more protected areas due to land use constraints.
- Large-scale deployment of CDR might lead to increased biodiversity loss and competition for land designated for food crop production.

Insufficiency of Targets:

- Despite the ambitious nature of the 30x30 target, researchers argue that protecting a minimum of 44% of global land is necessary to effectively conserve biodiversity.
- **CDR activities alone may not adequately fulfill the goals outlined in the Paris Agreement to limit global warming to 1.5 or 2 degrees Celsius.**

Challenges in Implementation:

- The study raises questions about how countries will allocate additional land for protected areas and restoration while expanding food production and implementing CDR strategies.
- Achieving a delicate balance between these objectives poses a significant challenge.

Legal Perspectives:

- The **existing international environmental law does not explicitly prevent the simultaneous implementation of CDR techniques alongside protected areas on the same land parcels.**
- Legal frameworks need to evolve to address these complex interplays between climate goals and biodiversity protection.

Recommendations:

- The study emphasizes the necessity to **focus on CDR policies that effectively**

absorb greenhouse gases while prioritizing biodiversity protection.

- Urgent **action is needed to mitigate climate change**, with the study emphasizing that the threat it poses to biodiversity far outweighs other concerns.
- There is a call for the development of comprehensive legal frameworks that address the intricacies of implementing both CDR strategies and protected areas.

About Carbon Dioxide Removal

CDR refers to the use of deliberate and intentional human actions, technologies, practices, and approaches to remove carbon dioxide from the atmosphere.

Methods of CDR:

Biochar:

- Produced through **controlled burning (pyrolysis) of organic waste** from agriculture and forests.
- **Resembles charcoal but with reduced contamination**, providing a safe carbon storage method.
- Pyrolysis **releases minimal fumes, creating a stable form of carbon.**
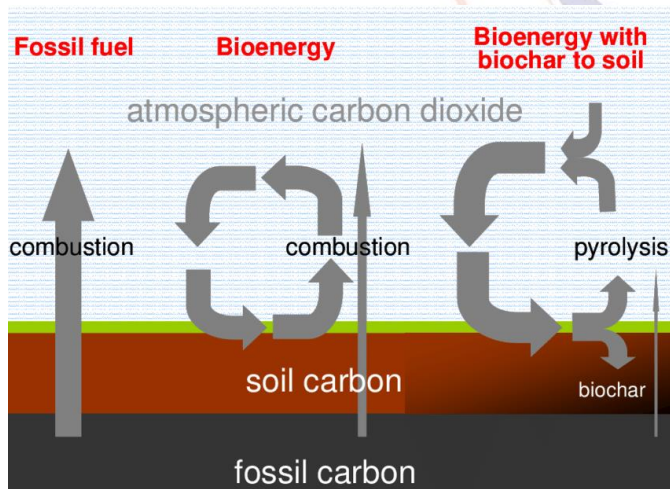
Bioenergy with Carbon Capture and Storage (BECCS):

- **Involves bioenergy production, often through combustion for electricity or heat.**
- Captures resulting CO2 emissions, storing them underground to prevent greenhouse effects.

- Sequesters carbon fixed during photosynthesis as post-combustion CO2.
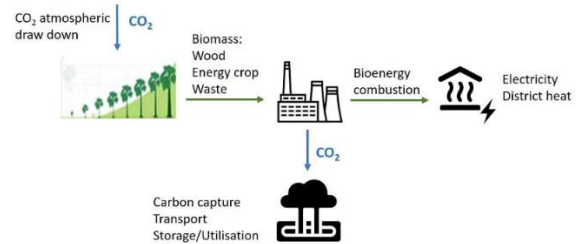
Direct Air Carbon Capture and Storage (DACCS):

- Extracts **CO2 directly from the atmosphere at any location.**
- Captured CO2 is permanently stored underground or repurposed for other applications.
- **Uses electricity to remove CO2 from the air.**

Enhanced Rock Weathering:

- **Involves pulverizing silicate rocks** to expedite weathering.
- Resulting powder, with a larger reactive surface area, is spread on agricultural lands for chemical reactions.

Ocean Alkalinity Enhancement:

- **Includes adding alkaline substances to seawater** to accelerate its natural carbon sink capacity.
- Enhances the ocean's ability to absorb and store carbon dioxide.

IV. DISASTERS

4. HIMALAYAS ON FIRE

SOURCE – DOWN TO EARTH
Forest fires in the Himalayan region, particularly in Himachal Pradesh and Uttarakhand, have surged this winter due to a lack of precipitation.
The F**orest Survey of India (FSI) reports a substantial increase i**n incidents, with 2,050 forest fires recorded between October 16, 2023, and January 16, 2024, compared to 296 incidents during the same period the previous year.
What is Forest Fire?
Forest fires, also known as bush or vegetation fires, are uncontrolled and non-prescribed

combustion of plants in natural settings like **forests, grasslands, and tundras**. The fire consumes natural fuels and spreads based on environmental conditions such as wind and topography.

Classification:

- **Surface Fire:** Spreads along the ground, consuming surface litter.
- **Underground Fire:** Burns organic matter beneath the forest floor and may continue for months, destroying vegetative cover.
- **Ground Fire:** Burns in subsurface organic fuels, often ignited by surface fires, and can destroy vegetation completely.

Factors Contributing to Forest Fires in Himalayan Region:

Lack of Snowfall and Precipitation:

- Absence of snowfall and rainfall leaves the region dry, impacting soil moisture.
- Crucial for preventing the forest floor from becoming excessively dry.

Dry Conditions:

- Lack of moisture in soil and vegetation creates favourable conditions for fires.
- Dry leaves and soil act as potential fuel for fires.
- Rising temperatures linked to climate change contribute to forest drying.

Human Activities:

- Careless discarding of cigarettes and uncontrolled burning trigger fires.
- Controlled burning by the forest department, if not managed properly, can exacerbate the issue.

Vulnerable Tree Species:

- Presence of fire-prone and flammable tree species like Chir pine increases the risk.
- About 15% of Himachal's forest area is covered with Chir pine.

Long Dry Spell:

- Extended periods without rainfall or snowfall make the region more susceptible to fires.

Government Initiatives to Cope with Forest Fires:

National Action Plan for Forest Fires (NAPFF):

- Initiated in 2018 to reduce forest fires by informing and empowering forest fringe communities.
- Aims to incentivize collaboration with state forest departments.

Forest Fire Prevention and Management Scheme (FPM):

- Government-sponsored program assisting states in dealing with forest fires.

Way Forward:

Advanced Fire Detection and Monitoring Systems:

- Implement satellite-based technologies for early warnings and rapid response to potential forest fires.

Community Engagement:

- Involve local communities in forest management and fire prevention efforts.
- Conduct awareness programs to educate residents about responsible forest practices and fire safety.

Sustainable Forest Management:

- Implement practices focusing on maintaining biodiversity.
- Promote fire-resistant vegetation and reduce the presence of highly flammable tree species.

V. PRELIMS POINTERS IN NEWS

5. AMMONIA (NH3)

SOURCE: THE HINDU
Ammonia gas leakage occurred from an underwater supply pipeline in Chennai's Ennore,

Tamil Nadu, caused elevated levels ammonia in both air (400 micrograms) and sea (5 mg/l), breaching acceptable limits.

NH₃
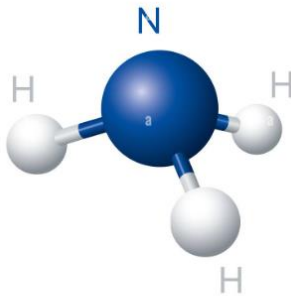
- Ammonia, a colourless and pungent gas composed of nitrogen and hydrogen.
- It naturally occurs in the human body for protein synthesis and is commonly found in soil.
- **Widely used in agriculture as fertilizer, and in the manufacture of plastics, explosives, fabrics, pesticides, dyes, and other chemicals, ammonia is highly corrosive and can inflict damage to human cells.**
- The incident raises environmental and health concerns due to the gas's hazardous nature.

6. CIGARITIS MEGHAMALAIENSIS

SOURCE: TIMES OF INDIA
The Meghamalai hills in Tamil Nadu have revealed a **new butterfly species** named Cigaritis meghamalaiensis.
It has been more than three decades since scientists last discovered a new butterfly species in the Western Ghats.

Discovery and Distribution:
- Researchers first identified the distinct Cigaritis genus species in the high elevations of Periyar, Idukki, in 2018.
- Further exploration indicates the species is exclusive to the Meghamalais and the adjacent Periyar Tiger Reserve.

Distinctive Features:
- Notable features include conjoined discal and post-discal bands on the forewing underside, parallel from their origin at the costa.
- This unique characteristic sets the new species apart from other Cigaritis butterflies in Peninsular India and Sri Lanka.

Other Cigaritis Species in Western Ghats:
- There are seven Cigaritis species in the Western Ghats, including C. vulcanus, C. schistacea, C. ictis, C. elima elima, C. lohita lazularia, C. lilacinus, and C. abnormis.
- Except for C. lilacinus, all others have been reported from the southern Western Ghats.

Periyar Tiger Reserve:
- Located in the Western Ghats of Kerala, **named after the River Periyar originating within.**
- Drained by two main rivers, **Pamba and Periyar.**
- **Rich in tribal communities like Mannans and Palians.**
- Diverse vegetation includes **tropical evergreen, semi-evergreen, and moist deciduous forests.**
- Flora consists of **teak, mangoes, rosewood, jamun, jacarandas, terminalias, tamarind, royal ponciana, and bamboo.**
- Fauna features **elephants, wild pigs, sambar, gaur, mouse deer, Indian wild dog, and tigers.**

7. INDIAN PANGOLIN

SOURCE: THE HINDU
The pangolin conservation project, aimed at protecting pangolins, has achieved success in the Pench Tiger Reserve and Satpura Tiger Reserve. This success is evident as pangolins have started breeding in these reserves.

About Pangolins (Scaly Anteaters):
- Pangolins are unique mammals with large keratin scales covering their skin, known as scaly anteaters.
- There are eight species globally, four each in Asia and Africa, with two found in India: **Indian Pangolin (Manis crassicaudata) and Chinese Pangolin (Manis pentadactyla).**

Indian Pangolin:
- Native to the Indian subcontinent, the Indian pangolin, also known as the **thick-tailed pangolin**, is one of the most trafficked mammals globally.
- Distribution includes **India, Bangladesh, Southern Nepal, Sri Lanka, and parts of Pakistan.**
- Habitat ranges from desert regions and hilly areas to tropical forests, grasslands, and proximity to villages.
- Features include **large, overlapping scales acting as Armor, colour adaptation to surroundings, ability to curl into a ball for self-defence, and being nocturnal.**

Conservation Status:
- **IUCN Red List**: Endangered.
- **Wildlife (Protection) Act, 1972**: Schedule I.
- **CITES:** Appendix I.

- **Chinese pangolin**-IUCN status-critically endangered

8. GREEN HONEYCREEPER

SOURCE: THE HINDU
Ornithologists in Colombia recently photographed a wild green honeycreeper displaying a unique phenomenon — half of its body had male plumage, and the other half had female colouring.
This bilateral gynandromorphism is a rare occurrence resulting from a mistake during female cell division, leading to an egg with both male and female characteristics, followed by fertilization by two sperm.

About Green Honeycreeper:
- **Scientific Name:** Chlorophanes spiza, a small bird in the tanager family.
- **Distribution**: Found in the New World Tropics, from Mexico to Brazil, primarily in rainforests of Central **and South America.**
- **Features:** Measures 13–14 cm, weighs 14 to 23 grams, and exhibits sexually dimorphic plumage.
- **Male:** Mainly blue-tinged green with a black head, bright yellow bill.
- **Female:** Grass-green with a paler throat, lacking male's iridescence and black head.
- **Feeding Habits:** Consumes nectar, fruit, and insects, often visiting feeders supplying fruit.
- **Conservation Status**: Least Concern on the IUCN Red List.

9. KUNO NATIONAL PARK

SOURCE: INDIAN EXPRESS

A Namibian cheetah named Aasha at Kuno National Park in Madhya Pradesh's Sheopur district recently gave birth to three cubs.

THE HOMES FOR CHEETAH IN INDIA

Three potential wildlife sanctuaries that would support cheetah population

Kuno-Palpur
Area: 344.686km²
Part of Kathiawar-Gir dry deciduous forests

Shahgarh
Area: About 4,000km²
A fenced region close to India-Pakistan border

Nauradehi
Area: 1,197km²
Spreads over the southern area of Vindhya Range of hills

About Kuno National Park:

- **Location:** Situated in the **Sheopur district of Madhya Pradesh**, near the Vindhyan Hills, named after the Kuno River (a major tributary of the Chambal River).
- **Establishment:** Initially a wildlife sanctuary, it gained **national park status in 2018.**
- **Cheetah Reintroduction:** Kuno National Park was selected for the **'Action Plan for Introduction of Cheetah in India'** and **gained international recognition for conservation efforts**, including the recent reintroduction of cheetahs.
- **Vegetation:** Varied from **tropical dry deciduous forest to savannah grasslands.**
- **Landscape:** Characterized by **rocky hills, ravines, and plateaus.**
- **Flora**: Dominated by **Kardhai, Salai, and Khair trees.**
- **Fauna:** Home to diverse wildlife, including the jungle cat, Indian leopard, sloth bear, Indian wolf, striped hyena, golden jackal, Bengal fox, dhole, and over 120 bird species.
- **Asiatic Lions:** Known for the **successful translocation of Asiatic lions from Gir**

National Park in Gujarat in 2021, aiming to establish a second population of the species.

10. DEBRIGARH WILDLIFE SANCTUARY INCLUDED IN SWADESH DARSHAN 2.0

SOURCE: PIB

The Ministry of Tourism has incorporated the Debrigarh Wildlife Sanctuary into the Swadesh Darshan 2.0 scheme.

Swadesh Darshan Scheme:

- **Launch:** Introduced in 2015 by the Ministry of Tourism, Government of India, with the aim of developing sustainable and responsible tourism destinations in the country.
- **Funding:** 100% centrally funded scheme.
- **Assistance:** The Ministry provides financial aid to State governments, Union Territory Administrations, or Central Agencies for tourism infrastructure development.
- **Operation & Maintenance:** The responsibility of projects sanctioned under the scheme lies with the respective State Government/UT Administration.

Swadesh Darshan 2.0

The Ministry has revamped the Swadesh Darshan scheme as Swadesh Darshan 2.0 for sustainable tourist destination development.

- **Objectives:** Focus on increasing private sector investment, fostering Public Private Partnerships (PPP), and enhancing tourism-related infrastructure and services.

Debrigarh Wildlife Sanctuary:

- **Location:** Situated in the Bargarh district of **Odisha**, near the Hirakud dam on the Mahanadi River.
- **Historical Significance:** Noted freedom fighter Veer Surendra Sai's base during his rebellion against the British was located within the sanctuary.
- **Declaration:** Designated a wildlife sanctuary in 1985.

- **Vegetation:** Encompasses dry deciduous mixed forests.
- **Flora:** Dominated by Sal, Asana, Bija, Aanla, Dhaura, and other major tree species.
- **Fauna:** Home to a diverse array of wildlife, including Tiger, Sloth Bear, Leopard, Hyena, Spotted Deer, Antelopes, Sambar, Gaur, Nilgai, Bison, and Langur Monkeys.

11. PUNGANUR COW

SOURCE: TIMES OF INDIA
The Prime Minister recently fed Punganur cows at his New Delhi residence, drawing attention to this unique cattle breed.

About Punganur Cow:
Physical Characteristics:

- Stands at 70-90 cm tall and weighs under 200 kg, making it one of the world's smallest cattle breeds.
- Native to Punganur village in Andhra Pradesh.

Resilience and Adaptability:

- High resilience to drought and can thrive on low-quality feed.

Milk Quality:

- Produces milk with higher fat content, ideal for ghee production.
- Yields 1 to 3 litres of milk per day with 8% fat content, richer in Omega fatty acids, calcium, potassium, and magnesium.

Appearance:

- Comes in white, grey, light brown, dark brown, or red, sometimes with patches of other colours.
- Broad forehead, short horns, crescent-shaped, curving backward in males and forward in females.

Eco-Friendly Attributes:

- Requires less water, feed, and space compared to hybrid breeds.

Cultural Significance:

- Used for Ksheeraabhishekam (milk offering) in Andhra Pradesh temples, including Tirupati Thirumala Temple.

12. NEW CORAL SNAKE SPECIES

Researchers from Mizoram University's zoology department have identified a new species of coral snake in Mizoram, naming it Sinomicrurus gorei in honor of British Indian doctor Gore.

Key Details:
Local Name and Resemblance:

- Known as **'Rulṭhihna'** locally, resembling the Mizo traditional amber necklace called 'Ṭhihna'.

Species Count:

- Nine Sinomicrurus coral snake species discovered globally.
- Only Sinomicrurus macclellandi found in Northeast India prior to this discovery.

Distinctive Features:

- Unique patterns, scales, hemipenis, DNA, and skull.
- Previously, Sinomicrurus gorei and Sinomicrurus macclellandi considered the same due to close resemblance.

Reproductive Variance:

- Sinomicrurus gorei lays up to three eggs, while Sinomicrurus macclellandi lays 6-14 eggs.

Habitat Distribution:

- Sinomicrurus macclellandi mainly in hilly areas, Sinomicrurus gorei in both low-lying and hilly regions.

13. BALEEN WHALES

SOURCE: THE HINDU

Recently, a fossilized jawbone of a baleen whale, estimated to be 19 million years old and around nine meters in length, was discovered.

About Baleen Whales:

- **Unique Adaptation:** Cetaceans with epidermal mouth modifications called baleen for filtering food from water.
- **Teeth Exception:** Unlike most mammals, baleen whales lack teeth, utilizing baleen as a filtering mechanism.
- **Keratin Structure**: Baleen is a hair-like keratin structure used to filter small krill from the water.

Evolutionary Significance:

- **Efficient Feeding:** Enabled baleen whales to efficiently feed on vast shoals of zooplankton, contributing to the evolution of larger body sizes.
- **Species Diversity:** There are 14 species of baleen whales, including blue, bowhead, right, humpback, minke, and Gray whales.

Baleen Whale Characteristics:

- **Size Comparison:** Generally larger than toothed whales, except for the large-toothed sperm whale.
- **Migration Pattern:** Many baleen whales exhibit annual migration, covering long distances between feeding and breeding areas.

Fossil Record Patterns:

- **Southern Hemisphere Presence:** Fossil records from Australasia and South America suggest that large baleen whales

in the evolutionary history are primarily found in the Southern Hemisphere.

Ecosystem Engineering:

- **Consumption of Energy:** Baleen whales act as ecosystem engineers, consuming significant amounts of energy.
- **Nutrient Contribution:** Upon death, these whales provide abundant nutrients to deep-sea ecosystems, enhancing biodiversity.

14. INDIAN VULTURE

Recently, a vulture was sighted in Thane's skyline, marking a significant event after more than two decades.

About Indian Vulture (Gyps indicus):

- The Indian vulture is an Old-World vulture indigenous to Asia.
- Referred to as Indian long-billed vultures due to their distinctively longer beaks.
- Medium-sized and robust scavengers primarily feeding on dead animal carcasses.
- Females are smaller than males.

Distribution and Habitat:

- Native to I**ndia, Pakistan, and Nepal.**
- Typically found in savannas, open habitats around villages, cities, and cultivated areas.

Threats to Indian Vulture:

- Drastic population decline of 97-99% attributed to poisoning by the veterinary drug diclofenac.
- **Diclofenac**, given to working animals for joint pain relief, inadvertently proved toxic to vultures.

Conservation Status:
- Classified as **Critically Endangered** on the IUCN Red List, highlighting the urgent need for conservation efforts.

15. CHANDAKA-DAMPARA WILDLIFE SANCTUARY

Odisha state government has recently relocated deer from Cuttack to Chandaka-Dampara wildlife sanctuary.

About Chandaka-Dampara Wildlife Sanctuary:
- **Location**: Situated in Khurda district, Odisha, marking the northeastern extent of Eastern Ghats.
- **Sanctuary Status:** Designated in 1982.
- **Climate:** Exhibits a tropical climate with distinct summer, rainy season, and winter.

Vegetation:
- Moderately diverse flora with a blend of evergreen and deciduous elements.
- Falls under the semi-evergreen forest zone, but human and environmental factors have altered its original character.
- **Key Plant Species:** Dhaman, Bankapasia, Jamu, Gandhana, Kansa, Kusum, Marua, Sidha, Karanja, Thorny Bamboo, etc.

Fauna:
- Diverse wildlife includes elephants, Chital, Barking Deer, Wild Boar, Rhesus Monkey, Pangolin, Sloth Bear, Indian Wolf, Hyena, and other mammals.

Upcoming Plans:
- The government plans to introduce Sambar and Gaur (bison) to enhance biodiversity in the sanctuary.
- Aims to provide a conducive habitat for these species, contributing to overall conservation efforts.

Significance:
- Chandaka-Dampara Wildlife Sanctuary serves as a crucial habitat for threatened wild animals and birds in the region.

SCIENCE AND TECHNOLOGY

I. MEDICAL HEALTH / VACCINES / DISEASSES

1. MULTIPLE SCLEROSIS

SOURCE: BBC

Context: Deoxyribonucleic Acid (DNA) extracted from bones and teeth of ancient Europeans, up to 34,000 years old, provides insights into the origins of Multiple Sclerosis (MS).
- Research Involves ancient DNA sequencing from 1,664 individuals across Western Europe and Asia.
- Ancient genomes compared with modern DNA from the UK Biobank, including 410,000 "white-British" and 24,000 others born outside the UK.

Key Observation - Bronze Age Migration:

- Striking discovery linked to MS and a pivotal migration event 5,000 years ago during the Bronze Age.
- Yamnaya people, livestock herders from modern Ukraine and southern Russia, moved to Western Europe.
- Carried genetic traits initially protective against infections from their animals.

Evolution of Risk:

- As sanitary conditions improved, the same genetic variants increased the risk of Multiple Sclerosis over millennia.

About Multiple Sclerosis (MS):

- **Chronic autoimmune disease where the body mistakenly attacks itself, affecting the central nervous system (CNS).**

MULTIPLE SCLEROSIS
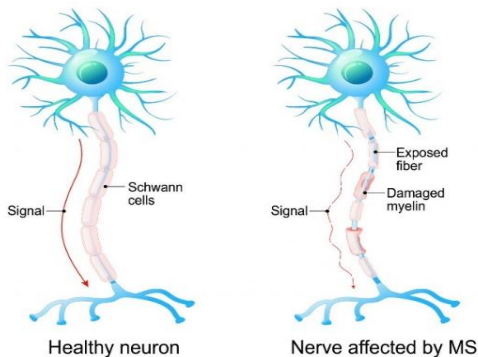
Symptoms of MS:

- Muscle weakness, numbness, and damaged nerve fibres in the brain and spinal cord.
- Issues like difficulty emptying the bladder, frequent or sudden urination, bowel problems, fatigue, and dizziness.

Diagnosis Challenges:

- Symptoms are common and may go unrecognized.
- Often takes many years for a proper diagnosis due to the absence of specific causes or triggers.

Possible Causes:

- Exact cause unknown; likely a combination of factors.

- Genetic factors may play a role.
- Potential links to smoking, stress, and deficiencies in Vitamin D and B12.

Impact on Myelin Sheath:

- Immune system damages the myelin sheath, a protective covering around nerve fibres.
- Results in a range of symptoms affecting various bodily functions.

Management and Awareness:

- There is no cure for MS; disease management involves symptom relief and slowing disease progression.
- Raising awareness crucial for early detection and effective management.

2. BUBBLE BABY SYNDROME (SEVERE COMBINED IMMUNODEFICIENCY - SCID)

SOURCE: TIMES OF INDIA

A two-month-old girl with bubble baby syndrome undergoes bone marrow transplant (BMT) in Mumbai

SCID is a rare genetic disorder affecting the immune system, also known as Bubble Baby Syndrome.

- It is a type of primary immune deficiency where the body lacks proper functioning of immune cells, making it vulnerable to infections.
- The nickname "living in the bubble" comes from the fact that exposure to a normal environment can be fatal for affected children.

Immune System:

- The immune system originates in the bone marrow, where stem cells develop into red blood cells, white blood cells (WBCs), and platelets.
- **WBCs, especially lymphocytes (B-cells and T-cells), play a crucial role in fighting infections**.
- T-cells identify and destroy invaders, while B-cells produce antibodies for future protection.

SCID Mechanism:

- **SCID is a combined immunodeficiency disorder affecting both B and T lymphocytes.**
- Children with SCID have either too few or malfunctioning lymphocytes, making it challenging for the immune system to combat infections effectively.

Causes and Symptoms:

- SCID is caused by inherited mutations in multiple genes passed down from one or both parents.
- Symptoms may not be immediately apparent at birth but soon faces problems such as **failure to thrive, chronic diarrhoea, respiratory infections, oral thrush, and other severe infections.**

Treatment:

- SCID is a paediatric emergency, and without treatment, survival beyond the first birthday is unlikely.
- **The primary treatment is a stem cell transplant** (bone marrow transplant) from a donor, with the aim of rebuilding the child's immune system.

3. HOW INDIAN WOMEN CAN RID THEMSELVES OF CERVICAL CANCER

SOURCE: INDIAN EXPRESS

The Government of India has devised a three-phase vaccination plan against Human Papillomavirus (HPV) for girls aged 9-14 to combat the risk of cervical cancer.

This initiative aims to safeguard against various cancers caused by HPV strains, and an indigenous vaccine, **CERVAVAC**, has been launched by the Serum Institute of India.

Understanding Cervical Cancer:

- **Cervical cancer is the fourth most prevalent cancer among women worldwide, with nearly all cases linked to high-risk HPV.**
- Persistent infections with certain HPV strains, particularly types 16 and 18, contribute to around 85% of cervical cancer cases.
- **Advanced-stage detection is a challenge due to lack of awareness, fear, and absence of early symptoms, leading to high mortality rates.**
- Access to formal healthcare remains a concern, with some patients resorting to traditional healers before seeking medical attention.

Cervical cancer is one of the most preventable and treatable types of cancer

Screening and vaccination are key to prevent the disease

Yet in 2020, more than **600 000 women were diagnosed** with cervical cancer worldwide and almost **350 000 died** from the disease

International Agency for Research on Cancer

World Health Organization
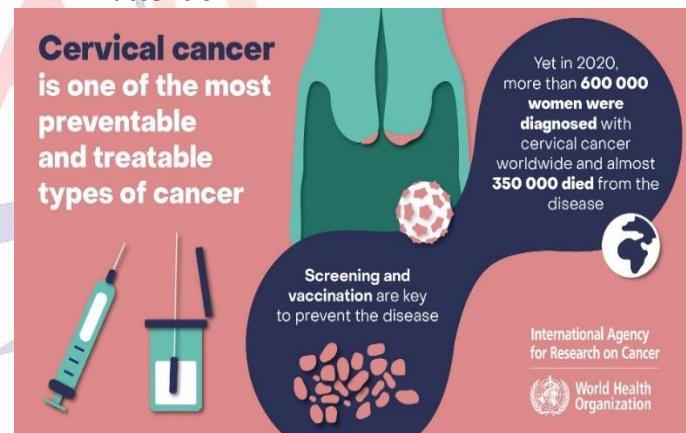
India's Cervical Cancer Landscape:

- In India, cervical cancer ranks as the second-most common cancer in women, predominantly affecting the middle-aged population.
- **With 1,23,907 new cases and 77,348 deaths in 2022, India constitutes a significant portion of the global burden.**

CERVAVAC - A Indigenous Solution:

- CERVAVAC, India's first indigenously developed quadrivalent HPV vaccine, targets four virus strains.

- **The vaccine, based on Virus-Like Particles (VLP), gained approval for bulk procurement after clearance from the Drug Controller General of India.**
- Effective administration is crucial before the first sexual intercourse for optimal efficacy.

Government Initiatives and Challenges:
- **India has various initiatives like the National Programme for Prevention and Control of Cancer and the National Cancer Grid to address cancer-related challenges.**
- Challenges include barriers to early detection, lack of access to formal healthcare, and societal factors influencing patient choices.

Strategies to Eliminate Cervical Cancer:
- HPV vaccination, early detection through screening, and timely treatment are crucial in preventing and curing cervical cancer.
- **The 10–15-year pre-invasive phase offers an opportunity for early detection and outpatient treatment, resulting in high cure rates.**
- Cervical cancer is unique in its potential for elimination, aligning with Sustainable Development Goal 3.4.

WHO Targets and Government Initiatives:
- The World Health Organisation (WHO) sets ambitious targets for cervical cancer elimination, focusing on vaccination, screening, and treatment.
- **The Government of India implements cancer screening in primary health centres, and indigenous kits and vaccines aid in resource-scarce settings.**

Technological Advancements and Population-Level Awareness:
- **Innovations like single-dose HPV vaccination, self-sampling for HPV testing, and Artificial Intelligence (AI) technologies enhance cervical cancer prevention.**
- The urgent need for population-level awareness, vaccine promotion, and age-appropriate screening is underscored.

Comprehensive Approach to Strengthen Care:
- A comprehensive approach involves accurate diagnosis, robust cancer registries, reduced financial burden, and well-connected care pathways.
- **Digital technologies, collaborations, and partnerships play a vital role in successful cervical cancer elimination.**

Conclusion:
The WHO targets, coupled with government initiatives, provide a roadmap for comprehensive action. Success in eliminating cervical cancer requires sustained efforts, including awareness campaigns, vaccine promotion, and collaborative approaches to strengthen cervical cancer care.

4. THE CHALLENGE OF ANTIMICROBIAL RESISTANCE

SOURCE: THE HINDU
The National Centre for Disease Control (NCDC) recently conducted a survey shedding light on antibiotic prescription and use in hospitals amid rising concerns about Antimicrobial Resistance (AMR).
AMR poses a threat to global health, making infections harder to treat and increasing healthcare costs.

Key Findings:

Preventative Use of Antibiotics

- 55% of surveyed patients received antibiotics for preventative reasons, not for treating infections.
- 45% were prescribed antibiotics for therapeutic purposes.

Antibiotic Prescription Patterns:

- Only 6% received antibiotics after a confirmed diagnosis, while 94% were on empirical therapy.
- 94% received antibiotics before a definite diagnosis, indicating widespread use without precise knowledge of the infection.

Variation Among Hospitals:

- Wide variations in antibiotic prescription rates (37% to 100%) among hospitals.
- 86.5% of prescribed antibiotics were administered parenterally.

Drivers of AMR:

- Excessive and inappropriate antibiotic use identified as a significant driver for antibiotic resistance.

Antimicrobial Resistance (AMR):

AMR is the resistance acquired by microorganisms against antimicrobial drugs, rendering standard treatments ineffective.

Reasons for Spread:

- High prevalence of communicable diseases.
- Overburdened public health system.
- Poor infection control practices.
- Injudicious use and easy access to antibiotics.
- Lack of awareness and limited surveillance.

Implications of AMR Spread:

Healthcare Impact:

- Renders antibiotics ineffective against bacterial infections.
- Complicates the treatment of common illnesses, leading to prolonged illnesses, severe symptoms, and increased mortality rates.

Increased Healthcare Costs:

- Requires more expensive and prolonged therapies, leading to higher costs.

Challenges in Medical Procedures:

- Makes medical procedures riskier due to the increased risk of infections resistant to standard antibiotics.

Limitations in Treatment Options:

- Diminishes the available arsenal of effective antibiotics, leading to untreatable infections.

Measures Taken to Address AMR:

Indian Initiatives:

- National Programme on AMR containment.
- National Action Plan on AMR.
- AMR Surveillance and Research Network (AMRSN).
- Antibiotic Stewardship Program.
- Regulation of antibiotic sales.

Global Measures:

- World Antimicrobial Awareness Week (WAAW).
- Global Antimicrobial Resistance and Use Surveillance System (GLASS).
- Global Point Prevalence Survey Methodology.

Way Forward:

- **Public Education Campaigns:** Raise awareness about AMR through mass media and community outreach programs.
- **Antibiotic Stewardship Programs:** Implement programs in hospitals to optimize antibiotic use.
- **Regulation of Antibiotic Sales:** Enforce stricter regulations on over-the-counter antibiotic sales.
- **Expand AMR Surveillance:** Establish a nationwide surveillance system to track resistant bacteria.
- **Develop New Technologies:** Explore innovative technologies like phage therapy.

Conclusion:

Addressing AMR requires a multi-pronged approach involving public education, strict

regulations, surveillance, and the development of new technologies. **The collaboration of nations and global initiatives is crucial to mitigate the impact of AMR on public health.**

II. SPACE TECHNOLOGY

5. FROM THE MOON TO EUROPA, SIX SPACE MISSIONS TO BE EXCITED FOR IN 2024

SOURCE: THE HINDU
The year 2023 witnessed significant milestones in space exploration, from NASA's OSIRIS-REx mission to India's Chandrayaan-3.
As we transition into 2024, the anticipation for space missions continues to grow.
This year promises an array of missions, including NASA's Europa Clipper and Artemis II, as well as ventures from JAXA, ESA, and ISRO.
Each mission holds unique objectives, from exploring Jupiter's moon to studying Mars' moons, testing planetary defence techniques, and advancing human spaceflight capabilities.

NASA's Space Missions
Europa Clipper
- **Objective:** Explore **Jupiter's moon, Europa**, known for its icy surface and potentially vast saltwater ocean.
- **Method:** Europa Clipper will conduct close flybys to study the moon's geology, icy shell, and subsurface ocean.
- **Significance:** Aims to investigate Europa's potential as a habitat for extraterrestrial life.

Artemis II
- Part of NASA's Artemis program, Artemis II marks a crewed lunar mission to orbit the Moon.
- Validates systems for sustained lunar presence and includes the first woman.
- Highlights NASA's commitment to lunar exploration, a stepping stone for future Mars missions.

VIPER

- Volatiles Investigating Polar Exploration Rover (VIPER) is a lunar exploration robot.
- **Mission:** Explore the Moon's south pole, searching for volatiles like water and carbon dioxide.
- **Significance:** Identifies potential resources for future human lunar exploration.

Lunar Trailblazer and PRIME-1
- Lunar Trailblazer, a SIMPLEx mission, will orbit the Moon, mapping water molecule locations.
- PRIME-1, a rideshare mission, tests drilling on the Moon, a precursor to VIPER's activities.

JAXA's MMX Mission
- Martian Moon Exploration (MMX) mission aims to study Mars' moons, Phobos and Deimos.
- Investigates the origin of these moons and collects a sample from Phobos' surface.
- Japanese Aerospace Exploration Agency's (JAXA) contribution to understanding Martian moons.

ESA's Hera Mission
- European Space Agency's (ESA) Hera Mission revisits **Didymos-Dimorphos asteroid system.**
- Studies physical properties of the asteroids impacted by NASA's DART mission in 2022.
- Demonstrates the kinetic impact technique for planetary defence.

ISRO's Space Missions for 2024
PSLV-C58 with XPoSat
- XPoSat, India's first X-Ray Polarimeter Satellite, launched in January 2023.
- Aims to investigate X-ray source polarization, focusing on celestial objects like pulsars and black hole X-ray binaries.

NISAR
- NASA-ISRO Synthetic Aperture Radar (NISAR) is a joint mission for Earth remote sensing.
- Provides insights into ecosystems, ice mass, vegetation biomass, and natural hazards.
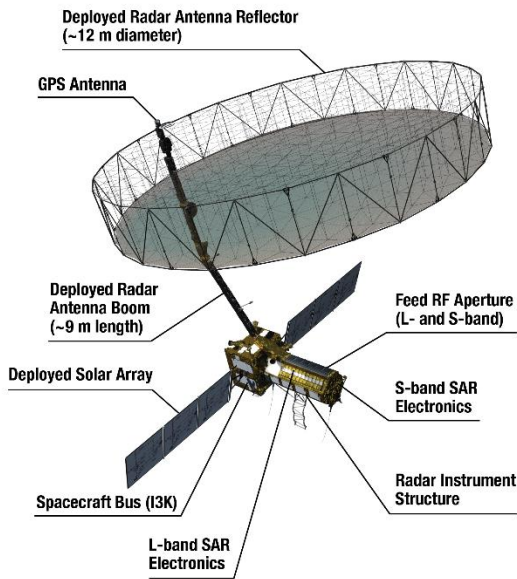
Gaganyaan 1

- Critical step in India's Human Spaceflight Programme, Gaganyaan 1 is a crewed test flight.
- Collaborative effort between ISRO and Hindustan Aeronautics Ltd (HAL) for manned space exploration.

Mangalyaan-2 (MOM 2)

- Mars Orbiter Mission 2 (MOM 2) is ISRO's sequel to the successful Mangalyaan mission.
- Equips the orbiter with advanced instruments to study Mars' surface, atmosphere, and climatic conditions.

Shukrayaan-1

- Under the Venus Orbiter Mission, ISRO plans to launch Shukrayaan-1 to orbit Venus.
- Aims to study Venus' atmosphere, marking India's first venture into exploring the second planet from the Sun.

Conclusion

The year 2024 holds immense promise for space exploration, with diverse missions set to unravel mysteries across our solar system.

Collaborative efforts between space agencies worldwide highlights the shared pursuit of scientific knowledge and technological advancements, marking a new era in the exploration of outer space.

UPSC MAINS QUESTION

Q. "Discuss the significance and objectives of key space missions scheduled for 2024? (150 WORDS)

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6. XPOSAT MISSION

SOURCE: THE HINDU

ISRO recently launched the PSLV-C58 mission, carrying the X-ray Polarimeter Satellite (XPoSat).

XPoSat:

XPoSat is ISRO's first dedicated scientific satellite designed for space-polarisation measurements of X-ray emissions from celestial sources.
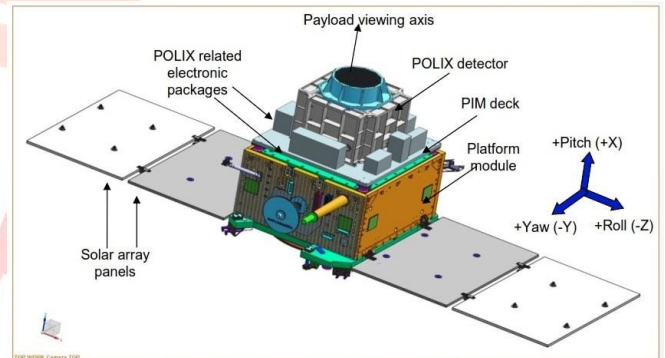
Payloads on XPoSat:

POLIX: An X-ray Polarimeter for astronomical observations in the 8-30 keV energy band.

- **Developed by Raman Research Institute (RRI), Bangalore, in collaboration with U R Rao Satellite Centre (URSC).**
- Aims to observe around 40 bright astronomical sources over the mission's planned 5-year lifetime.
- **First payload in the medium X-ray energy band** dedicated to polarimetry measurements.

XSPECT: An X-ray Spectroscopy and Timing payload.

- **Provides fast timing and good spectroscopic resolution in soft X-rays** (0.8-15 keV).
- Enables long-term monitoring of spectral state changes, line flux, and profile in soft X-ray emission.

- Targets various sources like X-ray pulsars, black hole binaries, low-magnetic field neutron stars, AGNs, and Magnetars.

Significance of the Launch:

- India becomes the second nation, after NASA's IXPE in 2021, to launch an observatory for studying astronomical sources like black holes and neutron stars.
- XPoSat's capabilities enhance India's presence in space research and contribute to global efforts in understanding celestial phenomena.

7. HOW SATELLITES TRACK THE WEATHER

SOURCE: THE HINDU

India's weather forecasting capabilities have significantly advanced with the deployment of the Indian National Satellite (INSAT) system, including satellites like INSAT 3D and 3DR.

These satellites utilize advanced technologies to analyse various weather phenomena, enhancing the accuracy of weather predictions.

The continuous improvement in satellite technology plays a pivotal role in India's efforts to monitor and predict weather changes effectively.

How INSAT System Aids Weather Analysis:

Advanced Imaging:

- INSAT 3D and 3DR employ red-green-blue (RGB) imagers for detailed weather analysis.
- Solar reflectance and brightness temperature at different wavelengths help identify distinct weather phenomena.

Day and Night Monitoring:

- The satellites have 'day microphysics' and 'night microphysics' components, ensuring round-the-clock monitoring.
- This dual capability enhances the comprehensiveness of weather observations.

Snow and Cloud Differentiation:

- Differentiation between snow and clouds is achieved by analysing their reflectance in various parts of the spectrum.
- Accurate identification of snow is crucial for precise weather predictions.

Enhanced Weather Predictions:

- Day and night data integration facilitates improved tracking of cyclone formation and thunderstorm predictions.
- Early warning systems benefit from the enhanced predictive capabilities.

Advanced Radiometers:

- Upgraded radiometers on satellites like INSAT 3DR offer better spatial resolution and functionality.
- Technological advancements contribute to more detailed weather monitoring.

Atmospheric Sounders:

- These instruments measure temperature, humidity, and water vapor, providing vital atmospheric profiles for weather analysis.
- In-depth data aids in understanding and predicting complex weather patterns.

Continual Improvement:

- Each new satellite in the INSAT series introduces improved technology.
- INSAT 3DR, for example, features upgraded VHRR, sounder, and additional transponders, enhancing overall weather monitoring capabilities.

Types of Weather Satellites in India:

Kalpana 1:

- Launched in 2002, it operated in a geostationary orbit with an early version of the Very High-Resolution Radiometer (VHRR).
- Deactivated in September 2017 after providing 15 years of service.

INSAT 3A:

- Launched in 2003, equipped with a three-channel VHRR for meteorological observations.
- Different resolutions for visible, thermal infrared, and water vapor bands.

INSAT 3D and 3DR:

- Positioned in geostationary orbits at 82 degrees and 74 degrees east longitudes, respectively.
- Upgraded VHRRs for improved spatial resolution and functionality.
- Carry atmospheric sounders for measuring crucial atmospheric parameters.

Upcoming INSAT 3DS:

- Scheduled for launch in February 2024, indicating a subsequent iteration following the INSAT 3D and 3DR series.
- Expected to contribute further to India's weather monitoring capabilities.

8. INDIA TO BECOME A FULL MEMBER OF THE SKA OBSERVATORY

SOURCE: PIB

India has stepped into the ambitious Square Kilometre Array Observatory (SKAO) project, the world's largest radio telescope initiative.

This significant move involves a financial commitment of Rs 1,250 crore and highlights India's pivotal role in cutting-edge astronomical research.

Square Kilometre Array Observatory (SKAO):

- **Nature of SKAO:** SKAO is an intergovernmental organization **headquartered in the UK,** aiming to construct and operate advanced radio telescopes.
- **Global Participation:** Several countries, including the UK, Australia, South Africa, Canada, China, France, Italy, Germany, and India, are actively involved in building SKAO.
- **Project Objectives:** SKAO involves an array of thousands of a**ntennas distributed across remote locations in South Africa and Australia.** The interconnected antennas function as one colossal unit, facilitating the observation and study of celestial phenomena. Additionally, SKAO delves into the study of gravitational waves.

India's Involvement in SKAO:

- **Historical Context:** India, spearheaded by the Pune-based **National Centre for Radio Astrophysics (NCRA)**, has been instrumental in shaping the SKAO project since the 1990s.
- **Key Contribution:** India's primary contribution **lies in the development and operation of the Telescope Manager element**. This critical component serves as the "neural network" or software controlling the entire telescope's operation.

Note: NCRA, a research institution specializing in radio astronomy, is situated on the Pune University Campus and is part of the Tata Institute of Fundamental Research (TIFR) in Mumbai.

Radio Telescopes:

- **Definition:** A radio telescope is a specialized antenna and receiver system designed to detect and collect radio waves emitted by celestial objects.
- **Working Principle:** Unlike optical telescopes, **radio telescopes can operate during the daytime and nighttime**. They capture radio waves with wavelengths ranging from 1 millimeter to 100 kilometers.
- **Applications:** Radio telescopes are pivotal in studying diverse astronomical phenomena, including star and galaxy formation, black holes, interstellar medium, our solar system's planets and moons, and the quest for extraterrestrial life.

Major Radio Telescopes:

- **Giant Metrewave Radio Telescope (GMRT):** Located near Pune, GMRT played a crucial role in detecting nano-hertz gravitational waves in June 2023, showcasing India's prowess(skill) in cutting-edge astronomical research.
- **Atacama Large Millimetre/submillimetre Array (ALMA):** Situated in the Atacama Desert, Chile.
- **Five-hundred-metre Aperture Spherical Telescope (FAST):** Located in China.

Gravitational Waves:

- **Definition:** Gravitational waves are ripples or vibrations in spacetime, analogous to ripples formed when a pebble is dropped in a pond.
- **Einstein's Prediction**: Albert Einstein, in his theory of general relativity (1916), forecasted the existence of gravitational waves.
- **Research Importance:** Gravitational wave research, exemplified by the Nobel Prize-winning LIGO detection in 2017, holds immense potential for groundbreaking scientific discoveries.

India's Commitment to Gravitational Wave Research:

- **LIGO Expansion:** India's approval for the third LIGO node in Maharashtra highlights its dedication to advancing gravitational wave research.

Conclusion:

India's entry into the SKAO project marks a significant stride in global astronomy. With substantial financial backing and pivotal contributions to SKAO's development, India is poised to play a central role in unraveling the mysteries of the universe.

9. THIRTY METER TELESCOPE (TMT) PROJECT

SOURCE – DOWN TO EARTH
An official delegation from the Department of Science and Technology recently visited **Mauna Kea** to address challenges related to the Thirty Meter Telescope (TMT) project.

About Thirty Meter Telescope (TMT):

- **Purpose:** Conceived as a 30-meter diameter telescope for **optical and infrared observation**s, TMT aims to explore deep space.
- **Collaboration:** A joint effort involving the U.S., Japan, China, Canada, and India, it's set to be the world's most advanced ground-based observatory.
- **Technological Advancements:** TMT integrates innovations like segmented mirror design, precision control, and adaptive optics for superior performance.
- **Segmented Mirror**: The heart of the telescope consists of 492 individual segments, forming a single reflective surface of 30m diameter.
- **Location:** Situated on Mauna Kea, an inactive volcano on Hawaii's island, chosen for its ideal conditions for astronomical observations.

Indian Contribution:

- **Major Contributor**: India is expected to play a significant role, contributing hardware, instrumentation, and software worth $200 million.
- **Components:** Contributions include segment support assemblies, actuators, edge sensors, segment polishing, coating, and first light instruments.
- **Lead Institution:** The Indian Institute of Astrophysics (IIAP) leads the consortium of Indian institutions involved in the project.

- **Funding**: India TMT will be jointly funded by the Departments of Science and Technology and Atomic Energy.

10. CHANG'E 6 LUNAR MISSION

SOURCE – THE HINDU

The China National Space Administration (CNSA) has recently declared that the Chang'e 6 sample return mission is progressing as planned and is scheduled to touch down on the Moon's surface during the initial half of 2024.

Objective:

- Designed by the China National Space Administration (CNSA).
- Aims to collect lunar samples from the Moon's south pole.
- Part of China's Chang'e lunar exploration program.

Mission Timeline:

- Scheduled to land on the lunar surface in the first half of 2024.
- Represents the first attempt to retrieve samples from the far side of the Moon.

Sample Collection:

- Aims to bring back up to two kilograms of lunar samples.
- Similar configuration to the successful Chang'e 5 mission.
- Focus on unraveling geological mysteries of the Moon.

International Collaboration:

- Collaboration with the European Space Agency (ESA) and the French space agency CNES.
- ESA contributes a lunar surface ion tester, and CNES provides equipment for measuring radon gas.
- Italian laser corner reflector and Pakistan's ICUBE-Q CubeSat are part of the mission.

Mission Components:

- Involves both a lander and a rover.
- Lander to touch down on the lunar surface.

- Rover to explore designated regions, conduct experiments, and assist in sample collection.

Global Scientific Access:

- Returned lunar samples will be made available for study by the global scientific community.
- Expected to provide valuable insights into the Moon's geological and scientific aspects.

Significance of Chang'e 6:

- Chang'e 6 represents a crucial step in advancing lunar exploration and expanding our understanding of the Moon's composition and history. The international collaboration adds a diverse set of scientific instruments to enhance the mission's capabilities.

III. EMERGING TECHNOLOGIES

11. PEGASUS SPYWARE

SOURCE – THE HINDU

The Pegasus spyware, developed by the Israeli NSO Group, has raised concerns about privacy, security, and human rights. Recent reports from Amnesty International revealed its use in targeting Indian journalists, sparking debates on the need for robust cybersecurity initiatives and international oversight.

Pegasus Spyware: An Invasive Surveillance Tool

- Developed by NSO Group, designed for government use in crime and terrorism prevention.
- Operates as a highly invasive mobile surveillance tool, collecting data from smartphones.
- Utilizes "zero-click" methods for installation, exploiting vulnerabilities in apps like WhatsApp.

What Pegasus spyware can do

Source: Pegasus Project

Operating Procedure of Pegasus:
- "Zero-click" installation distinguishes it from regular apps, requiring no user action.
- Exploits zero-day vulnerabilities, undiscovered flaws in the operating system.
- Targets apps like WhatsApp, triggering installation through messages or calls.

Targets and Implications:
- Used globally to spy on journalists, human rights activists, lawyers, opposition leaders, and heads of state.
- Impacts privacy, compromises press freedom, and poses risks to national sovereignty.
- Threatens individuals and groups exposing corruption and defending human rights.

Challenges Associated with Pegasus:
- Difficult to detect and remove, hiding its presence and self-destructing if at risk of exposure.
- Operates in legal grey areas, making regulation and control challenging.
- NSO Group and clients often deny responsibility for misuse, creating accountability issues.

Cybersecurity Initiatives in India:
- **Information Technology Act, 2000:** Legal framework addressing electronic transactions and cybersecurity.
- **National Cyber Security Strategy:** Framework for strengthening cybersecurity in India.
- **Cyber Surakshit Bharat:** Initiative to enhance cybersecurity awareness.
- **CERT-In (Computer Emergency Response Team - India):** Responds to cybersecurity incidents and provides guidelines.
- **Critical Information Infrastructure:** Protection of critical information infrastructure against cyber threats.
- **Indian Cyber Crime Coordination Centre (I4C):** Coordinating efforts to combat cybercrime.

International Cybersecurity Mechanisms:
- **International Telecommunication Union (ITU):** UN agency promoting international cooperation in telecom and information and communication technology.
- **Budapest Convention on Cybercrime:** Framework for addressing cybercrime through international cooperation.

Way Forward:
- Establish international oversight mechanisms to hold companies accountable for unethical use.
- Strengthen legal frameworks addressing spyware use, protecting privacy and human rights.
- Conduct public awareness campaigns on spyware risks and prevention measures.
- Enhance national cybersecurity infrastructure for proactive threat detection.

- Encourage tech companies to adopt ethical guidelines aligned with human rights principles.

IV. PRELIMS POINTERS IN NEWS

12. FEAST (FINITE ELEMENT ANALYSIS OF STRUCTURES)

SOURCE: INDIAN EXPRESS

The Vikram Sarabhai Space Centre (VSSC), an integral part of ISRO, has developed Finite Element Analysis (FEA) software named FEAST.

- FEA is a computerized method crucial for predicting the real-world responses of a product to external forces. FEAST is designed to conduct FEA for diverse structures, such as rockets, aircraft, satellites, and buildings.
- This indigenous software marks a significant stride, reducing dependence on expensive foreign alternatives.
- **VSSC, headquartered in Thiruvananthapuram, Kerala, is the lead centre for ISRO, specializing in the design and development of launch vehicle technology.**
- FEAST contributes to enhancing self-reliance in critical technological domains.

13. FORMALDEHYDE (CH2O)

SOURCE: INDIAN EXPRESS

Researchers have introduced a non-invasive sensor capable of detecting formalin adulteration in fish.

- Formalin, a solution containing 37% formaldehyde, is used in various industries, including resin manufacturing, plastic production, cosmetics, and disinfectants.
- **The new sensor addresses health concerns, as formaldehyde is classified as a carcinogenic substance by the World Health Organization.**
- **Carcinogens are agents capable of causing cancer.**
- This innovative sensor offers a practical solution to ensure the safety and quality of fish products by swiftly identifying formalin presence without invasive methods, safeguarding consumer health.

14. NEAR INFRARED LIGHT

SOURCE: INDIAN EXPRESS

Researchers have discovered that near-infrared light exhibits high effectiveness in rupturing cancerous cells.
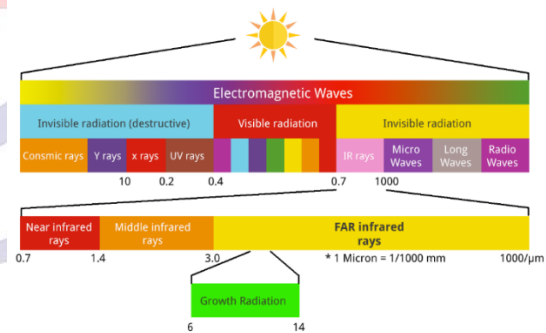
- **Near-infrared rays, which lie just beyond the visible electromagnetic spectrum, have demonstrated superior effectiveness compared to visible rays due to their higher penetrative power.**
- This quality allows near-infrared light to reach and disrupt cancer cells more efficiently. However, researchers have raised concerns about the potential damage to vital tissues caused by its high penetrative power.
- Near-infrared rays are a segment of radiation within the infrared light spectrum, just beyond the visible range.

- **Apart from its application in cancer research, near-infrared rays find utility in various fields, such as satellite observations of vegetation and soil composition.**
- The electromagnetic spectrum encompasses a range of waves, including radio waves, microwaves, visible light, ultraviolet light, X-rays, and gamma-rays, arranged in ascending order of energy or frequency.

15. THYLAKOID MEMBRANES

Researchers at the University of Liège Discover Ancient Thylakoid Microstructures:
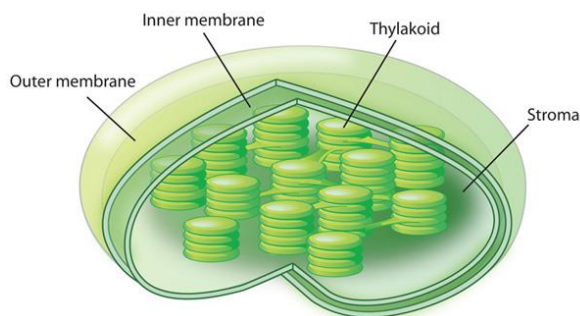
About Thylakoid Membranes:
- **Definition:** Thylakoids are pouches found in chloroplasts of plants, storing chlorophyll that reacts to sunlight, triggering photosynthesis.
- **Composition:** Dense, mostly galactolipid, protein-containing bilayers where photosynthesis occurs in photosynthetic organisms.
- **Origins:** Found in ancient, light-sensitive bacteria known as cyanobacteria, which multiplied in oceans billions of years ago.
- **Role in Evolution:** Thylakoid membranes in cyanobacteria were crucial for using sunlight to create energy and release oxygen, a precursor to life.

Key Facts about Cyanobacteria:
- Also known as blue-green algae, these microscopic organisms inhabit various water types.

- They use sunlight to produce their own food through photosynthesis.
- In nutrient-rich environments, cyanobacteria can rapidly multiply, forming surface blooms, particularly in warm, slow-moving waters.
- Blooms can occur due to nutrient influx from sources like fertilizer runoff or septic tank overflows, often in late summer or early fall.

16. PHYTOCANNABINOIDS

CSIR-IIIM Scientists Discover Antibiotic Properties in Phytocannabinoid THCBD:
About Phytocannabinoids:
- **Definition**: Cannabinoids are compounds present in the cannabis plant, and 'phyto' signifies their plant origin.
- **Binding and Effects**: Cannabinoids bind to animal receptors, inducing various neurological effects.
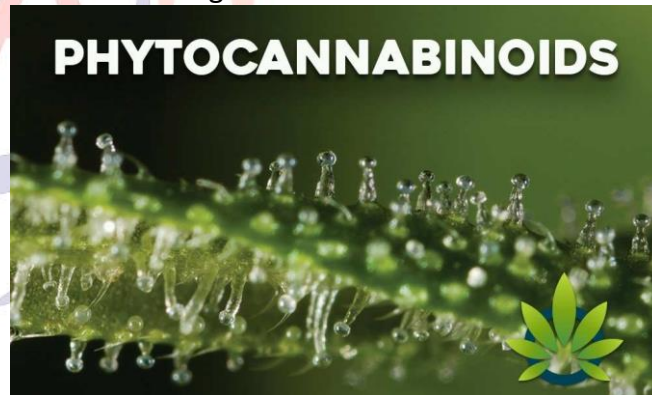
THCBD Discovery Process:
Researchers extracted cannabidiol from cannabis and reacted it with hydrogen using palladium as a catalyst.
Result: This produced THCBD, a semisynthetic phytocannabinoid.
THCBD's Antibiotic Properties:
- **Tested Against S. aureus:** Antibacterial properties of THCBD were examined against Staphylococcus aureus, a significant cause of deaths due to Antimicrobial Resistance (AMR).

- **Efficacy:** THCBD demonstrated potency at 0.25 μg/ml, reducing viable microbial cells in S. aureus skin infections in mice.

Antimicrobial Resistance (AMR):

- **Global Health Concern**: AMR occurs when microorganisms no longer respond to medicines, **posing a significant global health threat.**
- **Challenges:** Bacteria, viruses, fungi, and parasites become resistant to commonly used treatments.

SECURITY

I. SECURITY FORCES AND THEIR MANDATE

1. TERRITORIAL JURISDICTION' OF THE BORDER SECURITY FORCE (BSF)

The recent decision by the Supreme Court of India to scrutinize the 'expansion of territorial jurisdiction' over the Border Security Force (BSF) comes against the backdrop of the Union government's notification in October 2021 amending the BSF Act, 1968.

This amendment extended the jurisdiction of the BSF in certain states, triggering debates and concerns related to federalism, consultation, and arbitrariness.

Background:

- Union government amended the BSF Act in October 2021.
- Jurisdiction extended from 15 km to 50 km in Punjab, West Bengal, and Assam.
- Gujarat's limit reduced from 80 km to 50 km; Rajasthan remained unchanged at 50 km.

BSF Jurisdiction: Current Scenario:

- Powers include arrest, search, and seizure under various laws.
- **Focus on preventing trans-border crimes, unauthorized entry or exit.**
- Cannot investigate or prosecute, hands over cases to local police.

Key Advantages over the extension of BSF jurisdiction:

- **Uniformity in Operations:** Ensures consistent operations in border states, fostering coordination.
- **Effective Border Patrol:** Aids in efficient discharge of border patrol duties.
- **Combat Trans-Border Crimes:** Allows BSF to conduct more searches, seizures deep into the territory.
- **Technological Advancements:** Empowers BSF with advanced technology to guard borders effectively.
- **Cooperation with State Police:** Emphasizes close coordination to avoid clashes of jurisdiction.

Concerns over the Extension of BSF jurisdiction:
Federalism Concerns:

- States argue encroachment on police and public order powers.
- **Punjab filed an 'original suit' in the Supreme Court under Article 131.**

Lack of Consultation:

- States contend notification issued without consulting affected states.

Arbitrariness:

- Supreme Court questions if extension was arbitrary and interferes with state police jurisdiction.

About BSF:

- **Raised on December 1, 1965;** 192 operational battalions.
- **Largest border-guarding force**; guards 6,300 km of international border.
- Has 2.65 lakh personnel; role is the security of border lines.
- **Tasks during peace and war times outlined.**

Steps to Improve BSF's Capacity:

- **Enhancing Operational Powers:** Ministry of Home Affairs can enhance 'arrest, search and seize' powers.
- **Increase Housing Satisfaction Ratio:** Better living conditions and amenities can boost morale and efficiency.
- **Training and Skill Development:** Regular programs enhance capabilities in various aspects.
- **Health and Wellness Programs:** Crucial for physical and mental well-being, vital for performance.
- **Collaboration with Other Agencies:** Sharing intelligence with other agencies aids effective border management.

Community Engagement: Engaging with local communities helps gather crucial information and maintains peace.

The Future Outlook:

- **Supreme Court to examine the constitutionality of the notification.**
- Scrutiny on whether the increase in BSF jurisdiction in Punjab is arbitrary.
- Evaluation of whether all states should be treated alike in determining local limits.
- **Examination of the constitutionality of the October 11, 2021, notification under Article 131.**

II. PRELIMS POINTERS IN NEWS

2. INDIAN OCEAN NAVAL SYMPOSIUM (IONS) – 2023

SOURCE: PIB

The Royal Thai Navy successfully hosted the 8th edition of the Indian Ocean Naval Symposium (IONS) Conclave of Chiefs in Bangkok, Thailand.

This significant gathering witnessed the Republic of Korea Navy joining as the latest 'Observer,' elevating IONS' collective strength to 34 (25 Members and 9 Observers).

Key Points:

- **IONS Background:** Conceived by the Indian Navy in 2008, IONS represents a voluntary initiative fostering increased maritime cooperation among the navies of littoral states in the Indian Ocean Region.
- **Observer Status:** The Republic of Korea Navy's inclusion as an Observer signifies a commitment to expanding collaborative efforts and knowledge-sharing in maritime security.
- **Collective Strength:** With 34 participating entities (25 Members and 9 Observers), IONS continues to evolve as a platform for naval cooperation and dialogue.
- **IMEX-22:** In the previous year, IONS marked a milestone by conducting its inaugural maritime exercise, IMEX-22, further emphasizing the organization's commitment to enhancing regional maritime security.

3. OPERATION SARVASHAKTI

SOURCE: INDIA TODAY

Context: Operation **Sarvashakti** Launched by the **Indian Army t**o eliminate terrorists responsible for ambushes in Rajouri and Poonch regions, Jammu and Kashmir.

Participating Corps:

- Chinar Corps in Srinagar and White Knight Corps in Nagrota simultaneously conduct operations.
- Aims to neutralize terrorists and enhance security in the targeted regions.
- Simultaneous operations ensure coordinated efforts and efficient results.

Inspiration from Operation Sarpvinash (2003):
Operation modelled after 2003's Operation Sarpvinash against terrorists south of Pir Panjal range, which resulting in the elimination of nearly 100 terrorists

4. KH-22 MISSILES

SOURCE: THE HINDU
Ukraine Air Force's spokesperson revealed their inability to shoot down Kh-22 supersonic cruise missiles launched by Russia. The Kh-22 missiles pose a significant challenge for Ukraine's air defense units.

About Kh-22 Missile:
- Soviet-era long-range airborne supersonic cruise missile **designed in the 1960s.**
- **Initially created to destroy aircraft carriers, large warships, or groups of such carriers**.
- Launched from Tupolev-22 bombers and later modernized in the "Kh-22 special air-to-surface missile complex."
- **Upgraded in the 1970s with impressive features**: 4,000 km/h speed, 1,000 kg warhead, and a range of 500 km.
- Weighs 5,820 kg; approximately 3,000 missiles produced in the USSR.

History of Kh-22 in Ukraine:
- After the USSR collapse, many Kh-22 missiles remained in Ukraine.

- In 1991, Ukraine relinquished its nuclear and strategic aviation arsenal.
- **In 2000, Ukraine transferred 386 Kh-22 missiles to Russia as payment for gas debt.**

Successor: Kh-32:
- The Kh-32 succeeded the Kh-22, designed for new Russian Tu-22M3M bombers.
- Features include a conventional warhead, improved rocket motor, and a new radar imaging terminal seeker.
- **Kh-32 has a longer range but a smaller warhead compared to Kh-22.**

5. DESERT CYCLONE 2024

SOURCE: PIB
The inaugural edition of the joint military exercise "Desert Cyclone 2024" between India and the United Arab Emirates (UAE) will take place from January 2 to January 15 in Rajasthan.
The primary focus of the exercise is to enhance interoperability through the exchange of knowledge and best practices in Urban Operations.

EX DESERT CYCLONE 2024

Significance of 'Desert Cyclone 2024':
- Marks a significant milestone in the strategic partnership between India and the UAE.
- Aims to strengthen military cooperation and collaboration between the two nations.

India-UAE Relations:
- **Diplomatic relations established in 1972**; UAE opened its Embassy in Delhi in 1972,

and India opened its Embassy in Abu Dhabi in 1973.

- The **first-ever India-UAE Joint Air Forces exercise occurred in September 2008 at the Al-Dhafra base in Abu Dhabi.**
- India regularly participates in the **biennial International Defence Exhibition (IDEX) in Abu Dhabi.**

Naval Cooperation:

- Earlier this year, **Indian Navy ships INS Visakhapatnam and INS Trikand participated in the bilateral exercise 'Zayed Talwar' with the UAE**, aiming to enhance interoperability and synergy between the two navies.

6. AN-32 AIRCRAFT

The Indian Air Force (IAF) successfully located the wreckage of an AN-32 aircraft that had gone missing almost seven-and-a-half years ago.

About AN-32 Aircraft:

- Origin and Manufacturer: Soviet-origin military transport aircraft designed and manufactured by the Antonov Design Bureau of Ukraine for the Indian Air Force (IAF).
- Purchase: India acquired the AN-32 from the Soviet Union in 1984, and the IAF operates a fleet of approximately 100 such planes.
- NATO Reporting Name: Known as Cline.

Features of AN-32:

- **Adaptability:** Designed for day and night manoeuvres in tropical and mountainous regions, with the ability to operate in hot climatic conditions (up to 55°C).
- **Power Source:** Powered by two single-shaft turboprop engines.
- **Speed and Range:** Maximum speed of 530 km/h, cruise speed of 470 km/h, range of 2,500 km, and service ceiling of 9,500m.
- **Weight and Capacity:** Weighs around 16,800 kg, maximum take-off weight of 27,000 kg, and versatile cargo capacity, accommodating 7.5 tons of cargo, 50 passengers, 42 paratroopers, or 24 patients with three medical crews.
- **Operational Capabilities:** Capable of takeoff and landing on rough airfields and dirt runways, with a limited bombing role and usage in para-trooping operations.

7. ASTRA MISSILES

Minister of State for Defence flagged off the Astra Missiles at Bharat Dynamics in Hyderabad.
Induction of these indigenously developed missiles enhances the IAF's air defence capabilities and marks a significant stride towards self-reliance in defence technology.

Origin and Development:

- Developed by DRDO, manufactured by Bharat Dynamics Ltd. (BDL).
- Beyond-Visual-Range (BVR) air-to-air missile designed for fighter aircraft.

Purpose and Capabilities:

- Designed to engage and destroy highly manoeuvring supersonic aircraft.
- Ranked as the world's best in the air-to-air missile category.

Variants and Induction:

- Developed in multiple variants to meet specific requirements.
- ASTRA Mk-I integrated with SU-30 Mk-I aircraft, inducted into the Indian Air Force (IAF).

Features of ASTRA Mk-I:

- **Range**: 80 to 110 km in a head-on chase.
- **Speed:** 4.5 Mach (almost hypersonic).
- **Guidance System:** Locally developed Ku-band active radar.
- **Warhead**: 15-kg warhead.
- **Operational Flexibility:** Offers "Lock on Before Launch – LOBL" and "Lock on After Launch – LOAL" options.
- **Technology**: Based on advanced solid-fuel ducted ramjet (SFDR) engine technology.

Operational Capabilities:

- Capable of operating under all weather conditions, day and night.
- High overall reliability and very high "Single Shot Kill Probability – SSKP."

SOCIETY

I. DIVERSITY OF INDIA

1. PROMOTION OF GEOGRAPHICAL INDICATIONS (GIS) IN INDIA

SOURCE – DOWN TO EARTH

India's Geographical Indication (GI) tags, aimed at recognizing and protecting unique products linked to specific regions, face challenges that highlight the need for reforms in the registration processes.

The GI system is a crucial tool for preserving traditional knowledge, culture, and fostering socio-economic development.

Geographical Indication (GI):

- **A GI is a designation given to products originating from a specific geographical area, indicating a connection between the product's qualities or reputation and its place of origin.**
- Governed by the Agreement on TRIPS at the WTO.

- India's Geographical Indications of Goods Act, 1999, aims to register and protect GIs in the country.
- **Unlike some EU nations with Protected Destination of Origin (PDO), India only has the Protected GI (PGI) category.**
- GIs extend beyond agricultural products to include handicrafts based on unique skills and resources available in specific areas.

Status of GI Tags Registration:

- As of December 2023, **India has received 1,167 GI applications, with only 547 products registered.**
- In comparison, Germany leads globally with 15,566 registered products, followed by China with 7,247.
- **Globally, wines and spirits constitute 51.8% of GIs, while in India, handicrafts (45%) and agriculture (30%) dominate.**

Concerns Regarding GI Tags in India:

- **Outdated GI Act**: The GI Act, formulated over two decades ago, requires amendments to address current challenges, simplify application processes, and reduce processing times.
- **Lack of Institutional Development:** Insufficient institutional development hampers effective implementation and support for GI protection mechanisms.
- **Ambiguity in Producers' Definition:** Lack of clarity in defining "producers" results in the involvement of intermediaries, diluting benefits for genuine producers.
- **International Disputes**: Disputes, especially with products like Darjeeling tea

and Basmati rice, indicate less attention to GIs compared to other intellectual property rights.

- **Limited Academic Focus:** Limited academic attention is given to GIs in India, with only seven publications, but there is a recent surge indicating growing interest.

Potential Reforms and Solutions:

- **Incentivize Producers:** Government initiatives should incentivize grassroots-level producers to boost the number of GI registrations.
- **Define Producers Clearly:** Laws should clearly define "producers," excluding non-producers from benefiting to ensure direct advantages for genuine producers.
- **Technology and Skill-Building:** Promote digital literacy, technology adoption, and skill-building among GI stakeholders for modernization.
- **Collaboration for Promotion:** Government agencies should collaborate with trade associations to organize exhibitions and promote GI-based products through various media.
- **International Promotion:** Indian embassies should actively promote GI-based products to encourage growth in foreign markets.
- **WTO Attention:** Favourable international tariff regimes and special attention to GI products at the WTO can enhance their global presence.
- **Integration with One District One Product:** Integrating GIs with the One District One Product scheme can enhance promotion and market reach.
- **Rural Market Promotion**: Developing market outlet schemes, especially in rural markets (gramin haats), can boost the visibility of GI products.
- **Quality Assurance:** Establishing testing laboratories at marketplaces is essential to ensure consumer faith in the quality of GI products.

- **Startups and SDGs:** Aligning startups with GIs and linking their performance with Sustainable Development Goals (SDGs) can contribute to social development.

II. VULNERABLE SECTIONS OF THE SOCIETY

2. WHY IS UPSKILLING NECESSARY FOR THE RURAL YOUTH?

SOURCE: THE HINDU

With the urbanization trend projected to reach almost 50% of India's population by 2047, there is a growing need to shift focus to rural development.

Controlling Rural Youth Migration:

Agriculture as an Aspirational Vocation:

- Encouraging rural youth to see agriculture as an aspirational vocation is crucial.
- Many farmers are leaving agriculture for non-farming jobs, highlighting the need to make farming attractive and viable.
- Creating awareness about the potential and advancements in agriculture can shift perceptions.

Creating Alternative Employment Opportunities:

- Besides agriculture, providing diverse job opportunities within rural settings is vital. This helps in retaining talent within the local communities.
- Initiatives focusing on rural industries, services, and small businesses can be instrumental.

Improving Vocational Training:

- Enhancing the quality and accessibility of vocational training is essential. This includes imparting relevant rural skills that align with local employment demands.
- The success of the Delhi government's **'Skills on Wheel' initiative can serve as a model for reaching rural youth effectively.**

Enhancing Rural Education:

Imparting Technical and Life Skills:

- Rural education should evolve to include both technical and life skills in its curriculum.
- This ensures holistic development and prepares youth for various challenges.
- Skills like agricultural mechanization, nursing, and digital technologies should be integrated into educational programs.

Incorporating International Best Practices:

- Learning from successful models globally, such as **Mexico's tele-schools and Bhutan's well-being-infused curriculum,** can inform improvements in rural education.
- Tele-schools, providing value-based education, can be particularly effective in areas with limited access to secondary schools.

Role of Civil Society and NGOs:

- Organizations like NIIT Foundation and Pratham Institute play a crucial role in providing upskilling opportunities to rural youth.
- Collaborative efforts between government, NGOs, and civil society can bridge educational gaps and enhance employability.

Conclusion:

Controlling the migration of rural youth to urban areas requires a multifaceted approach.

By making agriculture appealing, creating alternative employment avenues, improving vocational training, and enhancing rural education with a focus on skills, India can equip its rural youth for a brighter future within their communities.

UPSC MAINS QUESTION

Q. "Examine the importance of upskilling for rural youth in the context of India's urbanization trend. Evaluate the role of civil society and NGOs in implementing effective upskilling initiatives for sustainable rural development." (150 WORDS).

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3. WHY IS CHILD MARRIAGE STILL HIGH IN WEST BENGAL?

SOURCE: THE HINDU

A recent Lancet study sheds light on child marriage in India, revealing an overall decline nationwide. However, certain states like Bihar, West Bengal, Uttar Pradesh, and Maharashtra collectively contribute to over half of the total burden of child marriages in girls.

Policy Interventions in West Bengal:

Kanyashree Prakalpa Scheme:

- Launched in 2013, incentivizes schooling for girls aged 13-18 to discourage child marriage.
- Covered 81 lakh girls, recognized with the United Nations Public Service Award in 2017.

Rupashree Prakalpa:

- Provides cash incentives for girls' marriages, sometimes leading to utilizing benefits from both schemes.

Educational Stride and Child Marriage Rates:

- Despite increased girls' school enrolment, child marriage rates remain high in West Bengal.
- Migration in the state contributes to child marriage, driven by societal norms and economic factors.

Challenges in Law Implementation:

- The Prohibition of Child Marriage Act (PCMA), 2006:
- West Bengal reported 105 cases in 2021, raising concerns about law enforcement.
- The Prohibition of Child Marriage (Amendment) Bill, 2021, proposes raising the marriage age for women to 21, which is currently under Parliamentary review.

Impacts of Child Marriage:

Ending Childhood:

- Child marriage abruptly ends childhood, pushing boys and girls into adulthood prematurely.
- Early marriages often involve significant age differences, intensifying challenges.

Human Rights Violation:

- Recognized as a human rights violation and a form of sexual and gender-based violence.
- Denies fundamental rights, including health, education, safety, and participation.

Maternal and Child Health Implications:

- Child brides face increased risks during pregnancy and childbirth, impacting maternal and child health.
- Mental health issues and susceptibility to HIV are also associated with child marriage.

Initiatives to Tackle Child Marriage:

- **Prohibition of Child Marriage Act, 2006 (PCMA):** Legal framework to prevent child marriages.
- **Beti Bachao Beti Padhao (BBBP) scheme:** Aims at promoting the education of the girl child and preventing gender-based sex-selective elimination.
- **National Commission for Protection of Child Rights (NCPCR):** Works towards safeguarding the rights of children, including protection from child marriage.
- **Protection of Children from Sexual Offences Act 2012:** Addresses the issue of child sexual abuse and exploitation.
- **CHILDLINE:** A helpline for children in distress, providing support and intervention.

Way Forward:

- **Mobilize Political Will:** Prioritize eradication of child marriage through legislative measures at state and national levels.
- **Social Campaigns:** Involve stakeholders like panchayats, schools, and local communities in awareness campaigns.
- **Promote Reporting and Transparency:** Regularly update and provide detailed information on child marriage cases.
- **Comprehensive Review of PCMA 2006:** Identify loopholes and areas for improvement in enforcement.

- **Advocate for the Prohibition of Child Marriage (Amendment) Bill, 2021:** Swift approval to increase the minimum age of marriage for females to 21.
- **Empower Girls:** Provide information, skills, and support networks to enhance autonomy and decision-making.

Mains Question:

Q. Despite the implementation of policy interventions, child marriage remains a prevalent issue in West Bengal. Analyze the factors contributing to the persistence of child marriage in the state and suggest comprehensive strategies for effective eradication. (150 WORDS).

III. HEALTH SECTOR

4. CHILDHOOD CANCERS - PUBLIC HEALTH CONCERN IN INDIA

SOURCE – DOWN TO EARTH

Childhood cancers are emerging as a significant public health concern in India, with a considerable percentage of cancer patients falling under the age of 15.

A recent study published in the India Pediatric Journal sheds light on the prevalence, types, and challenges associated with pediatric cancers in the country.

Key Highlights of the Study:

- The study is based on the largest dataset on childhood cancers in India from the National Cancer Registry Programme (NCRP), established by the Indian Council of Medical Research in 1981.

Every day, 47 children are diagnosed with cancer
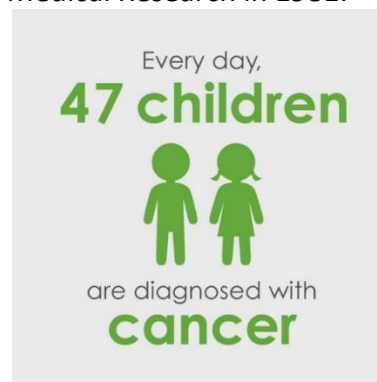
- **India reported 1,332,207 cancer cases between 2012 and 2019**, with 3.2% and 4.6% in the age groups 0-14 years and 0-19 years, respectively.

Distribution of Cancers in Different Age Groups:

- **Childhood cancers are divided into two age groups: 0-14 and 0-19 years.**
- Leukaemia's constitute a significant burden, comprising nearly half of all cancers in the 0-4 and 5-9 age groups (42.1% and 42.5%, respectively).
- For the 0–19-year age group, leading cancers are leukaemia (36%), lymphoma (12%), bone (11%), and central nervous system tumour (10%).

Non-Hodgkin Lymphomas and Gender Differences:

- **Non-Hodgkin lymphomas show an increase with age, particularly in males** associated with hormonal and biological changes.
- **Malignant bone tumours affect more girls** due to earlier skeletal maturity.

Gender Disparities and Social Determinants:

- A higher proportion of male children are diagnosed with cancer, attributed to male birth preferences and gender discrimination.
- **Sex disparity mirrors data reported in low- and middle-income countries (LMIC) and is linked to low female literacy rates.**

Challenges in CNS Tumour Registration in India:

- CNS tumours in India may be treated in neurosurgical centres in multispecialty hospitals rather than dedicated cancer centres.
- **The NCRP currently only registers 'malignant' CNS tumours**, (defined as World Health Organization Grade 3 and 4).

Global Disparities in Cancer Types:

- Proportion of leukaemias and bone cancers appears higher globally than in India.
- **International distribution of CNS tumours is greater than observed in India.**

Cancer: A group of diseases characterized by the uncontrolled growth and spread of abnormal cells in the body.

Leukaemia: Cancers of the white blood cells beginning in the bone marrow.

Lymphomas: Cancers beginning in cells of the lymph system, including Hodgkin lymphoma and non-Hodgkin lymphoma.

Non-Hodgkin lymphomas: Non-Hodgkin lymphoma (NHL), also known as non-Hodgkin's lymphoma, is a group of blood cancers that includes all types of lymphomas except Hodgkin lymphomas.

Bone Cancer: Occurs when unusual cells grow out of control in bones, often in children and young adults.

Central Nervous System (CNS) Tumours: Abnormal cell formation in the brain or spinal cord, which can be cancerous or benign.

India's Initiatives Related to Cancer Treatment:

- National Programme for Prevention and Control of Cancer, Diabetes, Cardiovascular Diseases and Stroke
- National Cancer Grid
- National Cancer Awareness Day
- HPV Vaccine

Conclusion:

The study highlights the rising concern of childhood cancers in India, emphasizing the need for targeted interventions and awareness. Understanding the prevalence and types of paediatric cancers is crucial for developing effective strategies.

Mains Question:

Q. Discuss the key findings and implications of the recent study on childhood cancers in India. (150 WORDS)

IV. EDUCATION SECTOR

5. GENDER EQUITY IN EDUCATION

SOURCE – INDIAN EXPRESS

The Annual Status of Education Report in 2023 highlights disparities in career aspirations

between boys and girls, especially in Science, Technology, Engineering, and Mathematics (STEM) courses.

Current Status of Gender Equity in Education:

Gender Equity in Learning Outcomes:

- National Achievement Survey (2017) show parity in learning levels between boys and girls in elementary and secondary classes across the nation.

Gender Gap in Mean Years of Schooling:

- Over the last two decades, girls' mean years of schooling nearly tripled from 1.7 to 4.7 years (1990 to 2018), while for boys, it increased from 4.1 to 8.2 years.
- The gender gap has expanded from 2.4 to 3.5 years during this period.

Widening Gender Gap with Education Level:

- Higher dropout rates for girls as education level increases, indicating greater barriers for girls due to societal norms and gender stereotypes.

Gender Gap in Private School Enrolment:

- More boys are enrolled in private schools, exposing societal gender biases in school choice.

The Way Forward:

Focus on Early Childhood Education (ECE):

- Shifting focus to ECE is essential to address the roots of the gender gap, as gender norms and biases are deeply ingrained in early childhood.
- ECE can lay the foundation for eliminating gender stereotypes.

Addressing Structural Challenges:

- Urgent attention is required to tackle challenges like the absence of a regulatory framework, inadequate funding, poor quality, and the lack of legislation for universal access to ECE.

Eliminating Gender Stereotypes:

- Early childhood education must actively work towards imparting education that eliminates gender stereotypes, fostering an environment that contributes to erasing the gender gap.

Government Schemes:

- Initiatives such as Beti Bachao, Beti Padhao, and the National Education Policy emphasize the significance of ECE. These schemes should be implemented promptly and efficiently.

Importance of Women's Education:

- Women's education yields positive social externalities and intergenerational benefits, contributing to a virtuous cycle of reduced poverty, infant mortality, crime, and improved economic development.

Mains question:

Q. Women's education is crucial for societal prosperity, yet it faces significant challenges in the Indian context. Discuss these challenges and their implications. (150 WORDS)

V. WELFARE SCHEMES, MECHANISMS, LAWS, AND INSTITUTIONS RELATED TO ST.

6. HATTEE COMMUNITY

SOURCE: THE HINDU

The **Himachal Pradesh state government has issued a notification granting Scheduled Tribe (ST)** status to the Hattee community in the Trans-Giri area of Sirmaur district.

About Hattee Community:

- The Hattee community **is recognized for selling homegrown produce** like vegetables, crops, meat, and wool at local markets known as 'haat' in towns.
- Their **homeland spans the Himachal-Uttarakhand border in the Giri and Tons river basins, both Yamuna tributaries.**
- Men in the Hattee community **wear distinctive white headgear during ceremonies.**
- **Geographically separated from Sirmaur by the Giri and Tons rivers**, with the Tons River acting as a boundary with the Jaunsar Bawar area of Uttarakhand.

Historical Background:

- The **Hattees were originally part of the royal estate of Sirmaur** until the separation of Jaunsar Bawar in 1815.
- **Governed by a traditional council called Khumbli**, the Hattee community in Trans-Giri shares similarities in traditions with those in Jaunsar Bawar.

Cultural Unity:

- Despite geographical separation, **the Hattee clans in Trans-Giri and Jaunsar Bawar maintain similar traditions, fostering inter-marriages.**