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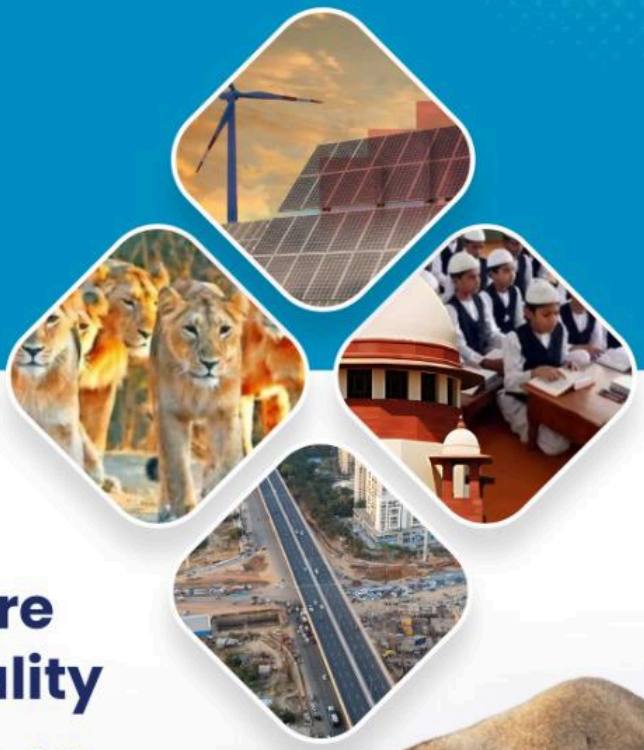

NOVEMBER, 2024

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Mains Daily Analysis

General Studies I

1. Indians Need to Share Contraceptive Responsibility

Context

- **India has a long history of family planning initiatives, beginning in 1952** with a national program aimed at improving maternal and child health and stabilizing population growth.
- Over the years, **the program has evolved, but one striking trend** has emerged**: a stark gender disparity in the adoption of permanent contraceptive methods.**
- This **disparity underscores systemic challenges** to achieving gender equality, **particularly in the context of Sustainable Development Goal 5: empowering all women and girls by 2030.**

The Decline of Male Sterilisation

- **During the late 1960s, vasectomies were the dominant sterilisation method i**n India, constituting over 80% of such procedures.
- However, policy shifts, misconceptions, and societal attitudes have led to a steep decline.
- The **five rounds of the National Family Health Survey (NFHS) reveal a consistent drop in male sterilisation rates,** with the most recent surveys, NFHS-4 (2015-16) and NFHS-5, showing no progress.
- This **stands in contrast to the National Health Policy of 2017, which set a target of increasing male sterilisation rates to 30%.**

Reasons Behind Disparity between Male and Female Sterilisation Rates in India

- **Societal Expectations and Responsibility**
  - In many Indian communities, **family planning is perceived primarily as a woman's responsibility.**
  - This **notion is perpetuated by cultural expectations** that women are the primary caregivers and thus must manage reproductive health.
  - **Men, on the other hand, are often considered exempt from these responsibilities** due to their roles as breadwinners.
  - **These ingrained attitudes perpetuate the idea that women must endure the physical and emotional costs of sterilisation**, while men remain uninvolved.
- **Myths and Misconceptions About Vasectomies**
  - Misconceptions about vasectomies play a significant role in their low uptake.
  - **Many men fear that the procedure will affect their masculinity**, libido, or physical strength, despite medical evidence to the contrary.
  - **This fear is compounded by a lack of reliable information and widespread myths**, such as vasectomy leading to impotence or being a form of emasculation.
  - **Such unfounded beliefs discourage men from considering the procedure**, even when it is a safer and less invasive alternative to female sterilisation.
- **Economic and Practical Barriers**
  - Economic considerations further discourage men from undergoing vasectomies.
  - **Many families rely heavily on male income**, and the prospect of missing work for even a day can seem untenable for those living on daily wages.
  - **Despite government cash incentives designed to compensate for lost wages**, awareness of these **programs remains low.**
  - **Women interviewed in a 2024 field study in Chhatrapati Sambhaji Nagar, Maharashtra, expressed concerns** that vasectomies would impose additional financial burdens on their families.
  - This **highlights a critical gap in communication about government support systems.**
- **Patriarchal Resistance and Female Reluctance**
  - Interestingly, the resistance to male sterilisation is not confined to men because **many women also view vasectomy as inappropriate or unnecessary for their husbands.**
  - In patriarchal households, **women may internalise societal norms** that assign reproductive responsibilities to them alone.

- **Some women interviewed in rural areas believed that asking their husbands to undergo a vasectomy would be disrespectful** or could lead to marital discord.
- This further entrenches gender imbalances and perpetuates the cycle of female burden in family planning.

- **Lack of Skilled Healthcare Providers and Awareness**
  - In rural areas, **limited access to skilled healthcare providers exacerbates the problem.**
  - Even when men are willing to undergo vasectomies, **the unavailability of trained professionals poses a significant barrier.**
  - Additionally, **community health workers**, often the primary source of medical information in rural regions, **are themselves poorly informed about vasectomy options**, particularly modern techniques like no-scalpel vasectomies.
  - **This lack of awareness reduces the visibility of male sterilisation** as a viable option, perpetuating reliance on female sterilisation.

Implications for Gender Equality

- This gendered disparity **undermines broader efforts to achieve gender equality and women's empowerment.**
- When women bear the brunt of sterilisation, **they face higher health risks and potential disruptions to their daily lives and livelihoods.**
- Moreover, **the societal narrative that places the burden solely on women reinforces harmful gender stereotypes and limits the potential for shared responsibilities** in marital and familial dynamics.
- **Addressing these disparities requires not only increased awareness about the safety and simplicity of vasectomy procedures** but also a societal shift in how reproductive responsibilities are viewed.
- **Until men are encouraged to take an active role** in family planning, **achieving gender equality in India will remain an elusive goal.**

Strategies for Promoting Vasectomy Adoption

- **Early Education, Awareness, Social and Behavioural Change Initiatives**
  - Sensitisation about shared family planning responsibilities should begin in schools.
  - **Early exposure to concepts of gender equality** and reproductive health through peer-group discussions and structured awareness programs can challenge existing stereotypes and destigmatise vasectomies.
  - **Sustained efforts in debunking myths** surrounding vasectomies are crucial.
  - **Campaigns must focus on the procedure's safety and simplicity** compared to tubectomy, the corresponding surgical method for women.
- **Enhanced Incentives and Learning from International Successes**
  - Conditional cash incentives can play a vital role in increasing male participation.
  - For instance, a **2019 study in Maharashtra** revealed **that financial incentives encouraged more men in rural tribal areas to opt for vasectomies**.
  - **Madhya Pradesh's 2022 decision to raise these incentives by 50%** demonstrates a **promising policy direction.**
  - **Countries like South Korea, Bhutan, and Brazil offer valuable lessons**.
  - **South Korea's high vasectomy prevalence is linked to progressive gender norms**, while Bhutan's government-run camps and **Brazil's mass media campaigns have effectively increased male sterilisation rates.**
  - These examples show that **normalising vasectomies and offering high-quality services can drive acceptance.**
- **Strengthening Health Systems**
  - **The Indian government must align its health infrastructure with policy goals** by training more professionals to perform vasectomies and promoting technical advancements like non-scalpel techniques.
  - **Investments in awareness and accessibility are essential** for creating an environment where male sterilisation is a viable option.

Conclusion

- **The disproportionate reliance on women for sterilisation highlights deep-seated gender inequalities** in India's family planning efforts.
- **Bridging this gap requires more than policy intentions;** it demands actionable steps that integrate education, incentives, and systemic reform.

- **By normalising vasectomies and addressing societal misconceptions, India can promote shared responsibility in family planning**, paving the way for gender equality and improved reproductive health outcomes.

2. Child Marriages in India

Why in the News?

Union Women and Child Development Minister announced a substantial reduction in child marriages in India, from **47.4% in 2006** to **23.3% in 2019-21**, attributed to the **Prevention of Child Marriage Act (2006)**.

Child Marriages in India:

- In India, **child marriage reduced from 47.4% in 2005-06 to 26.8% in 2015-16.**
- In the last five years, it declined by 3.5% points to reach 23.3% in 2020-21, according to the latest National Family Health Survey-5 data.
- There is a growing trend for decline in the overall prevalence of child marriage, but 23.3% is still a disturbingly high percentage in a country with a population of 141.2 crore.
- **Eight States have a higher prevalence of child marriage than the national average:**
  - **West Bengal**, **Bihar** and **Tripura** top the list with more than 40% of women aged 20-24 years married below 18, according to NFHS data.
- Some States have shown a reduction in child marriages, like **Madhya Pradesh** (23.1% in 2020-21 from 32.4% in 2015-16), **Rajasthan** (25.4% from 35.4%) and **Haryana**.

Global Scenario:

- According to data from UNICEF, the **total number of girls married in childhood stands at 12 million per year.**
- The **2030 UN Sustainable Development Goals aim to eliminate all harmful practices, such as child, early and forced marriage and female genital mutilations, under goal 5.**
- While it is encouraging that in the past decade great progress has been made in South Asia, where a girl's risk of marrying before she is 18 has dropped by more than a third, from nearly 50% to below 30%, it is not enough, and progress has been uneven.

Impact of Child Marriage:

- While child marriage is considered a human rights violation and a recognised form of sexual and gender-based violence, the **adverse impact of child marriage is manifested across maternal and child health**.
- **Recently, 10 infants died at Murshidabad Medical College and Hospital in a span of 24 hours.**
  - The hospital authorities said the majority of the children were born with extremely low birth weight.
- **Murshidabad, one of the economically poorer districts of the State**, has one of the highest numbers of child marriages in West Bengal.
- The **NFHS - 5 points out that 55.4% of women aged 20-24 years are married before the age of 18 years in the district.**
- The district saw a rise from NFHS-4 numbers, which stood at 53.5 %.

Legal Intervention in India:

- There are several laws including the **Prohibition of Child Marriage Act, 2006** and the **Protection of Children from Sexual Offences Act, 2012**, which aim at protecting children from violation of human and other rights.
- The **Prohibition of Child Marriage (Amendment) Bill, 2021** seeks to **increase the marriage age of women from existing 18 years to 21 years**.

Why Minimum Age of Marriage for Females should be increased?

- **Lack of access to education and employment:**
  - **Women face inequalities when it comes to access to education and employment** as a consequence of their early marriages.
  - It is often the case that **women are denied access to education and an economic means of livelihood after entering into the institution of marriage at an early age.**

- Increasing the minimum age for marriage will lead to more women pursuing higher education and opt for employment.

- **Impact of early marriage on health of women and children:**
  - An early age of marriage and consequent **early pregnancies** have a substantial impact on the nutritional levels of mothers and their children, along with their overall health and mental wellbeing.
  - Underage mothers are at a higher risk of reproductive health challenges, **malnutrition, postpartum haemorrhage, and a susceptibility to sexually transmitted diseases.**

Schemes/ Policies for Preventing Girl Child Marriage:

- **Sukanya Samriddhi Yojana (SSY):**
  - **Sukanya Samriddhi Yojana (SSY), was launched in 2015**, in order to promote the welfare of girl child.
  - It encourages parents **to invest and build funds for the future studies and marriage expenses of the girl's children**.
- **Balika Samriddhi Yojana:**
  - **Balika Samriddhi Yojana** is another central government scheme to support girls in financially vulnerable sections of society.
  - This scheme ensures the enrolment and retention of girl child in primary and secondary schools.
  - It aims at the **prosperity of a girl's child and provides them with a better quality education**.
- **Beti Bachao Beti Padhao:**
  - Among all the other girl's child welfare schemes, **Beti Bachao Beti Padhao** is the most popular.
  - This scheme celebrates girl children, literally translating to **Save the Girl Child, Educate the Girl child**. It believes in women empowerment and creating an inclusive ecosystem for the same.
  - This scheme is **to promote girl children's safety before and after they are born**.

News Summary:

- Union Women and Child Development Minister announced a substantial reduction in child marriages in India, from **47.4% in 2006** to **23.3% in 2019-21**, attributed to the **Prevention of Child Marriage Act (2006)**.
- Speaking at the launch of the **Bal Vivah Mukt Bharat Abhiyan (Child Marriage-Free India Campaign)**, she highlighted the prevention of over **two lakh child marriages** in the past year alone.
- **Bal Vivah Mukt Bharat Abhiyan Goals**:
  - Focus on seven high-burden states (**West Bengal, Bihar, Jharkhand, Rajasthan, Tripura, Assam, and Andhra Pradesh)** and 300 districts with above-average child marriage rates.
  - **Aim to reduce child marriage rates to below 5% by 2029**.
  - Launch of the **'Child Marriage Free Bharat' portal** for awareness, reporting, and progress monitoring.
- **Global Context**:
  - India significantly contributed to South Asia's reduction in child marriage rates, according to UN reports.
- **Challenges and Solutions**:
  - Education continuity for girls
  - Skill development and employment
  - Nutritional and reproductive health
  - Safety, anti-trafficking, and social protection
  - Awareness campaigns are critical, as laws alone cannot eradicate the issue.

3. India's Urban Infrastructure Financing, Needs, and Reality

Context

- **India is on the brink of an urban revolution and over the next three decades, its urban population is expected to double**, increasing from 400 million in the last decade to 800 million.
- While this demographic shift offers a unique opportunity to reshape India's urban landscape, **it also presents a formidable challenge; financing the massive infrastructure** required to support this growth.
- **Addressing this challenge is essential to ensure sustainable and inclusive urban development** and therefore it is important to examine the financial gap, issues at local level and required reform.

The Financial Gap

- According to a recent World Bank report, **India will need approximately ₹70 lakh crore by 2036 to meet its urban infrastructure needs.**
- This **translates to a requirement of ₹4.6 lakh crore annually**; however, **current government investment stands at just ₹1.3 lakh crore annually,** barely a quarter of the required amount.
- Broadly, **about half of this investment is earmarked for basic urban services,** while the other half is designated for urban transport projects.

An Assessment of Challenges at the Local Level

- **Stagnation in Municipal Finances**
  - For two decades, **municipal finances have remained stagnant at just 1% of the GDP,** a clear indication of the systemic neglect of urban local bodies (ULBs).
  - Despite their significant role in urban development, **municipalities contribute only 45% of urban investments,** with the rest being managed by parastatal agencies.
  - This **limited fiscal capacity restricts their ability to plan and execute large-scale infrastructure** projects effectively.
- **Dependency on Central and State Transfers**
  - **While central and state transfers to municipalities have increased** marginally from 37% to 44% of their total revenue, **this has not translated into robust financial health.**
  - **Municipalities' dependence on external funding has reduced their ability to operate**
  - Compounding this, **the share of municipalities' own revenue sources has declined from 51% to 43%,** further weakening their financial independence.
- **Low Revenue Generation and Collection Inefficiencies**
  - Municipal tax revenues have shown only modest growth, rising by 8% between 2010 and 2018, while grants increased by 14%, and non-tax revenue grew by 10.5%.
  - However, **inefficiencies in tax collection severely limit revenue potential;** for instance, ULBs in cities like Bengaluru and Jaipur collect only 5%-20% of their potential tax revenue.
  - Nationally, **property tax collection stands at a mere ₹25,000 crore annually, amounting to just 0.15% of GDP,** a figure significantly lower than global benchmarks.
- **Poor Cost Recovery for Services**
  - Urban local bodies also struggle with cost recovery for essential services.
  - **Across the country, the recovery rates for urban services** like water supply and waste management **range from 20% to 50%.**
  - This **mismatch between the costs of providing services and the revenues generated not only worsens the financial strain** on ULBs but also **leads to substandard service delivery.**
- **Underutilisation of Funds**
  - One of the paradoxical challenges faced by municipalities is **their inability to utilise allocated funds effectively.**
  - The Fifteenth Finance Commission reported that **approximately 23% of total municipal revenue remains unspent.**
  - **Even in major cities** like Hyderabad and Chennai, **only 50% of capital expenditure budgets were utilised in 2018-19.**
  - This **underutilisation points to systemic inefficiencies**, such as delays in project approvals, lack of skilled manpower, and bureaucratic hurdles.
- **Suboptimal Utilization of Central Schemes**
  - Flagship urban development schemes like the **Atal Mission for Rejuvenation and Urban Transformation (AMRUT) and the Smart Cities Mission have also faced implementation challenges.**
  - AMRUT achieved 80% fund utilisation, while the Smart Cities Mission managed 70%.
  - **These figures**, though reasonable, **fall short of the full potential of these initiatives** and highlight gaps in project execution and management.
- **Decline in Public-Private Partnerships (PPPs)**
  - **PPPs,** which were once seen as a promising avenue for augmenting urban infrastructure investment, **have witnessed a sharp decline.**
  - **Investment in urban PPP projects peaked at ₹8,353 crore in 2012** but plummeted to ₹467 crore by 2018.

- **Several factors contribute to this decline, including inadequate project-specific revenues, weak financial viability of projects**, and the lack of institutional mechanisms to attract private players.

Pathways to Reform

- **Long-term Reforms**
  - **Structural reforms are crucial f**or strengthening municipal financial autonomy and capacity.
  - **Empowering municipal governments to manage and allocate resources** more effectively is essential.
  - This i**ncludes enhancing the role of State Finance Commissions and enabling municipalities to raise funds** through mechanisms such as debt borrowing and municipal bonds.
  - These **reforms will attract much-needed private capital**, fostering sustainable urban development.
- **Medium-term Strategies**
  - **Developing a Robust Project Pipeline**
    - To meet the ₹70 lakh crore urban investment requirement, **India needs a steady pipeline of 600-800 projects annually,** with about 15% of investments potentially coming through PPPs.
    - This **involves meticulous planning and preparation to ensure projects are viable** and impactful.
  - **Decoupling Project Preparation from Financial Assistance**
    - Hastily prepared projects often fail to meet financial, social, and environmental sustainability criteria.
    - **Separating project preparation from financial assistance will allow for better planning and execution,** particularly in the face of climate change vulnerabilities
  - **Leveraging Digital Public Infrastructure (DPI)**
    - **Digital innovations can revolutionise urban service delivery,** particularly in sectors like public transport.
    - **By adopting DPI, India can enhance efficiency, transparency, and accountability,** establishing itself as a global leader in smart urban solutions.
  - **Capturing Land Value in Transport Projects**
    - With half of the required ₹70 lakh crore investment allocated to urban transport, particularly metro rail projects**, integrating transport infrastructure with urban development is crucial.**
    - **Leveraging land value near transit hubs can drive economic growth** while improving urban efficiency.

Conclusion

- **India's urban future hinges on the ability to address these financial and structural challenges head-on as the stakes are high**, and this is the window for action.
- By **pursuing both immediate and long-term strategies**, **India can build urban infrastructure that meets the demands of its growing cities,** thus ensuring sustainable and inclusive development for the decades to come.
- **The path forward will require collaboration across government levels, private sector participation,** and a relentless focus on innovation and governance efficiency.

4. Global Alliance Against Hunger and Poverty

Why in news?

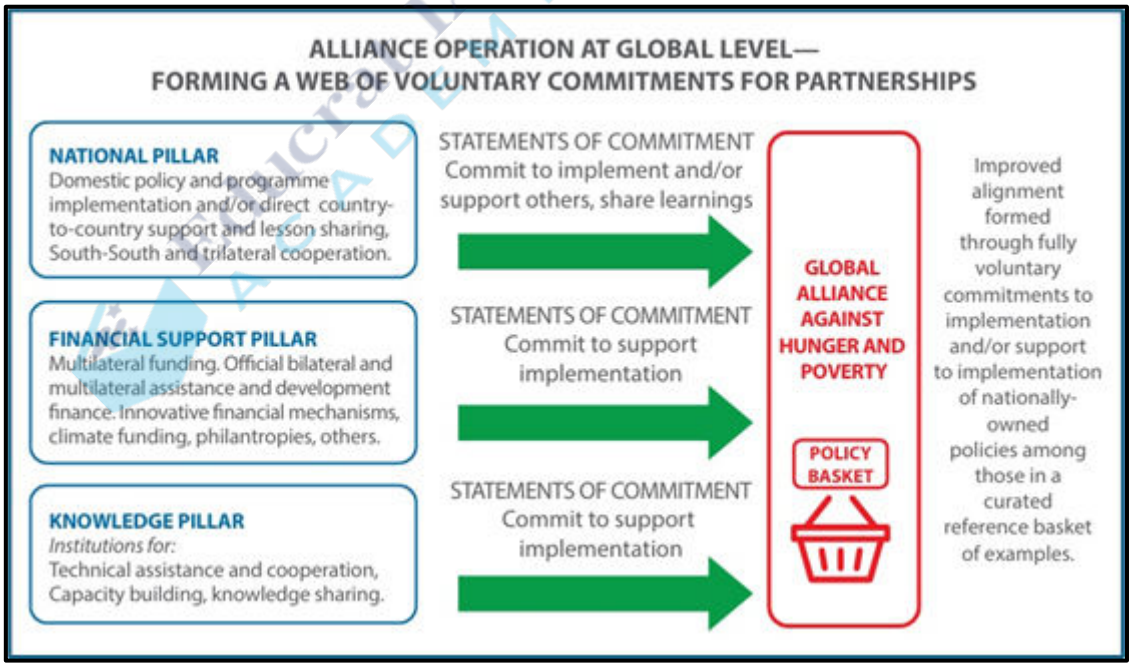
The **Global Alliance Against Hunger and Poverty was officially launched during the G20 Leaders' Summit in Rio de Janeiro, Brazil.** Its primary objective is to accelerate efforts toward the eradication of hunger and poverty globally while promoting the achievement of the Sustainable Development Goals (SDGs).

Hunger and India

- **What is Hunger?**
  - The **Food and Agriculture Organization (FAO)** defines **hunger as food deprivation, or undernourishment, as the habitual consumption of too few calories** to provide the minimum dietary energy an individual requires to live a healthy and productive life, given that person's sex, age, stature, and physical activity level.
- **Hunger and India**
  - India is ranked **105th** among **127 countries in the Global Hunger Index (GHI) 2024**, indicating a **'serious' level of hunger**.
  - Notably, **India's GHI score of 27.3** is a cause for concern, especially when compared to its South Asian neighbours like **Bangladesh, Nepal, and Sri Lanka, which fall into the "moderate" category.**

Global Alliance Against Hunger and Poverty

- **The Need for the Alliance**
  - The **2030 Agenda for Sustainable Development, adopted in 2015** by all UN Member States, set targets to end poverty, hunger, and ensure food security by 2030.
  - However, the Covid-19 pandemic reversed progress, leading to a rise in extreme poverty and declining nutrition standards, particularly in the Global South.
  - Projections indicate 622 million people will live below the extreme poverty line of $2.15 per day by 2030.
  - **582 million people are expected to live in hunger by 2030, the same as in 2015.**
  - Global conflicts, climate change, and inequalities have further weakened progress.
- **About**
  - The **G20 summit in Rio de Janeiro launched the Global Alliance Against Hunger and Poverty**, connecting nations with resources to tackle hunger.
  - Led by **Brazil's President Luiz Inácio Lula da Silva,** the initiative focuses on cash transfers, school meals, and support for farmers.
- **Aims/objectives**
  - The alliance aims to eradicate hunger and poverty by 2030, aligning with the **Sustainable Development Goals (SDGs)**.
  - Its key objective is to remove all nations from the **FAO Hunger Map** by fostering collaboration and resource mobilization.
- **Membership and Structure**
  - **Members**: **148, including 82 countries**; African Union and European Union; 24 international organizations; 9 financial institutions; 31 philanthropic and non-governmental organizations.
  - **Available to non-G20 countries since July 2024.**
    - Early members include Brazil, Bangladesh, and G20 members, with participants spanning all continents.
- **Key Pillars of the Alliance**
  - **National:** Coordination of public policies specific to eradicating hunger.
  - **Knowledge:** Integration of data and technologies for evidence-based solutions.
  - **Financial:** Large-scale resource mobilization to fund programs.



- **Strategic Commitments**
  - **Income Distribution**: Reach 500 million people through income support programs by 2030.
  - **School Meals: Provide** school meals to 150 million children in high-hunger regions.
  - **Financial Mobilization**: Leverage multilateral banks to raise billions for anti-poverty initiatives.
- **Funding**

- **No exclusive fund**; relies on contributions from members and institutions like **FAO, UNICEF, and the World Bank.**
- **Estimated operational cost:** $2-3 million annually.

- **Technical Office**
  - **Based at FAO with functional autonomy.**
    - It is expected that the headquarters of this alliance will be based in **Brasilia** or another Global South country.
- **Key Activities**
  - Regular Summits Against Hunger and Poverty.
  - Creation of a **High-Level Champions Council to oversee alliance activities**.
- **Other features**
  - Facilitates **sharing of best practices** among members.
  - Provides **technical expertise or financial support** for national hunger and poverty eradication policies.
  - **Includes a policy basket with over 50 instruments for targeted support in areas like: School meals; Cash transfers; Support for smallholder and family farming; Socio-economic inclusion programs; Maternal and early childhood interventions; Water access solutions.**
  - The Alliance acts as a matchmaking platform, connecting countries in need with donors and support organizations.

5. Debating the Healthy Longevity Initiative

Context

- **In September 2024, the World Bank released a report titled Unlocking the Power of Healthy Longevity:** Demographic Change, Non-communicable Diseases, and Human Capital.
- The report **shed light on a pressing issue: the impact of demographic shifts and the rise of non-communicable diseases (NCDs)** on global health.
- The report **also underscores the profound transformations underway, particularly in low- and middle-income countries (LMICs),** where the aging population faces escalating health challenges.
- It becomes imperative **to explore the main insights from the report, examining the feasibility of the proposed Healthy Longevity Initiative (HLI) in India** and the broader socio-economic and healthcare challenges tied to NCDs.

The Rising Burden of NCDs in LMICs and Implications for Human Capital

- The demographic transition in LMICs reflects a rapidly aging population, **which presents new health and economic challenges.**
- According to the World Bank, **projections indicate that global deaths could rise from 61 million in 2023 to 92 million by 2050, primarily due to NCDs.**
- This **rise in mortality also entails increased demand for hospitalisations, long-term care, and treatment resources**, putting pressure on already strained healthcare systems.
- **For LMICs, including India, this health burden hinders development goals and economic stability,** as avoidable deaths and disabilities drain human capital and financial resources.
- **If these countries can achieve feasible progress** rates in health policies, **the World Bank estimates that around 25 million annual deaths could be avoided by 2050,** meeting the related Sustainable Development Goals (SDGs).
- **In response, the World Bank's report advocates a HLI, emphasising a life-course approach to minimise avoidable mortality and serious disability**, thereby enabling individuals to maintain physical, mental, and social well-being into older age.

India's Aging Population and the Growing NCD Crisis: Causes and Consequences

- **The Growing NCD Crisis**
  - India is witnessing an **unprecedented demographic shift** characterised by rapid aging.
  - With **approximately 140 million individuals aged 60 and above, India now has the second-largest elderly population** globally, second only to China.
  - Projections indicate that **this population segment will continue to grow rapidly, with its annual growth rate nearly three times** that of the general population.

- This **demographic shift is accompanied by a steep rise in the prevalence of NCDs** like cardiovascular diseases, cancer, chronic respiratory illnesses, and diabetes.
- These **conditions have already become the leading causes of death and disability,** presenting a multifaceted challenge to India's healthcare system, economy, and social structures.

- **Lifestyle and Environmental Factors Driving the NCD Crisis**
  - **A major contributor** to the rising incidence of NCDs in India is the **significant shift in lifestyle and environmental factors.**
  - **Rapid urbanisation, economic growth, and changing dietary habits have led to increased consumption of calorie-dense**, processed foods high in refined sugars and saturated fats.
  - These **dietary changes are associated with a higher risk of developing conditions** such as cardiovascular diseases, diabetes, and obesity, all of which are primary NCDs affecting India's elderly.
  - Moreover, **a sedentary lifestyle, exacerbated by modern urban living, has contributed to the rise of obesity and related health conditions** among both younger and older generations.
  - **Limited access to recreational spaces and a culture that prioritises sedentary work,** especially in urban settings, **further limits physical activity levels among the population.**
- **Health and Socio-Economic Consequences of an Aging Population**
  - **As people live longer, they become more susceptible to NCDs**, which require sustained medical attention, ongoing treatments, and, often, expensive interventions.
  - **The surge in NCDs among India's elderly population results not only in rising mortality rates but also in increased disability,** impacting individuals' ability to work and contribute economically.
  - This **demographic health shift places immense pressure on family resources, especially in a country where healthcare expenses are often borne by families** due to limited public health funding and insurance coverage.
  - **Families of elderly individuals with chronic NCDs may face severe financial hardship**, potentially leading to impoverishment, indebtedness, and reduced household consumption as resources are diverted toward medical care.
  - **The economic repercussions of this growing NCD crisis are far-reaching. The increased burden of NCDs could lower national productivity**, as more people become unable to participate in the workforce due to illness.

Evaluating Social Security and Health Policies

- **Evaluation of Social Security Schemes**
  - In India, **social security schemes could play a crucial role in managing the NCD burden among vulnerable populations.**
  - For instance, **it is crucial to examine whether participation in social security programs reduces the prevalence of two prominent NCDs**: diabetes and heart disease.
  - Findings indicate that **even modest pension benefits help elderly people afford healthcare expenses,** thereby reducing NCD risks.
  - **However, challenges remain: travel costs, hospital fees, and high-priced medications impose financial strain,** often leading to debt and impoverishment.
  - **Health insurance, while beneficial, remains underutilised** due to limited public awareness, bureaucratic hurdles, and delays in claim processing.
- **Ayushman Bharat Scheme: Impact and Limitations**
  - The Ayushman Bharat Scheme, **introduced to provide health insurance to the most vulnerable 40% of households**, **illustrates the potential of social security but also its limitations.**
  - While the scheme offers essential coverage, **it is undermined by corruption and inefficiencies, as noted by the Comptroller and Auditor General of India (CAG) in 2023.**
  - **Issues include the ineligibility of beneficiaries, delays in hospital registration, improper procedures,** and lack of proper documentation.
  - **Such systemic flaws reveal that insurance alone is insufficient without improvements in healthcare infrastructure**, workforce availability, and healthcare delivery.

Policy Recommendations and Behavioural Interventions to Address NCD Crisis

- **Promoting Behavioural Changes**
  - Addressing India's NCD crisis **requires policy reforms and individual lifestyle changes.**

- The **Supreme Court's recent mandate to regulate healthcare costs highlights the importance of making healthcare affordable.**
- Yet, as observed, **price regulation requires robust enforcement to ensure compliance**.
- Furthermore, **promoting behavioural changes, such as increasing physical activity and adopting balanced diets, is crucial to managing obesity and, consequently, reducing risks of cardiovascular diseases** and diabetes.

- **Taxation on Unhealthy Products**
  - Policy measures, **such as taxation on unhealthy products, could help address the root causes of NCDs** and reduce multi-morbidity prevalence.
  - **Tobacco consumption remains a significant health threat**, particularly in India, where smoking is prevalent.
  - **Policies aimed at reducing tobacco use**, combined with public health campaigns, **could mitigate the incidence of respiratory and cardiovascular conditions.**
  - Although these interventions are challenging to implement, they are necessary for long-term health improvement.

Conclusion

- **The World Bank's 2024 report presents a vital perspective on the urgent need to address the growing burden of NCDs** and demographic changes in LMICs.
- While the Healthy Longevity Initiative offers a visionary approach, **the realities in countries like India reveal substantial barriers to achieving this ideal.**
- **India's rapidly aging population,** compounded by the prevalence of NCDs, **demands targeted interventions in healthcare policy, social security programs, and individual behaviours.**

6. Costs of population decline

Why in news?

The **Chief Ministers of Andhra Pradesh and Tamil Nadu** recently voiced concerns about low fertility rates in their states. Andhra Pradesh Chief Minister announced plans to introduce legislation aimed at incentivizing families to have more children.

This initiative reflects the growing worry over demographic challenges, as both states face declining birth rates that could impact future economic growth and social stability.

India's Shifting Demographics: Ageing Population and Fertility Trends

- **Impact of Family Planning Success on Ageing Population**
  - Decades of **successful family planning policies in India have resulted in slower population growth** but have also led to a rapidly ageing population, especially in some regions.
  - The shift poses challenges as the **elderly population grows, impacting economic and social systems.**
- **Declining Fertility Rates in Southern and Smaller Northern States**
  - Fertility rates, or the average number of children born to women during child-bearing years, have declined sharply in southern states **like Tamil Nadu and West Bengal (1.4 between 2019 and 2021), as well as in Andhra Pradesh, Telangana, Kerala, Punjab, and Himachal Pradesh (1.5).**
  - States with lower fertility rates typically experienced faster development.
- **Higher Fertility Rates in Northern States**
  - In contrast, states like **Bihar, Uttar Pradesh, and Madhya Pradesh** still have relatively high fertility rates (3, 2.7, and 2.6, respectively), indicating a slower demographic transition and a younger population structure.
- **Projected Growth in India's Elderly Population**
  - According to the **India Ageing Report (UNFPA),** India's elderly population is projected to increase from 10.1% in 2021 to 15% by 2036.
  - **Kerala, Tamil Nadu, and Andhra Pradesh will see a particularly advanced demographic shift**, with elderly populations expected to comprise 22.8%, 20.8%, and 19% of their populations by 2036.
  - In Bihar, however, the elderly will make up only 11% by 2036.

India's Ageing Crisis and Socio-Economic Political Challenges

- **India's Accelerated Demographic Transition**

- India's demographic transition is advancing faster than its socio-economic development.
- The key measure here is the **old age dependency ratio**, which indicates the number of older dependents for every 100 working-age individuals (18-59 years).
- According to **Associate Professor Srinivas Goli, an ageing crisis sets in when this ratio exceeds 15%.**

- **States with High Old Age Dependency Ratios**
  - Several states have already crossed this threshold, including **Kerala (26.1 in 2021), Tamil Nadu (20.5), Himachal Pradesh (19.6), and Andhra Pradesh (18.5).**
  - This implies that these states' demographic dividend—the **economic benefit from a younger workforce without high dependency—has largely ended, increasing pressures on healthcare and social services.**
- **Healthcare Burden of Ageing Populations**
  - **Ageing states face mounting health expenses.**
  - For instance, a 2017-18 study showed that the southern states, with only 20% of India's population, accounted for 32% of the country's out-of-pocket spending on cardiovascular diseases.
  - On the other hand, **eight Hindi-belt states, home to 50% of the population, spent only 24%.**
- **Economic and Gender Implications of Increasing Fertility**
  - While **some state leaders propose boosting fertility rates to counter ageing**, this could reduce women's participation in the workforce, potentially hindering economic growth.
  - Southern states also argue that despite their economic contributions and higher tax revenue, they receive a smaller share of central resources due to slower population growth, raising concerns over fiscal fairness.
- **Impact of Uneven Population Growth on Parliamentary Representation**
  - With the freeze on parliamentary seats expiring in 2026, a new delimitation exercise will adjust **Lok Sabha representation based on population shifts, impacting the federal structure.**
  - According to a study, states with higher population growth, like **Uttar Pradesh, Bihar, and Rajasthan**, are expected to gain seats (12, 10, and 7 respectively).
  - Meanwhile, states with slower growth, including **Tamil Nadu, Kerala, and Andhra Pradesh,** are projected to lose seats (9, 6, and 5 respectively) due to their declining share in the national population.

Alternative Approaches to Addressing Low Fertility in Southern States

- **Limitations of Pro-Natalist Incentives**
  - Southern CMs are proposing incentives to encourage **higher fertility rates**. However, analysts warns that such approaches have seen limited success globally.
  - Educated women are unlikely to respond to forced fertility incentives that fail to address real family needs.
- **Recommended Policy Changes for Sustainable Fertility Rates**
  - Experts advocate for **work-family policies that support gender equity, including paid maternity and paternity leave, accessible childcare, and employment policies that eliminate the "motherhood penalty."**
  - These changes could help women maintain economic independence, making them more inclined to have children.
- **Alternative Solutions: Extending Working Lifespan and Migration Policies**
  - Increasing the working lifespan could help reduce the old age dependency ratio.
  - Southern states, already **economic hubs attracting migrants, face challenges as migrants often rely on the social services of destination states.**
  - On the other hand, they are being counted in their home states for political and financial allocations, straining resources in southern states.
  - A **suitable migration policy** is needed to address this issue.

7. Big Tech's Fail; Unsafe Online Spaces for Women

Context

- T**he rapid growth of artificial intelligence (AI)** and social media platforms has **introduced a new frontier for political campaigns, public discourse**, and **online harassment.**
- **As technology develops, so does its impact on the lives and careers of public figures,** particularly women in politics.

- Therefore, **it becomes imperative to examine the complex intersection of AI, social media, and gender, highlighting the challenges faced by U.S. Vice President Kamala Harris and other women leaders worldwide.**

Digital Attacks on Kamala Harris's Campaign and Global Pattern of Harassment for Women Leaders

- **Digital Attacks on Kamala Harris's Campaign**
  - After U.S. President Joe Biden endorsed Kamala Harris as the 2024 Democratic Party nominee, **Harris quickly gained high-profile supporters, such as former President Barack Obama.**
  - However, **her candidacy ignited an intense wave of online attacks and debates, magnified by AI-generated disinformation** and deepfakes that questioned her competence and character.
  - **In one notable instance, a manipulated video featuring Harris's cloned voice circulated widely,** falsely attributing statements to her, such as **calling Biden senile** and **labelling herself an ultimate diversity hire.**
- **Global Pattern of Harassment for Women Leaders**
  - The **challenges Harris faces are not unique to her**; they reflect a global pattern.
  - For instance, **Italian Prime Minister Giorgia Meloni and Bangladeshi politicians Rumin Farhana and Nipun Roy have also faced similar harassment**
  - Deepfakes and other AI-generated explicit content have increasingly targeted women in politics.
  - **This underscores a disturbing global trend of using digital tools to attack women's dignity,** invade their privacy, and hinder their professional lives.
  - This r**ecurring pattern highlights the broader question of why social media platforms allow such content** to spread unchecked.

A Detailed Analysis of the Paradox Role of Big Tech, Their Responsibility and Regulatory Gaps and Implications

- **The Paradox Role of Big Tech**
  - The proliferation of deepfakes and offensive content reveals a severe lack of accountability within Big Tech companies.
  - They **often claim limited control over user-generated content** under safe harbour protections.
  - **Technology, often seen as empowering for women, paradoxically amplifies existing biases and reinforces stereotypes,** sometimes creating entirely new ways to marginalise and harass women.
  - **As a result, women in public roles face increased digital abuse and threats**, which may deter them from political and professional participation.
- **Big Tech's Responsibility and Regulatory Gaps**
  - While digital platforms are profitable due to high user engagement, **they have invested insufficiently in content moderation and safety features.**
  - Instead of leaving the responsibility to users, **tech companies should enhance moderation systems and provide faster responses to flagged content.**
  - Moreover, **Big Tech should be legally compelled to label AI-generated content or, in severe cases, remove it altogether to prevent harm.**
  - The **growing influence of tech magnates, such as Elon Musk, on public perception further complicates the issue.**
  - Their personal biases can sway millions of users who may struggle to distinguish between real and fake content.
- **Implications of Big Tech's Failure to Curb Degrading Content**
  - Big Tech's failure to curb the deluge of degrading content against women **results in a disproportionate burden being imposed on women, impacting their identity, dignity, and mental well-being.**
  - The **nature of online abuse women face is also starkly different from the trolling or insults directed at men.**
  - **While men may encounter misinformation and disinformation** regarding their actions or duties, **women face objectification, sexually explicit content, and body shaming.**

Necessary Policy Reforms for Online Safety of Women and to Fix the Big Tech's Accountability

- **Regulating AI-Driven Content and Deepfakes**
  - **One of the most pressing areas for reform is the regulation of AI-generated content**, including deepfakes.
  - As AI technology becomes more accessible, **so too does the capacity to produce hyper-realistic fake videos and audio that can deceive viewers.**

- **Deepfakes targeting women politicians, such as those experienced by Kamala Harris, Giorgia Meloni, and Nikki Haley, illustrate the potential for AI to be weaponised** against individuals based on their gender and public visibility.
- **Regulatory bodies should consider requiring social media platforms to implement stricter measures** to identify, label, and, when necessary, remove AI-generated content.

- **Strengthening Content Moderation Policies and Transparency**
  - Content moderation lies at the heart of creating a safer digital environment, yet **current moderation practices often fall short of addressing gender-based harassment effectively.**
  - Policy **reform should require platforms to adopt comprehensive, proactive content moderation policies tailored to address the unique forms of abuse** that women frequently encounter.
  - For instance, **unlike general misinformation campaigns, gendered harassment often focuses on the personal lives, appearances, and identities of women.**
  - **Policies should define and address this type of abuse explicitly**, ensuring that moderators are trained to understand and respond to gendered language and images that might otherwise evade detection.
- **Legal Protections for Victims of Digital Harassment**
  - To empower victims and provide recourse, **governments should consider strengthening legal protections and expanding the definition of online harassment.**
  - For example, **clear legal definitions of gendered cyber harassment could help victims** in cases that involve misogynistic or sexualized abuse.
  - **Currently, many legal systems have limited or outdated frameworks** that fail to address the complexities of digital harassment, especially where AI-driven content is concerned.
  - **Legislation that recognises the unique impacts of online abuse on women and other marginalised groups would give victims the tools to seek legal recourse,** while also providing a basis for holding social media companies accountable for their role in perpetuating harm.
- **Imposing Penalties for Non-Compliance**
  - **Policy reform should include enforceable penalties** for social media platforms that fail to prevent or respond adequately to gender-based harassment and disinformation.
  - **Currently, many platforms avoid stringent measures** due to a lack of consequences; however, **implementing meaningful fines and sanctions could incentivise these companies to invest more seriously in moderation technologies** and user safety measures.
  - **Financial penalties could be scaled based on the severity and frequency of non-compliance,** while repeat offenders could face more significant repercussions, such as temporary suspensions of service within certain jurisdictions.
- **Promoting Diversity in Tech and Addressing Systemic Bias**
  - **A core issue with online harassment lies in the design and development of the algorithms** that detect and moderate harmful content.
  - **Algorithms are often trained on data sets that reflect existing societal biases, and when these biases are unaddressed,** they become embedded in the technology itself.
  - For example, **platforms may overlook or under-prioritise language and imagery that targets women in sexist or misogynistic ways** because the developers may not have accounted for gender-specific abuse patterns.
  - **Encouraging diversity within the tech workforce**, especially among AI developers, data scientists, and policy advisors, **could lead to more inclusive content moderation practices that are sensitive to gendered abuse.**
  - To support this, **governments and tech companies could introduce policies or incentives aimed at hiring and retaining women** and other underrepresented groups in the technology sector.

Conclusion

- **The digital age presents both opportunities and challenges** for women in politics. As AI and social media continue to evolve, so does the potential for abuse.
- **The targeted harassment of Kamala Harris and other women leaders exemplifies the urgent need for Big Tech accountability**, inclusive AI development, and robust policy reform.
- **Ensuring that online platforms are safe and equitable for all requires a combined effort from tech companies, governments, and civil society**, reinforcing that the responsibility of gender equity in digital spaces belongs to everyone.

8. What are the Major Challenges Faced by Indian Cities?

Background:

- With October 31 recognized globally as World Cities Day, this year's theme is "**Youth Climate Changemakers: Catalysing Local Action for Urban Sustainability**".
- It aims to bring attention to the pressing issues affecting urban centres worldwide, particularly in India.
- With over **40% of India's population residing in urban areas across approximately 9,000 towns**, Indian cities face unique challenges exacerbated by rapid urbanization, socio-economic inequalities, and climate threats.

Unique Urbanisation Pathway in India:

- Unlike Western nations, where urbanization followed **industrialization and economic growth, India's urban expansion is primarily "poverty-driven."**
- **Economic distress pushes rural populations to urban areas**, often without adequate infrastructure or employment opportunities.
- Migration patterns highlight infrastructure gaps.
- During the COVID-19 pandemic, reverse migration underscored the lack of essential services for urban residents and strained rural areas unprepared for the returning population.

Primary Challenges of Indian Urbanisation:

- **Outdated Spatial Planning**:
  - India's urban planning often lags behind current needs, with many plans focusing on capital growth rather than human-centric development.
  - Outmoded spatial plans fail to account for rising populations and housing demands.
- **Deindustrialization and Employment**:
  - **Post-1980s deindustrialization in cities like Ahmedabad, Delhi, and Mumbai** led to significant job losses, pushing displaced workers into peri-urban slums where nearly 40% of India's urban population now resides.
  - Employment remains mostly informal, with **90% of jobs lacking job security and adequate working conditions.**

Environmental Challenges and Climate Impact:

- **Climate Vulnerabilities**:
  - Indian cities, particularly in **the National Capital Region (NCR), experience severe air pollution, urban flooding, and the "urban heat island" effect.**
  - **Among India's ten most polluted cities, eight are located in the NCR,** leading to substantial health risks and decreased quality of life.
- **Urban Flooding and Extreme Heat**:
  - The **increase in impervious surfaces and poor drainage systems** make Indian cities prone to urban flooding.
  - The dense construction exacerbates heat levels, significantly impacting public health and productivity.

Social Inequality & Segregation:

- **Growing Inequality**:
  - Cities are witnessing **widening socio-economic disparities, with luxury housing projects such as DLF's "The Dahlias" in Gurugram** offering apartments starting at ₹100 crore, contrasting with millions living without basic shelter.
- **Community Segregation**:
  - Contrary to the notion that cities dilute social and religious differences, urban areas in India are becoming increasingly segregated along these lines, leading to community isolation and tensions.

Governance & Decentralisation Issues:

- **Limited Local Authority**:
  - Despite the **74th Constitutional Amendment aiming for decentralized urban governance**, most Indian cities lack control over urban planning and essential functions.

- Only a few cities have implemented more than **three of the 18 mandated functions outlined in the 12th Schedule.**
- **Funding Constraints**:
  - Urban areas receive minimal financial support from intergovernmental transfers, with cities allocated only 0.5% of the GDP, limiting their capacity for sustainable development and infrastructure improvements.

Conclusion:
- Indian cities face complex, interwoven challenges requiring coordinated national interventions and empowered local governance to create inclusive, resilient, and sustainable urban environments.
- Comprehensive solutions involving updated spatial planning, adequate resource allocation, and localized climate action are crucial to addressing these issues and ensuring a more equitable future for India's urban population.

9. India's Female Labour Force Participation

Why in News?

The International Labour Organisation (ILO) recently highlighted the challenges of low female labour force participation in India, primarily driven by the overwhelming caregiving responsibilities placed on women.

The report, titled **The Impact of Care Responsibilities on Women's Labour Participation**, emphasises the need for investments in early childhood care and education (ECCE) to promote gender equality in the workforce.

Current Statistics on Women's Labour Force Participation in India:
- **High percentage outside workforce:** Over half of India's women (53%) remain outside the labour force, largely due to unpaid caregiving duties, in stark contrast to only 1.1% of men.
- **Unpaid domestic and household work:** According to India's Periodic Labour Force Survey (PLFS) for 2023-24, around 36.7% of females and 19.4% of the workforce are involved in unpaid household work.
- **Gender disparities in domestic work:** The National Statistical Office (NSO) Time Use Survey 2019 shows that 81% of Indian females aged 6 and above spend over five hours daily on unpaid domestic activities.
- **Caregiving time differences:** Among those 6 years and older, 26.2% of females spend over two hours daily on caregiving versus 12.4% of males, indicating the disproportionate share borne by women.

Global Perspectives on Care Responsibilities and Workforce Participation:
- **Global findings:**
  - In 2023, **748 million individuals globally** were not part of the labour force due to caregiving responsibilities, with **708 million of them being women**.
    - These numbers underline the **consistent gender imbalance** in care duties.
  - **Northern Africa, Arab states, and Asia-Pacific regions** report the highest percentages of women outside the labour force due to caregiving, reflecting cultural and structural differences in caregiving expectations worldwide.
  - India, alongside countries like **Iran, Egypt, and Jordan**, has a high percentage of women restricted by caregiving responsibilities.
    - **Countries with high female workforce participation:** Nations like **Belarus, Bulgaria, and Sweden** maintain lower proportions of women outside the workforce (less than 10%) by investing in ECCE, roughly 1% of their GDP.

Key Barriers to Women's Workforce Inclusion and Way Ahead:
- **Barriers:**
  - The ILO report highlights **low educational attainment, limited job opportunities, and inadequate infrastructure** as critical factors keeping women out of the workforce.
  - **Cultural norms** around caregiving heavily restrict women's labour market access, especially in **rural areas,** reinforcing existing gender inequalities.
- **Way ahead:**
  - To address the high percentage of women outside India's workforce due to care responsibilities, **substantial investments in the care economy** - especially in ECCE - are essential.

- Such initiatives cannot only foster gender equality but also unlock economic potential by enabling more women to enter and thrive in the workforce.

10. Supreme Court's Landmark Judgment on Child Marriages in India

Background:

- In a recent ground-breaking ruling in the **Society for Enlightenment and Voluntary Action v. Union of India** case, the **Supreme Court** has shifted the focus on child marriages from criminal prosecution to addressing the harm and challenges faced by victims.
- The Court laid out comprehensive guidelines aimed at strengthening the **Prohibition of Child Marriage Act (PCMA) and highlighted the crucial role of state governments in enforcing these measures.**
- The judgment emphasizes that efforts to tackle child marriage should not only focus on prevention and punishment but also on empowering those already in child marriages to reclaim their independence.

Child Marriages in India:

- According to the **National Family Health Survey (NFHS)**, the percentage of women aged 20-24 who were married before 18 has declined significantly from 47.4% in 2005 to 23.3% in 2021.
- Despite this progress, India is far from achieving the **United Nations' Sustainable Development Goal (SDG)** of completely eradicating child marriage by 2030.
- **Institutional Approach:**
  - Efforts have traditionally focused on **prevention and, more recently, on prosecution.**
  - For instance, in Assam, the authorities took mass action by arresting men who were found married to minors.
  - However, **criminal prosecution alone might not address the complexities surrounding child marriage, especially in cases where young individuals marry to escape challenging situations.**

Legal Framework for Child Marriage in India:

- **Prohibition of Child Marriage Act, 2006 (PCMA)**:
  - Defines child marriage as a marriage where either the **husband is under 21 or the wife under 18.**
  - Such marriages are "**voidable**," meaning they remain valid until one party (who was a minor at the time) seeks to annul it.
  - In states like **Karnataka** and **Haryana**, child marriages are void from the start.
- **Annulment vs. Divorce**:
  - **Annulment** treats the marriage as though it never existed, restoring the individuals to an unmarried status.
  - **Divorce** acknowledges a valid marriage that existed before dissolution, requiring grounds like cruelty or adultery.
  - For annulment under PCMA, the petitioner needs only to prove that a child marriage occurred, without needing additional grounds.
- **Other Civil Remedies under PCMA**:
  - The Act also provides support measures like **maintenance, residence orders, and the return of wedding gifts to ensure some security for those exiting child marriages.**

Challenges of Criminalizing Child Marriage:

- While child marriages can be voided, the **PCMA**, along with other laws like **POCSO (Protection of Children from Sexual Offences Act)** and the **Bharatiya Nyaya Sanhita (BNS)**, criminalizes several activities related to child marriage. These include:
  - **Performing or promoting child marriage**.
  - **Adult men marrying minors**.
  - **Sexual activity within a child marriage**.
- **Impact of Criminalization:**
  - These criminal provisions may inadvertently penalize the **families of the married minors, potentially isolating the young girl involved.**

- It could restrict her access to healthcare and reproductive services due to the fear of legal repercussions for her family.
- Studies have shown that criminal laws often disproportionately target self-initiated marriages where young couples elope, as opposed to arranged marriages.
- **A 2024 study conducted by Enfold Proactive Health Trust and Civic Data Lab revealed that nearly half of the 174 PCMA cases examined were self-initiated marriages, pointing towards a nuanced scenario where adolescents exercise agency in patriarchal setups by eloping.**

Key Features of the Supreme Court's Judgement:

- **Child Betrothals**: The Supreme Court highlighted a loophole in the Prohibition of Child Marriage Act (PCMA), which **bans child marriage but is silent on child betrothals.**
  - Betrothals, often used to secure future alliances, can be arranged for children, allowing families to delay marriage until children are of legal age, thereby evading the law.
  - The Court **urged Parliament to criminalize child betrothals**, deeming them a violation of children's rights to autonomy, agency, and freedom of choice.
- **Gendered Impact**: The Court acknowledged for the first time that **both boys and girls suffer due to child marriage.**
  - While girls often face physical and emotional abuse, boys are pressured into premature responsibilities, disrupting their personal and professional lives.
- **Interaction with Personal Laws**: The judgment noted the confusion over how PCMA interacts with various personal laws governing marriage across religious communities.
  - While the government suggested that PCMA should override personal laws, the Court refrained from making this ruling, awaiting future legislative amendments.
- **Protecting Childhood**: The Court emphasized that **child marriage infringes on the fundamental right to childhood, forcing minors into adult roles and denying them the ability to make informed choices**. This perpetuates poverty and social marginalization.
- **Strengthening Enforcement**: The Court recommended appointing dedicated Child Marriage Prohibition Officers (CMPOs) in every district, ensuring they focus solely on preventing child marriages without other duties that might divert their attention.

Significance of Supreme Court's Judgement:

- Child marriage often results in **social and economic hardships for those attempting to leave such unions.**
- The Supreme Court judgment urges the government to introduce comprehensive support measures, including:
  - **Skill Development & Vocational Training**: To equip women exiting child marriages with economic independence.
  - **Rehabilitation & Follow-Up Support**: Ensuring that those who exit marriages can reintegrate into society.
  - **Compensation**: Consideration of compensation for women under victim support schemes.
- **Empowering Women within Child Marriages:**
  - Some women might choose to stay in their marriages but need tools to assert their rights regarding **reproductive health, employment, and education.**
  - The judgment's focus on **sex education for adolescents** aims to empower young people in such marriages with knowledge to navigate these challenges.

Conclusion:

- Recognizing the evolving trends of child marriage, where many young individuals choose to marry on their own, the **judgment advocates for a more balanced approach that combines prevention with empowerment rather than solely relying on punitive measures.**
- This approach aligns with global best practices, which suggest that addressing socio-economic and educational factors can be more effective in eliminating child marriage than punitive action alone.

General Studies II

1. CCI's investigation into Google over real money gaming

Why in news?

The Competition Commission of India (CCI) has initiated an investigation into Google following a complaint by real money gaming (RMG) **platform** Winzo.

The complaint alleges that **Google's pilot project, which selectively allowed fantasy sports apps like Dream11 and rummy games on its Play Store, discriminates against other RMG companies and distorts market competition.**

Online Gaming in India

Types

- **E-sports**
  - Competitive video gaming where players or teams compete in popular games at local, national, and international levels.
  - **Examples:** PUBG Mobile, Call of Duty, Dota 2, League of Legends, Free Fire etc.
- **Fantasy Sports**
  - Games where users create teams of real-life athletes and earn points based on their performance in actual games.
  - **Examples:** Dream11, MyTeam11, MPL Fantasy.
- **Games of Skill**
  - Games where the outcome is primarily determined by the player's skills and decision-making rather than luck.
  - **Examples:** Chess, Rummy, Poker, Carrom.
- **Games of Chance**
  - Games where the outcome is determined largely by luck, with minimal or no skill involved.
  - **Examples**: Roulette, Slot Machines, Lottery, Dice games.

Online gaming regulations in India

- **Game of Skill vs. Chance**
  - The central principle is that only "**games of skill" are permitted**, while games of chance are generally considered gambling and prohibited.
  - However, there is no **clear definition to distinguish between game of skill and game of chance.**
- **State Level Regulations (Online gaming - a state subject)**
  - While the central government sets the basic framework, individual states can enact their own laws regarding online gaming based on their interpretation of games of skill.
- **Self-Regulatory Bodies (SRBs)**
  - The MeitY has established a system where **online gaming platforms can register with SRBs that verify if their games are compliant with the rules, and these bodies also handle user complaints.**
  - Online games, which do not involve real money, do not require any regulatory nod.
- **KYC and User Verification**
  - Online gaming platforms are required to implement **Know Your Customer (KYC) procedures** to verify user identities.
- **Nodal Ministry**
  - **Ministry of Electronics and Information Technology (MeitY)** for online gaming in India.
  - **For e-sports, the Department of Sports, under the Ministry of Youth Affairs and Sports (MYAS), has been notified as the nodal agency.**

Challenges Faced by the Online Gaming Market in India

- There is currently **no regulatory framework to govern various aspects of online gaming companies.**
- No mechanism exists for individuals to **differentiate** between legitimate gaming platforms and illegal gambling/betting sites.
- Money laundering and national security concerns are exacerbated by the growth of **illegal offshore gambling and betting markets.**

CCI Launches Probe into Google

- **About the news**
  - CCI has launched a probe into Google for **alleged abuse of its dominant position in the real money gaming (RMG) ecosystem.**
  - The CCI noted that prolonged pilot programs and non-transparent policy enforcement by Google raise concerns about anti-competitive practices.
  - It has tasked its director general to carry out a "thorough probe" into the matter within the next two months.
- **Allegations on Google**
  - **Google's 2022 Policy Update and Pilot Programme**
    - **Google introduced a one-year pilot programme in 2022**, allowing only Daily Fantasy Sports (DFS) and rummy apps on its Play Store in India.
    - **Winzo criticized the exclusion of other real money gaming (RMG) apps**, calling it "discriminatory and arbitrary."
    - Winzo alleged that Dream11, a competitor included in the pilot, gained 1.7 crore new users within two months of the programme's launch.
  - **Advertising Policy Restrictions**
    - Google restricted its advertising policy in 2022, allowing only DFS and rummy apps to host advertisements.
    - Winzo argued that this restriction constituted an abuse of Google's dominant position, as access to Google's advertising platform offered significant business growth potential.
  - **Payment Warning Messages**
    - Winzo alleged that Google discouraged users from engaging with its app by showing warning messages during payments made via Google Pay.
    - Messages included warnings like "This person might be flagged as risky" and "This is an unusually high amount," potentially deterring users.
  - **Key Allegations**
    - Winzo claimed Google's actions created unfair competition, provided undue advantages to select competitors, and hindered the growth of other RMG platforms.

Google's defence

- **Lack of Objective Definition for Games of Skill**
  - Google argued before the CCI that there is no **clear or objective definition of "games of skill" in India.**
  - Determining whether a game qualifies as a game of skill requires case-by-case evaluation based on specific features, format, and rules.
- **Pending Online Gaming Rules**
  - Google highlighted the uncertainty surrounding the online gaming rules notified by the IT Ministry.
  - These rules mandate the creation of self-regulatory bodies to decide permissible games on platforms like the **Play Store**, but their implementation is still pending.
- **Fragmented Gaming Legislations in India**
  - Google raised concerns about India's fragmented gaming laws, where different state governments have varying regulations.
  - The lack of uniformity complicates compliance for online gaming platforms.

2. Census 2025 as a Comprehensive Citizen Registry

Context

- **The 2025 Census, a crucial demographic exercise**, incorporates the **updating of the National Population Register (NPR).**
- **It marks the first step toward the establishment of the National Register of Indian Citizens (NRIC),** a key initiative aimed at distinguishing citizens from non-citizens and providing a robust framework for governance and security.
- Therefore, **it is imperative to explore the origins, objectives, processes, and challenges of the NRIC, while addressing concerns about its implementation**, **data privacy, and potential exclusionary effects.**

Historical Context and Legislative Basis of NRIC

- The **concept of the NRIC originates from the Citizenship Act of 1955**, initially **conceptualised after the 1951 Census.**
- It **gained renewed momentum following the Kargil War (1999), with the Subrahmanyam Committee** emphasising the need for a comprehensive database of citizens and non-citizens to enhance national security.
- This **led to the addition of Section 14A to the Act,** making citizen registration mandatory and authorising the issuance of identity cards.
- **Various pilot projects, such as the Multi-Purpose National Identity Card (MNIC) and the fishermen identity card, have since been tested**, providing valuable insights into implementation challenges.

Objectives and Benefits of NRIC

- **Enhancing National Security**
  - **The foremost objective of the NRIC is to enhance national security** by maintaining a verified and authenticated registry of Indian citizens.
  - In a world increasingly vulnerable to illegal immigration, **identity fraud, and cross-border threats, the NRIC serves as a safeguard.**
  - By clearly distinguishing citizens from non-citizens, **the registry aims to identify and address security risks while ensuring that the rights and privileges of Indian citizens are protected.**
  - This framework is particularly critical in areas with historical challenges related to undocumented migration.
- **Streamlining Identity Verification**
  - Another key objective of the NRIC is **to establish a single, definitive identity verification system that reduces reliance on multiple documents.**
  - This unified approach **eliminates ambiguities in verifying citizenship, a step that becomes particularly valuable in addressing legal disputes**, property ownership issues, and entitlement claims.
  - By ensuring uniformity, **the NRIC minimises discrepancies and improves administrative efficiency.**
- **Facilitating Targeted Welfare Programs**
  - A significant benefit of the NRIC is its **potential to make welfare programs more efficient and effective.**
  - By accurately identifying citizens, **the NRIC ensures that public resources are allocated to the intended beneficiaries.**
  - **This reduces leakages and improves the reach of schemes** in areas such as healthcare, education, and social security.
  - For instance, **subsidy programs or benefits reserved for citizens can be implemented without the risk of extending them to ineligible individuals**, ensuring optimal utilization of public funds.
  - Finally, **a well-implemented NRIC can enhance public trust in governance by providing citizens with a reliable identity document** that is universally recognized.
  - This **sense of security and belonging creates stronger civic engagement** and reinforces the social contract between citizens and the state.

The NPR-NRIC Process and Aadhaar vs NRIC Debate

- **The NPR-NRIC Process**
  - The process of creating the NRIC involves multiple phases. **It begins with the collection of demographic data during Census house listing operations**, followed by biometric data collection to ensure record accuracy.
  - **A crucial step involves inviting public claims and objections to enhance transparency.** This is **supplemented by a verification and appeals process,** allowing residents to challenge or amend records.
  - **Detailed inquiries into citizenship status are then conducted**, culminating in the issuance of identity cards mandated by the Citizenship Act.
  - **The 2025 Census is expected to follow the data collection patterns of the 2011 Census,** covering demographic and socio-economic details such as name, gender, nationality, and residency.
  - However**, biometric data collection will likely be omitted, as it is already available in the Aadhaar database.**
- **Aadhaar versus NRIC Dabate**
  - A common question concerns the necessity of the NRIC given the existence of Aadhaar. **It is crucial to distinguish between the two systems.**
  - **Aadhaar, a 12-digit unique identification number, is issued to all residents of India, regardless of citizenship.**
  - Its **primary function is identity verification for accessing services** like banking and subsidies.

- In contrast, **the NRIC is a citizenship verification tool, requiring proof of citizenship and serving as a definitive record of citizens.**
- **While Aadhaar is inclusive and serves all residents, the NRIC is exclusive to citizens,** making **both systems complementary but distinct in purpose.**

Challenges of Implementing Nationwide NRIC:

- **Documentation Challenges:**
  - Many individuals, especially in rural areas, lack proper documentation to prove their citizenship.
  - These challenges are compounded for **marginalized groups such as tribal communities, migrants, and women** who may have limited access to or knowledge of legal records.
  - The process must account for such disparities to prevent widespread exclusion.
- **Privacy and Data Security:**
  - A nationwide NRIC would involve **collecting and managing vast amounts of sensitive demographic and citizenship data.**
  - Concerns about data misuse, unauthorized access, and surveillance are significant, particularly in the absence of robust data protection laws.
  - Safeguarding this data is critical to **maintaining public trust and preventing potential human rights violations.**
- **Exclusion Fears:**
  - Large-scale verification exercises risk alienating vulnerable populations, including those with limited education, financial resources, or access to legal aid.
  - Exclusion fears **could lead to social unrest, protests, and legal challenges**, underscoring the importance of designing an inclusive and transparent process.

Way Forward

- **Lessons from Assam on the Challenges of Implementation**
  - **The Assam experience** with the National Register of Citizens (NRC) **offers valuable insights into the potential challenges of a nationwide NRIC.**
  - **The Assam NRC, updated in 2019 under the Assam Accord, aimed to identify illegal immigrants**, particularly from Bangladesh.
  - However, **stringent documentation requirements resulted in the exclusion of many rural and less-educated residents**, raising concerns about fairness and accuracy.
  - **Unlike Assam's NRC, a national NRIC would not be governed by state-specific accords, but Assam's case underscores the humanitarian and administrative difficulties** that could arise on a larger scale.
- **Addressing Privacy Concerns**
  - Privacy concerns also persist, despite the Supreme Court's guidelines in the Aadhaar case.
  - The **potential misuse of demographic and biometric data necessitates robust data protection measures.**
  - Additionally, **fears of exclusion among communities with limited documentation remain a significant concern.**
  - **Implementing such a massive exercise requires streamlined procedures, logistical planning, and targeted awareness campaigns** to address these issues.
- **Citizen Engagement and Moving Forward**
  - For the NRIC initiative to succeed, **citizen participation is paramount.**
  - **Transparency and fairness depend on citizens staying informed**, verifying their records, and understanding their rights.
  - **Public awareness campaigns must ensure that all residents are proactive and engaged in the process.**
  - **Equitable implementation requires addressing exclusion fears** and ensuring that the NRIC is inclusive, effective, and reflective of India's diverse population.

Conclusion

- **The 2025 Census and the NRIC initiative** represent a significant step toward establishing **a comprehensive and verified citizen registry.**
- While it promises to enhance governance and national security, **challenges related to data privacy, exclusion, and logistical execution cannot be overlooked.**
- **Drawing lessons from the Assam** experience and maintaining **transparency throughout the process will be crucial.**

3. Wikipedia and ANI's Defamation Suit

Background:

- Earlier in 2024, Indian news agency **Asian News International (ANI)** filed a defamation suit against the **Wikimedia Foundation** and three Wikipedia administrators.
- ANI alleged that defamatory statements on its Wikipedia page tarnished its reputation.
- The Delhi High Court directed Wikimedia to disclose the details of these administrators, marking a significant moment in the case.

Key Allegations by ANI:

- **Defamatory Statements**: ANI claimed that its Wikipedia page included statements accusing it of:
  - Acting as a **propaganda tool for the central government.**
  - Distributing content from **fake news websites.**
  - Misreporting events.
- **Editing Issues**:
  - Attempts by ANI-associated editors to amend these claims were reversed or modified by independent editors.
  - The page was later placed under **'extended confirmed protection'**, restricting further edits by ANI-affiliated editors.
- **Legal Accusations**:
  - ANI argued that Wikimedia violated **safe-harbour provisions** under the **Information Technology Act, 2000**, and the IT (Intermediary Guidelines and Digital Media Ethics Code) Rules, 2021.
  - It demanded that Wikimedia and its administrators be held liable for hosting and publishing defamatory content.

How Does Wikipedia Function?

- Wikipedia is a **community-driven platform**, with content created and edited by volunteers. Key features of its structure include:
- **Editorial Process**:
  - **Anyone can edit articles, provided edits are backed by reliable and verifiable sources.**
  - **Original research is prohibited**, and any unpublished arguments or analyses are removed.
  - Editing histories of pages are transparent and accessible via the "view history" tab.
- **Protection Measures**:
  - Pages on controversial topics can be placed under **'extended confirmed protection'** or **'full protection'** to maintain neutrality.
  - Extended protection limits edits to experienced users, while full protection restricts editing to administrators.
- **Roles and Responsibilities**:
  - **Administrators**: Selected by community elections based on reputation. Wikimedia is not involved in their selection.
  - **Wikimedia's Role**: Limited to providing the technical infrastructure for the platform and supporting editors.

Legal & Structural Implications:

- **Safe-Harbour Status**:
  - The **safe-harbour provision** protects intermediaries like Wikimedia from liability for content posted by users.
  - ANI's lawsuit challenges this status, potentially making Wikimedia accountable for the content on Wikipedia.
- **Impact on Wikipedia**:
  - **Loss of Anonymity**: If editor details are disclosed, it could deter volunteers from contributing, fearing retaliation.
  - **Global Precedents**: Countries like China, Russia, and Pakistan have censored Wikipedia, and similar actions in India could damage its democratic reputation.
- **Initial Directives**:
  - The Delhi High Court initially directed Wikimedia to provide administrator details in a sealed cover.
- **Potential Blocking**:

- If Wikipedia fails to comply, the court has hinted at the possibility of blocking the platform in India.

Wider Implications:

- **Impact on Democracy**:
  - **Wikipedia's open and democratic structure supports free knowledge sharing**. Judicial or legislative interference could undermine this ethos.
  - India's handling of this case will reflect its stance on balancing freedom of speech with accountability.
- **Comparison with Other Nations**:
  - Countries like **China** and **Russia** have taken restrictive actions against Wikipedia, leading to censorship. India risks aligning with these precedents.

Conclusion:

- This defamation case raises critical questions about **intermediary liability, freedom of expression, and the functioning of community-driven platforms like Wikipedia.**
- While ANI seeks accountability, the broader implications for Wikipedia's operations and India's democratic values remain significant.
- A balanced approach will be crucial to uphold both accountability and the open nature of platforms like Wikipedia.

4. The Consensus Republic: A Lesson for Today's Parliamentarians from the Constituent Assembly

Context

- **On November 26, 2024, India commemorates the 75th anniversary of the adoption of its Constitution**, a landmark event that established the framework for the nation's democratic governance.
- **The achievements of the Constituent Assembly**, whose members shaped this seminal document, **remain a source of inspiration and guidance for contemporary politics.**
- As India celebrates this milestone, **it is imperative to reflect on these foundational ideals and draw lessons for the present and future functioning of its Parliament.**

The Spirit of the Constituent Assembly

- **A Commitment to Dialogue and Consensus Building**
  - The Constituent Assembly's approach was **characterised by a commitment to dialogue and consensus-building.**
  - **Members represented diverse ideological, cultural, and regional backgrounds**, fostering a pluralistic and inclusive environment.
  - This **diversity did not lead to chaos but rather enriched the process of drafting the Constitution.**
  - **B.R. Ambedkar, in his concluding speech to the Assembly on November 25, 1949, eloquently praised the Assembly** for avoiding the pitfalls of rigid party discipline.
  - He **highlighted the value of dissenting voices, noting that even though he often disagreed with their ideological positions,** these contributions enlivened debates and clarified constitutional principles.
- **A Stark Contrast to Present Day Parliamentary Culture**
  - **This respectful engagement offers a stark contrast to the present-day parliamentary culture,** which is increasingly marred by polarisation and disruptions.
  - **Ambedkar's acknowledgment of dissent as a tool for refinement underscores the need for contemporary legislators to view ideological differences as opportunities** for enrichment rather than obstacles to governance.

Evolution of Indian Parliamentary Democracy Over Past Few Decades

- **Parliamentary Democracy: A Diminished Legacy**
  - **India's parliamentary democracy,** once hailed as the cornerstone of the nation's governance, **has witnessed a noticeable decline in its functionality and relevance** over the past few decades.
  - The **ideals set by the Constituent Assembly,** robust debate, consensus-building, and prioritising the nation's collective welfare, **have gradually been overshadowed by partisanship, disruptions, and procedural inefficiencies.**

- This **decline is reflected across multiple dimensions**, including the number of sittings, the quality of legislative debates, and the transparency of the decision-making process.

- **Declining Parliamentary Sittings**
  - **In the early years** of independent India, **parliamentary sessions were more frequent, and debates were comprehensive.**
  - The **first Lok Sabha (1952–57) convened for 677 days, dedicating significant time to legislative and policy discussions.**
  - However, **in stark contrast, recent decades have seen a drastic reduction in parliamentary sittings.**
  - **Since the 1990s, Lok Sabha sessions have averaged only 345 days** over a five-year period.
  - The **17th Lok Sabha set a troubling precedent by sitting for just 274 days** during its entire term.
  - This **decrease signifies a diminishing commitment to the detailed deliberation and accountability** that are the lifeblood of parliamentary democracy.
- **Erosion of Legislative Scrutiny**
  - One of the most critical functions of Parliament is **to scrutinise and refine legislation.**
  - Historically, this was achieved by referring bills to Parliamentary Committees, where members could analyse proposals in-depth, consult experts, and engage with stakeholders.
  - **This practice has witnessed a steep decline. In the 15th Lok Sabha, 71% of bills were sent to committees,** ensuring thorough examination.
  - **By the 17th Lok Sabha, this figure had fallen to a mere 16% and this shift undermines the legislative process,** as complex bills are often passed without adequate discussion or revision.
- **Waning Debate on the Union Budget**
  - **The Union Budget**, a cornerstone of economic planning and resource allocation, **has historically commanded significant attention in Parliament.**
  - **Prior to 1990, discussions on the budget spanned an average of 120 hours**, allowing members to thoroughly debate fiscal priorities and policies.
  - **This time has since dwindled to just 35 hours in recent years**, with instances like 2023, 2018, and 2013 seeing the entire budget passed without any discussion.
  - **Such trends not only diminish the role of Parliament in fiscal oversight but also weaken its ability to represent the priorities** and concerns of the citizenry.
- **Disruptions and Polarisation**
  - Parliamentary **proceedings have increasingly been disrupted by partisan conflicts**, resulting in wasted time and resources.
  - **For example, the 15th Lok Sabha lost 37% of its scheduled time to disruptions**, while the **16th Lok Sabha lost 16%.**
  - These **disruptions often stem from ideological polarisation** and a lack of willingness to engage in meaningful dialogue.
  - **Such behaviour contrasts sharply with the respectful, issue-based disagreements** that characterised the debates of the Constituent Assembly.

Lessons for Today's Parliamentarians from the Constituent Assembly

- **Commitment to Consensus and Nation-Building**
  - **The members of the Constituent Assembly recognised the enormity of their task** and despite their diverse political and ideological beliefs, **they shared a collective commitment to building a cohesive nation.**
  - Their **deliberations reflected an unwavering focus on the common good**, transcending personal or partisan interests.
  - In contrast, contemporary parliamentary proceedings are often mired in polarization and adversarial politics.
  - **The spirit of consensus-building is frequently overshadowed by partisan conflicts** that hinder legislative progress.
  - **Today's parliamentarians must draw from the Assembly's example, setting aside differences to address critical national issues** like poverty, inequality, unemployment, healthcare, and education.
- **Embracing Constructive Dialogue and Respectful Disagreement**
  - **Constituent assembly Members often disagreed vehemently**, yet their debates were marked by respect and a focus on ideas rather than personal attacks.

- **B.R. Ambedkar** acknowledged the valuable contributions of dissenters like **H.V. Kamath, K.T. Shah**, and others, even when their views diverged from the majority. **Their disagreements enriched the discussions** and refined the Constitution's provisions.
- **For today's parliamentarians, this serves as a powerful reminde**r that dissent, when expressed respectfully, can be a driving force for progress.
- The **current culture of frequent disruptions, walkouts, and hostile rhetoric diminishes the quality of parliamentary debate** and erodes public trust in the institution.
- **By creating an environment where diverse perspectives are welcomed** and debated in good faith, **Parliament can become a forum for innovation and collective problem-solving.**

- **Bridging Ideological Divides**
  - The **Constituent Assembly was a microcosm of India's diversity**, encompassing members from various regions, communities, and political backgrounds.
  - **Despite this diversity, the Assembly succeeded in crafting a unified vision** for the country.
  - This was possible because members recognised that their shared goal of nation-building was greater than their ideological differences.
  - **Today's Parliament operates in a more complex political landscape**, with strong party systems and entrenched ideological positions.
  - However, **the need to bridge divides remains as urgent as ever.**

Conclusion

- **The 75th anniversary of the Indian Constitution is not just a celebration** of a historic achievement but a call to action.
- **By learning from the Constituent Assembly's ethos, contemporary parliamentarians can address the democratic deficits** that have crept into India's parliamentary culture.
- The **legacy of respectful disagreement, collective vision, and nation-building offers a roadmap for reimagining the future of India's democracy.**

5. Cooperatives in India

What are Cooperatives?

- Cooperatives are **autonomous associations of people united voluntarily to meet common economic, social, and cultural needs through a jointly-owned and democratically controlled enterprise.**
- In India, cooperatives play a vital role in fostering inclusive economic development, particularly in rural areas.

History of Cooperatives in India:

- **Pre-Independence Era**:
  - **1904**: The **Cooperative Credit Societies Act** was passed to address rural indebtedness by enabling the formation of credit cooperatives.
  - **1912**: The **Cooperative Societies Act** extended the scope of cooperatives to non-credit sectors, encouraging their establishment across various industries.
  - Early cooperatives focused on agricultural credit, marketing, and consumer goods.
- **Post-Independence Era**:
  - Cooperatives were integrated into India's Five-Year Plans to support rural development and self-reliance.
  - The **National Cooperative Development Corporation (NCDC)** was established in 1963 to provide funding and promote cooperatives.
  - The **White Revolution (1970s)** spearheaded by **Amul**, a dairy cooperative, demonstrated the transformative potential of cooperatives in rural economies.

Features of Cooperatives:

- **Democratic Structure**: Each member has an equal say, irrespective of their capital contribution.
- **Member-Owned**: Cooperatives are owned and controlled by their members.
- **Profit Sharing**: Profits are distributed equitably among members or reinvested for the organization's benefit.
- **Community-Oriented**: They aim to serve the interests of members and improve local economies.

Types of Cooperatives:

- **Agricultural Cooperatives**: Provide credit, inputs, and marketing support to farmers. Examples include Primary Agricultural Credit Societies (PACS) and Marketing Cooperatives.
- **Credit Cooperatives**: Facilitate affordable loans to members, often in rural and semi-urban areas. Examples are Urban Cooperative Banks (UCBs) and Cooperative Credit Societies.
- **Consumer Cooperatives**: Operate stores to supply essential goods at reasonable prices.
- **Housing Cooperatives**: Help members acquire affordable housing.
- **Worker Cooperatives**: Owned and managed by workers, they provide employment and equitable income distribution.
- **Dairy Cooperatives**: Promote milk production and marketing. The National Dairy Development Board (NDDB) is a prominent example.

Legal Framework & Regulations for Governing Cooperatives:

- **Legal Framework**:
  - The item "Cooperative Societies" is in the State List (via entry 32).
  - **Cooperative Societies Act, 1912**: The first comprehensive law for cooperative societies in India.
  - **State Cooperative Acts**: Since cooperatives are a state subject, individual states have their own legislation for regulating cooperative societies.
    - No state government official can exercise any control on multistate cooperative societies.
  - **Multi-State Cooperative Societies Act, 2002**: Governs cooperatives operating in more than one state.
- **Regulatory Bodies**:
  - **Registrar of Cooperative Societies (RCS)**: Oversees registration, administration, and functioning at the state level.
  - **Reserve Bank of India (RBI)**: Regulates Urban Cooperative Banks and credit cooperatives.
  - **Ministry of Cooperation**: Established in 2021 to strengthen and streamline the cooperative movement at the national level.

Challenges Faced by Cooperatives:

- **Lack of Professional Management**: Limited expertise often hampers operational efficiency.
- **Political Interference**: Over-reliance on government support can lead to external control.
- **Limited Access to Capital**: Difficulty in raising funds restricts growth and diversification.
- **Inefficient Governance**: Internal conflicts and weak leadership impact decision-making.
- **Lack of Modernization**: Many cooperatives lag in adopting technology and innovative practices.

Successful Cooperatives in India:

- **Amul**: A world-renowned dairy cooperative that transformed rural livelihoods through the White Revolution.
- **Indian Farmers Fertiliser Cooperative (IFFCO)**: One of the largest fertilizer cooperatives in the world.
- **Self-Employed Women's Association (SEWA)**: Empowering women through cooperative-led initiatives.

About International Cooperative Alliance (ICA) Global Conference:

- The **ICA Global Conference** is organized by the **International Cooperative Alliance (ICA)**, founded in **1895** to promote and unite cooperatives worldwide.
- The conference is held periodically to discuss global cooperative challenges, opportunities, and strategies for growth and sustainability.
- It has evolved as a key platform for knowledge sharing and policy advocacy in the cooperative sector.
- **Objectives:**
  - To **strengthen the global cooperative movement by fostering collaboration and sharing best practices**.
  - To align cooperative initiatives with global goals, such as the **United Nations' Sustainable Development Goals (SDGs)**.
  - To address emerging issues like **climate change, digital transformation, and economic inequality through cooperative frameworks.**
- **Members:**

- The ICA represents over **315 cooperative organizations from more than 110 countries**.
- Members include cooperatives from diverse sectors like **agriculture, banking, housing, consumer services, and worker cooperatives.**
- Participants in the global conference include cooperative leaders, policymakers, academics, and representatives from international organizations.

News Summary:

- India inaugurated the **International Cooperative Alliance (ICA) Global Cooperative Conference 2024** in New Delhi on November 25, with Prime Minister Narendra Modi leading the event alongside Bhutan's Prime Minister Tshering Tobgay.
- The five-day conference, hosted by Union Home and Cooperation Minister Amit Shah, has brought together 3,000 delegates, including 1,000 representatives from over 100 countries.
- **Key Highlights from PM Modi's Speech:**
  - **Global Cooperative Movement**: PM Modi emphasized the role of cooperatives in addressing global challenges, noting that India has over **eight lakh cooperatives** active across the country.
  - **Global Financing for Cooperatives**: He advocated for the creation of large international financial institutions to fund cooperatives worldwide.
  - **Circular Economy and Startups**: He called for linking cooperatives to the **circular economy** and promoting **startups** within the cooperative framework to ensure innovation and climate resilience.
  - **Opportunities in Crisis**: Highlighting current global challenges, he stated that these crises offer significant opportunities for the cooperative movement to thrive and adapt.
- **Bhutan's Gelephu Mindfulness City**: Bhutanese PM Tobgay highlighted the **Gelephu Mindfulness City**, a 2,500 sq. km zero-carbon smart city project. The city aims to embody cooperative values, with all Bhutanese citizens as shareholders.
- **India-Bhutan Collaboration**: The project seeks Indian investments in sectors like infrastructure, IT, hospitality, and wellness, with active discussions involving Indian companies such as the Adani Group.

6. The Long Fight for Accessibility, Dignity in Indian Prisons

Context

- **India's prisons** have long been **a site of systemic violence, neglect, and human rights violations.**
- A particularly vulnerable group within the prison population, **prisoners with disabilities, faces even harsher conditions due to systemic apathy** and structural inaccessibility.
- Therefore, **it becomes imperative to explore the historical and ongoing challenges in Indian prisons, focusing on the rights of prisoners with disabilities**.

A History of Neglect and Unfulfilled Promises

- **Shocking Incidents and Early Calls for Reform**
  - The infamous **Bhagalpur blindings of 1979-80 exposed the depths of brutality** in India's prison system.
  - In these incidents, **acid was poured into the eyes of prisoners,** rendering them blind and causing public outrage.
  - **This event brought into sharp focus the inhumanity prevalent in correctional facilities,** sparking debates over prison reform.
- **Formation of the Mulla Committee**
  - The **Mulla Committee was subsequently constituted in the early 1980s to address these issues**
  - The committee's **report presented a wide-ranging set of recommendations, including improvements to prison infrastructure,** better training for prison staff, regular inspections, and safeguards against torture and abuse.
  - It also **emphasised reducing overcrowding by addressing delays in the judicial system**.
  - However, despite the thoroughness of the Mulla Committee's analysis, **its recommendations were largely ignored.**
- **Continued Crises and Judicial Interventions**
  - **By the 1990s, little progress had been made**, and the crisis in prisons continued to intensify.
  - **In 1996, a letter from an inmate of Bengaluru's Central Jail to the Chief Justice of India highlighted the appalling conditions** faced by prisoners, **leading to the landmark Rama Murthy vs. State of Karnataka case.**

- The **Supreme Court identified persistent issues such as overcrowding, trial delays, and the mistreatment** of prisoners.
- The **judgment reiterated the Mulla Committee's recommendations,** urging the government to act decisively to address these systemic failures.

- **Unaddressed Underlying Problems**
  - Despite the judicial intervention, **the underlying problems have remained largely unaddressed.**
  - **Data from 2022 shows that Indian prisons operate at 130% of their capacity on average,** with **some exceeding 200%, creating conditions that are ripe for abuse, violence,** and neglect.
  - **Overcrowding exacerbates tensions between inmates and limits the resources available for their care,** leading to poor sanitation, inadequate medical facilities, and insufficient food supplies.
  - This unrelenting pressure on the system reflects decades of inaction despite repeated warnings.
- **The Cycle of Unfulfilled Promises**
  - The **recurring pattern of neglect and unfulfilled promises is evident in the Indian government's response** to prison reform over the years.
  - **Policies and guidelines have been drafted**, and commissions have been formed, **yet the implementation of these measures remains irregular at best.**
  - For instance, **while the Ministry of Home Affairs released the Model Prison Manual in 2016, many states have failed to adopt its provisions**, citing a lack of funds and administrative challenges.
  - This **cycle of inaction is compounded by societal apathy toward the plight of prisoners.**

An Analysis of the Struggles of Prisoners with Disabilities

- **Disproportionate Abuse and Violence**
  - Prisoners with disabilities are especially **vulnerable to abuse, both from fellow inmates and prison staff.**
  - **Physical impairments, limited mobility, or dependence on others for basic needs make them easy targets for violence,** exploitation, and harassment.
  - The **lack of oversight in many prisons further enables such mistreatment to go unchecked.**
  - For instance, **accounts of prisoners with disabilities being subjected to verbal abuse, physical assaults, or being denied essential items have surfaced in news reports** and human rights investigations.
- **Inaccessibility of Prison Infrastructure**
  - **Indian prisons, largely designed with able-bodied individuals in mind**, are rife with structural barriers that make daily life extraordinarily difficult for prisoners with disabilities.
  - **A 2018 audit of Delhi's Tihar, Rohini, and Mandoli jails** conducted by the Nipman Foundation **revealed severe accessibility gaps.**
  - **Prison cells often lack ramps, railings, or modifications that accommodate mobility aids** and prisoners in wheelchairs may find themselves unable to navigate their cells or access shared spaces.
  - **Bathrooms and toilets frequently lack basic accessibility features** such as grab bars or adequate space for wheelchairs, leaving prisoners unable to attend to their hygiene needs with dignity.
  - **Recreational spaces, visitation rooms (mulaqat rooms), and water coolers are often located in areas inaccessible to individuals with mobility impairments**, further isolating them from their peers and visitors.
- **Denial of Medical Care and Special Assistance**
  - **Prisoners with disabilities often require medical care**, assistive devices, or personal assistance **to manage their conditions.**
  - However, **prisons frequently fail to provide these essential services,** for instance, individuals requiring medication, physiotherapy, or specialised diets face delays or outright denial of these necessities.
  - The **absence of trained personnel to assist with basic tasks** such as dressing, eating, or using the restroom **further exacerbates their plight.**
- **Psychological Impact and Social Isolation**
  - The **challenges faced by prisoners with disabilities extend beyond physical suffering and the combination of abuse**, inaccessibility, and neglect leads to profound psychological distress.
  - **Many prisoners experience depression, anxiety, and a sense of hopelessness** as they navigate environments **that fail to accommodate their needs.**
  - Moreover, **the inability to communicate effectively or participate in communal activities compounds their isolation,** stripping away any semblance of normalcy or rehabilitation.

Legal Frameworks, Unrealised Rights and the Role of Society and State

- **SC's Observation in Upendra Baxi vs. State of U.P. (1983) and International Laws**
  - **India's Constitution guarantees the right to equality, freedom, and dignity for all,** including prisoners.
  - The **Supreme Court has reaffirmed these principles in several judgments, including Upendra Baxi vs. State of U.P. (1983),** which emphasised the need for humane living conditions in prisons.
  - **Internationally, India is bound by the Nelson Mandela Rules (2015)** and the **United Nations Convention on the Rights of Persons with Disabilities.**
  - **Both mandate reasonable accommodations for prisoners with disabilities** and prohibit inhumane treatment.
- **Rights of Persons with Disabilities Act (2016)**
  - Domestically, **the Rights of Persons with Disabilities Act (2016) prohibits the abuse and neglect of persons with disabilities**, and the **Ministry of Home Affairs' Model Prison Manual (2016) outlines standards** for dignified living conditions.
  - In 2024, the Ministry released guidelines to make prisons more accessible, **however, the disconnect between these policies and their implementation is stark.**
- **The Role of Society and the State**
  - **The lack of political will to reform prisons stems, in part, from societal indifference**.
  - **Many view prisoners as deserving of cruelty,** perpetuating a culture that justifies neglect and abuse.
  - However, **the state bears an unequivocal responsibility to uphold the rights of all prisoners,** including those with disabilities.
  - **Since prisons fall under the jurisdiction of state governments, these authorities must ensure compliance** with laws and international obligations.

Conclusion

- **The condition of Indian prisons reflects a broader failure to respect human rights** and implement meaningful reforms.
- **For prisoners with disabilities, the challenges are even more acute, compounded by structural inaccessibility**, neglect, and societal apathy.
- **While India's legal frameworks** and international commitments appear robust on paper, **their enforcement remains elusive.**

7. Challenges in Urban Local Governance

Why in News?

The **Comptroller and Auditor General (CAG) of India has flagged significant concerns about the health of urban local bodies (ULBs) in 18 states, which cater to 241 million residents.**

The report reveals systemic weaknesses in **financial management, staffing, and functional autonomy**, undermining the goals of the **74th Constitutional Amendment**.

What is the 74th Constitutional Amendment?

- **About:** The 74th Constitutional Amendment Act of **1992** gave constitutional status to Urban Local Bodies (**ULBs**) and established them as the **lowest unit of governance in cities and towns**.
- **Deals with:** It established a **framework for urban governance** in India by **decentralisation** of powers and authority.
- **Constitutional provisions:**
  - **The amendment added Part IX-A to the Constitution**, which deals with municipalities and is made up of **Articles 243-P to 243-ZG**.
  - The amendment mandates the devolution of 18 functions to ULBs [**Schedule 12 (Article 243W)**], including urban planning, public health, and water supply.

Need for Robust ULBs:

- With 50% of India's population expected to reside in urban areas by 2050, strong urban governance systems are essential.
- Empowered ULBs can play **a pivotal role in ensuring economic, environmental, and democratic vibrancy in cities**.

Key Findings from the CAG Report on ULBs:

- **Incomplete devolution of powers:**
  - The 1992 amendment aimed to decentralise 18 functions to ULBs, but **only 4 functions have been devolved with complete autonomy** after 30 years.
  - States have failed to comply with the "in-spirit reading" of the amendment, as observed in 393 ULBs across 18 states including Andhra Pradesh, Assam, Haryana, Himachal Pradesh, Odisha, MP, Maharashtra, etc.
- **Financial gaps and dependency:**
  - **Urban local bodies face a 42% gap between their resources and expenditure.**
  - **Only 32% of revenue is internally generated**, with the rest coming from Union and state government funding.
  - Property tax, a major revenue source, showed only 56% realisation of the total demand.
- **Limited expenditure on development:**
  - Merely 29% of ULB expenditure is directed towards developmental and programmatic work.
  - Insufficient investment in civic programs **hampers urban growth and quality of life.**
- **Staffing issues:**
  - Urban bodies face an average 37% vacancy rate in sanctioned staff positions.
  - Recruitment powers are restricted, with ULBs in 16 states having limited or no control over staffing.

Call for Strengthening ULBs:

- **Recommendations by CAG:**
  - **Enhance financial autonomy:** Grant ULBs control over taxation and user charges.
  - **Improve revenue collection mechanisms:** Streamline property tax and other revenue sources.
  - **Focus on fund utilisation:** Ensure optimal use of allocated funds for development.
  - **Strengthen decentralisation:** Revive the agenda of empowering ULBs politically and administratively.
- **Call for collaboration:** Since empowering ULBs is a national priority, cooperation between the government, academia, and civil society is essential to reaching this objective.

Conclusion:

- The CAG's findings emphasise the urgent need to **revamp the financial and administrative structures of ULBs.**
- Empowering these **"first-mile governments" is critical for sustainable urban governance** and achieving the goals of the 74th Constitutional Amendment.
- Therefore, States must facilitate laws and policies to strengthen ULBs. Urban local bodies should be actively involved in planning and governance functions.

8. Supreme Court Verdict on Property Rights and State Acquisition of Private Property

Why in News? The Supreme Court of India's (SC) judgement in **the Property Owners Association & Ors v State of Maharashtra case,** marked a shift in how it views state's acquisition of private property.

Background of the Property Owners Association & Ors v State of Maharashtra Case:

- **This case concerned a Maharashtra law** allowing the acquisition of certain privately owned dilapidated buildings in Mumbai. **The law claimed to enact Article 39(b) of the Constitution of India.**
- **The Bombay HC upheld this law in 1991**, stating it was protected under **Article 31C**, originally introduced in 1971 to promote socialist objectives under the Indira Gandhi government.

Understanding Articles 39(b) & 31C:

- **Article 39(b)**: It requires the state to ensure "ownership and control of the material resources of the community are so distributed as best to subserve the common good."
- **Article 31C:**
  - **It has two parts:**
    - **First part:** Exempts laws promoting Article 39(b) or (c) from being challenged for inconsistency with Articles 14, 19, or 31.

- **Second part:** Shields these laws from court scrutiny, provided they claim to uphold Article 39(b) or (c). However, this part was struck down in **the Kesavananda Bharti case (1973).**
- Later, the scope of Article 31C was expanded by **the 42nd Amendment in 1976** but was partially invalidated by the **Minerva Mills case (1980)**.

The Property Owners Association & Ors v State of Maharashtra Case:

- **About the judgement:**
  - **It is led by a 9-judge bench of the SC** (chaired by the Chief Justice of India [CJI]), and addressed two primary questions:
    - **The current status of Article 31C** of the Constitution of India and whether it still exists despite previous amendments being struck down.
    - **The scope of Article 39(b)** and its implications for the state's authority to acquire private property as "material resources of the community."
- **The status of Article 31C:**
  - The case challenged the Bombay HC's interpretation, contending that the Minerva Mills ruling effectively invalidated Article 31C.
  - **The court clarified** that Minerva Mills only removed the expanded scope but preserved the original version from Kesavananda Bharti, **keeping Article 31C operative in its original form.**
  - All justices on the bench agreed that **this interpretation remains consistent with constitutional principles.**
- **Interpretation of Article 39(b):**
  - The court next examined whether Article 39(b) allows the acquisition of all private property as community resources.
  - Referring to Justice Krishna Iyer's earlier views, the court clarified that **not all private property falls under "material resources of the community."**
  - **The court established four criteria** to determine if private property could be deemed a community resource:
    - **Nature of the resource:** Its inherent characteristics.
    - **Community impact:** How the resource affects societal well-being.
    - **Resource scarcity:** Availability of the resource.
    - **Concentration consequences:** Risks of resource concentration among private owners.

Diverging Opinions in the Property Owners Association & Ors v State of Maharashtra Case:

- **Majority opinion:** Emphasised the shift from a purely public-investment economy to one with both public and private investments, suggesting that not all private property qualifies as community resources.
- **Justice Nagarathna's concurrence:** Supported a broader interpretation, arguing that changing socio-economic policies shouldn't alter Article 39(b)'s intent.
- **Justice Dhulia's dissent:** Advocated for including all private resources under community resources to address ongoing wealth inequality.

Conclusion:

- The SC's decision in this case has **redefined the interpretation of Article 39(b) while retaining the original version of Article 31C**.
- This verdict reflects the judiciary's approach to **balancing state welfare objectives with private property rights**, adapted to India's evolving socio-economic landscape.

9. Test for Determining Minority Educational Institution (MEI) Status

Why in News?

Without determining whether Aligarh Muslim University (AMU) is a minority institution or not, a 7-judge bench of the Supreme Court overruled by a 4:3 majority a 1967 judgment by a 5-judge bench in Azeez Basha case.

The majority opinion **laid down elaborate parameters** for testing the minority character of an institution and tasked a regular bench to adjudicate the 57-year-old controversy based on the parameters.

Background of the AMU Minority Status Case:

- **AMU's transformation from MAO college (1920)**
  - The **Muhammadan Anglo-Oriental (MAO) college, established in 1877, was converted to AMU in 1920** by a central legislature Act.
  - The government argued this conversion changed its minority status, which became a pivotal issue in later legal debates.
- **Azeez Basha case (1967):** The **SC held that AMU was not established by the Muslim community** but by a central legislature Act in 1920, disqualifying it as a minority institution under **Article 30** of the Constitution.
- **Government amendments and legal developments (1981-2006):**
  - **1981:** An amendment to the AMU Act declared **AMU was created by the Muslim community for their educational advancement.**
  - **2005:** AMU **introduced 50% reservation for Muslims in postgraduate medical courses**.
  - **2006:** The Allahabad HC ruled against AMU's minority status, annulling the 1981 amendment and the 50% reservation policy.
- **SC referral (2019):** The issue was brought before the Supreme Court, and in 2019, it was referred to a seven-judge Bench.

Constitutional Protections and Benefits of MEIs:

- **Article 30:** Under Article 30(1), minorities have the right to establish and administer educational institutions.
- **Article 15(5):** MEIs are granted special privileges, such as control over admissions and staff hiring, and exemption from reservations for SCs and STs under this provision.
- **Benefits of minority status:** Minority institutions can reserve up to 50% seats for minority students and enjoy autonomy in administration, fostering cultural and linguistic diversity.

SC's Criteria for Determining MEI Status:

- **The SC identified the following:**
  - **The institution's purpose** should primarily aim to conserve minority language and culture.
  - **Minority institutions may admit non-minority students** without losing their minority status.
  - **Secular education does** not undermine minority character.
  - **Government-aided institutions** cannot compel religious instruction; those fully state-funded cannot offer it.
- **Test for determining minority character:** The SC devised **a two-step test** to identify whether an institution holds a minority character.

Two-Fold Test to Establish Minority Status:

- **Establishment:**
  - Courts must investigate the origin and purpose of an institution's establishment, identifying community involvement in its formation.
  - **Proof of establishment includes letters, funding records, and communications affirming that the institution's aim was predominantly for the minority community's benefit.**
- **Administration:**
  - MEIs are not obligated to appoint only minority members to administrative roles. However, administrative setup should reflect minority interests.
  - For pre-1950 institutions, courts must review whether the administration affirmed the minority's interest on the Constitution's commencement date.

Implications of SC Determining MEI Status Test:

- **Administrative autonomy affirmed:** This is seen as a significant development for institutions like St Stephen's College, which is currently in a dispute with Delhi University (DU) over its principal's reappointment process.
- **Reignites minority status debate:**
  - The ongoing legal questions surrounding **Jamia Millia Islamia's (JMI)** minority status are closely connected to the AMU case.
  - According to JMI's standing counsel, the SC's decision on AMU's minority status will likely affect JMI's case as both involve similar legal principles about institutions created by legislative acts.

Conclusion:

- The SC's verdict **brings AMU closer to securing its minority status** by clarifying criteria for minority character under Article 30. **However, the final determination of AMU's status awaits further review.**
- This landmark judgment sets a precedent for MEIs, preserving minority rights in India's educational framework while ensuring alignment with constitutional provisions.

10. India-US Ties under Trump as US President

Why in News? As Donald Trump has gained the votes required to become the U.S.'s 47th President, we will try to analyse India-US ties during Trump 1.0 and what Trump 2.0 means for India.

Trump's First Term - Strengthening Indo-US Strategic Ties:

- **Overview:**
  - During Donald Trump's presidency (2017-2021), the United States and India **transitioned from strategic partners to indispensable allies**.
  - This period saw **unprecedented cooperation in defence, counter-terrorism, and energy** but also presented certain challenges, particularly around trade and immigration.
- **Enhanced cooperation in defence, terrorism, and energy:**
  - **High-level diplomatic engagement:** PM Narendra Modi's 2017 White House visit set the tone for close diplomatic ties, culminating in Trump's historic visit to India in 2020.
  - **Counter-terrorism support:** The US firmly supported India's stance on terrorism, including backing the designation of **Jaish-e-Mohammad chief, Masood Azhar,** as a global terrorist and advocating Pakistan's grey-listing by the FATF.
  - **Defence technology and trade:** Under Trump, **India's defence imports from the US reached $18 billion**, and India gained access to advanced American defence technology, strengthening military capabilities and diversifying defence procurement.
  - **Strategic energy partnership:** The 2018 Strategic Energy Partnership facilitated India's import of American crude and LNG, **making the US India's sixth largest source of hydrocarbon imports.**
- **Confronting China as a common strategic rival:**
  - Trump's policies framed China as a **mutual threat**, enhancing Indo-US alignment in strategic goals.
  - His administration **revived the Quad alliance** and promoted the **Indo-Pacific strategy** to counter China's growing influence.

Trump's First Term - Issues in the India-US Ties:

- **Energy restrictions:** Trump pressured India to **halt oil imports from Iran**, marking a stark shift in India's energy sourcing strategy.
- **Trade and tariffs:** Trade disputes arose as Trump demanded **lower tariffs,** notably on Harley Davidson motorcycles, reflecting his broader stance on a fairer trade balance.
- **Immigration policy:** The Trump administration's restrictive immigration stance, including limits on **H1-B visas**, strained the relationship due to India's reliance on skilled migration to the US.
- **Kashmir mediation controversy:** Trump's offer to mediate between India and Pakistan on Kashmir sparked backlash in India, as it went against India's stance on third-party involvement in the issue.

Trump's Return and its Impact on India-US Relations:

- **Overview:**
  - With Donald Trump set to re-enter the White House, **India anticipates both benefits and challenges** in the upcoming phase of bilateral relations.
  - Building on Trump's earlier tenure, New Delhi expects **continuity in defence, energy cooperation, and strategic ties**, alongside possible **friction in trade and sensitive diplomatic interactions.**
- **Opportunities for stronger India-US ties under Trump:**
  - **Reviving trade and defence deals:**
    - Trump has expressed interest in resuming the Free Trade Agreement talks.
    - Expanded U.S. military hardware sales could further bolster India's defence capabilities.

- **Focus on energy independence:** As seen with the earlier MoU for the Driftwood LNG plant, potentially reviving investments and boosting India's energy security.
- **Less pressure on domestic issues:** Compared to the Biden administration, issues like press freedoms, treatment of NGOs, and human rights may see less scrutiny under Trump, easing diplomatic tensions.
- **Stance on regional issues:**
  - Trump's stance of cancelling the majority of U.S. funding to **Pakistan** during his last term is likely to continue.
  - Also, crackdown on **Khalistani** organisations is anticipated during Trump 2.0.

- **Potential areas of friction:**
  - **Trump's tariff policy:** Trump's focus on reducing trade tariffs might reignite disputes over India's tariffs, straining the economic partnership.
  - **Diplomatic mis-steps:** For instance, Trump's previous remarks on Kashmir mediation and India's conflict with China were met with strong denials from New Delhi.
  - **Unpredictable sanctions on oil imports:**
    - Under Trump, India faced pressure to cut off oil imports from **Iran and Venezuela**, risking its energy stability.
    - Similar policies could emerge, impacting India's energy policy and regional diplomacy.

Conclusion:

- Trump's first term reshaped Indo-US relations and India anticipates both opportunities and obstacles with Trump's return to the presidency.
- **Shifting regional dynamics will require careful navigation to maintain a balanced and productive partnership.**

11. A Positive Secularism: With UP Madarsa Verdict, Supreme Court Upholds Positive Secularism

Context

- The **Supreme Court's ruling in Anjum Qadri vs Union of India has upheld the constitutionality of the Uttar Pradesh Madarsa Act, 2004, overruling the Allahabad High Court's decision** to strike it down.
- This **judgment has profound implications for madarsas (Islamic religious schools) and their students,** providing clarity on the relationship between religious education and secularism, minority rights, and the state's regulatory powers.
- The **Court's decision underscores critical aspects of constitutional law, focusing on the concepts of secularism, the right to religious education, and the regulation** of educational institutions.

Background of the Case and the SC's Approach

- **Background of the Case**
  - The **Allahabad HC had previously ruled that the Madarsa Act**, which regulates the functioning of madarsas in Uttar Pradesh, **violated the principle of secularism enshrined in the Indian Constitution.**
  - It argued that the Act, **by requiring madarsas to comply with state education norms, interfered with their religious character.**
  - The **National Commission for Protection of Child Rights (NCPCR) also intervened, criticising the quality of education in madarsas.**
  - **The commission suggested that it violated the right to education under Article 21A**, which mandates free and compulsory education for children aged 6-14.
- **Supreme Court's Disagreement with High Court Ruling**
  - The **Supreme Court disagreed with High Court ruling, emphasising that the Basic Structure doctrine should be applied strictly to constitutional amendments rather than to ordinary laws** such as the UP Madarsa Act.
    - The **Basic Structure doctrine is a judicial principle that protects the fundamental framework of the Constitution.**
  - **As stated by former Chief Justice A.N. Ray, applying this doctrine too broadly could lead courts to essentially rewrite the Constitution**, introducing an element of unpredictability.
  - **Instead, CJI D.Y. Chandrachud argued that for ordinary legislation, judicial review should focus solely on legislative competence and consistency with fundamental rights,** steering away from abstract concepts like secularism, democracy, and federalism.

A Detailed Analysis of Supreme Court's Observations

- **Emphasis on Positive Secularism**
  - One of the **central themes of the judgment was the concept of secularism**, a matter of considerable constitutional debate.
  - The **Court reaffirmed the interpretation of secularism in the 1994 S R Bommai case**, which had **emphasised the positive aspect of secularism** as equal treatment of all religions.
  - The **court argued that by regulating and recognising madarsa education, the state was not undermining secularism** but rather ensuring that **minority communities have access to quality education, in line with their rights under Articles 25 to 30 of the Constitution.**
    - Articles 25 to 30 of the Indian Constitution cover the **Right to Freedom of Religion** and certain **Cultural and Educational Rights** for minorities.
  - **Secularism, in this view, is not about eliminating religious institutions but rather ensuring that all religious groups are treated equally** and fairly under the law.
- **SC's Comment on State's Responsibility and Involvement in Maintaining Secularism**
  - The **judgment also underscored the idea that the state's involvement** in religious education should **aim at substantive equality.**
  - The **court pointed out that it is the state's responsibility to create an environment** in which **all citizens, regardless of religion, can access education of equal quality.**
  - This **perspective aligns with the broader constitutional commitment to equality,** as **enshrined in Articles 14 and 15.**
    - **Articles 14 and 15 of the Indian Constitution are part of the Right to Equality,** ensuring that every individual is treated equally under the law.
  - The **court rejected the notion that secularism required the complete separation of religion from education**, recognising that religious education could coexist with secular education, provided it did not infringe on the rights of others.
- **Religious Rights and State Control over Minority Institutions**
  - Another **significant aspect of the judgment was its interpretation of Articles 26 and 30 of the constitution,** which protect the rights of religious minorities to establish and manage educational institutions.
  - The **court noted that madarsas,** as institutions established for religious and charitable purposes, **are entitled to state protection under Article 26.**
  - However, **it also clarified that the state has a legitimate interest in ensuring the quality of education provided in these institutions**, especially given the **obligations of Article 21A, which mandates compulsory education for children.**
- **SC's Comment on Autonomy Rights of Minority Institutions**
  - The **court acknowledged that while minority institutions, including madarsas, are entitled to autonomy, this right is not absolute.**
  - The **state can regulate these institutions** to ensure that the education they provide meets certain standards.
  - However, **such regulation cannot infringe upon the fundamental character of the institution** as a religious body.
  - **In this context, the judgment cited previous rulings that stressed the need to balance the right to manage** religious institutions with the state's duty to ensure that education in these institutions adheres to minimum standards.

SC's Observation on Challenges to Madarsa Education and Recognition of Degrees

- **Comment on Criticism of the Quality of Madarsa Education**
  - The **judgment also addressed the criticism that madarsa education is of poor quality,** particularly in comparison to secular institutions.
  - The **court pointed out that the state's obligation to ensure quality education under Article 21A applies universally**, including to madarsas.
  - However, **the Court rejected the argument that madarsas violate this right merely because their education is religious in nature.**
  - It **emphasised that religious education is distinct from religious instruction,** and the Constitution allows for the former within the framework of minority institutions.

- **Observation on Recognition of Madarsa Degrees**
  - **Despite recognising the value of madarsa education, the Court did note the challenge regarding the non-recognition of degrees** like Fazil and Kamil under the UP Madarsa Act.
  - **These degrees, which are issued by madarsas, are not recognised by the University Grants Commission (UGC) Act of 1956**, leading to limitations for madarsa graduates in accessing mainstream higher education.
  - However, **the Court suggested that such degrees should not be an obstacle for madarsa graduates pursuing courses in theology** or Islamic studies at universities, **as recognition of these degrees does not inherently undermine the standards of higher education.**

Significance of the Supreme Court's Ruling: Upholding the Concept of Positive Secularism

- **Positive secularism** is a concept that involves the state actively promoting religious harmony and respect for all religions, while not separating religion from the state altogether.
- This **ruling emphasises the importance of balancing the rights of minority religious groups with the state's duty** to provide equal and quality education to all citizens.
- While the **judgment provides relief to madarsa students and institutions, it also sets the stage for ongoing discussions about the role of religious education in a secular state** and the need for regulatory frameworks that respect both religious freedom and educational standards.
- The **case exemplifies the complex relationship between secularism, religious rights, and the state's role** in ensuring that all citizens, regardless of their religious background, have access to education that meets constitutional and legal requirements.

Conclusion

- **The Supreme Court's judgment in the Anjum Qadri case has reinforced the constitutional principles of equality**, religious freedom, and the state's duty to regulate educational standards.
- **By upholding the UP Madarsa Act, the Court affirmed that madarsas, as religious institutions, have the right to impart education** within the boundaries set by the Constitution.
- However, **it also acknowledged the state's responsibility to ensure that this education meets certain standards of quality.**

12. Does Data Justify Subdivision of Quotas?

Background:

- India's reservation system has been instrumental in providing access to opportunities for historically marginalized communities, especially **Scheduled Castes** (SCs) and **Scheduled Tribes** (STs).
- However, recent debates question whether the benefits of this system are equitably distributed among all SC subgroups.
- The Supreme Court has proposed introducing a "**quota-within-quota**" to address these disparities, leading to a nationwide discussion on whether such measures are justified by data.

Foundation & Evolution of Reservation in India:

- The reservation policy, rooted in **B.R. Ambedkar's vision**, aimed to create **equal opportunities by reserving spots in education, public employment, and governance for marginalized communities.**
- While the intention was to dismantle caste-based inequalities, the outcomes have been uneven, with some SC subgroups reportedly benefiting more than others.
- As a result, there are **growing calls to redesign the reservation system** to ensure a balanced distribution of opportunities.

Disparities Among SC Subgroups:

- Using data from states like **Andhra Pradesh, Bihar, Punjab, Tamil Nadu, Uttar Pradesh, and West Bengal**, researchers have found significant disparities in the outcomes of reservation policies:
  - **Punjab**: Since 1975, Punjab has implemented a subdivided quota system, benefiting disadvantaged SC subgroups like the **Mazhabi Sikhs and Balmikis**, helping them catch up to more advanced subgroups.

- **Bihar**: The state created a "**Mahadalit**" category in 2007 to target marginalized SC groups. However, political pressures expanded the category to include all SC groups, diluting its effectiveness.
- **Andhra Pradesh and Tamil Nadu**: These states have relatively balanced outcomes between their major SC groups, indicating that a further subdivision of quotas may not be necessary.

- Across these states, the **data reveals that while disparities exist within the SC category, the gap between SCs and upper-caste groups is still much larger.**
- This suggests that while a quota subdivision may help address some disparities within the SC category, it may not be a complete solution.

Access to Reserved Opportunities:

- A fundamental challenge in India's reservation system is ensuring access to reserved benefits.
- Data from the **India Human Development Survey** (IHDS) reveals that a significant portion of SC households in states like Uttar Pradesh and Bihar lack caste certificates—essential for accessing reserved positions in education and employment.
- This highlights a need to **improve access to reservation benefits rather than focusing solely on quota subdivision.**

Potential Issues with Quota Subdivision:

- While the **idea of a "quota-within-quota" has merit in states like Punjab**, data suggests that it may not be necessary everywhere.
- In states where **SC groups have comparable socio-economic outcomes**, further subdivisions could complicate the reservation system without delivering substantial benefits.
- Additionally, the subdivision policy is often vulnerable to political motivations, as seen in Bihar, where expanding the "Mahadalit" category diluted its impact.
- The **Supreme Court's recommendation to introduce a "creamy layer" exclusion for SCs is another contentious proposal.**
- While excluding economically advantaged SC individuals from reservation benefits could theoretically enhance equity, experts caution that economic mobility may not necessarily reduce caste-based discrimination.
- **Instances of both overt and covert untouchability persist**, suggesting that social identity, rather than economic status, continues to influence discrimination.

Need for Updated Data:

- **India's national Census**, currently delayed, is the **most comprehensive source of data on caste-based disparities.**
- Updated data is crucial to ensure that reservation policies are based on current socio-economic realities rather than outdated information.
- Without reliable data, any attempt to reform the reservation system may be misguided.

Conclusion:

- **India's reservation system has uplifted many marginalized groups, yet it faces challenges in delivering equitable outcomes within the SC category.**
- A quota-within-quota system may benefit states with pronounced disparities, but it is not a universal solution.
- Improving access to reservation benefits and addressing caste-based discrimination across the board should be prioritized.
- Moving forward, **reservation policies should be informed by robust, updated data to ensure they serve as genuine tools for social justice**.

13. Indian Federalism Is a Dialogue

Context

- The **Indian Constitution's influence extends beyond the conventional perception that only legal experts and scholars engage with it**; rather, its impact reaches every citizen involved in democracy.
- By navigating through significant judicial interpretations and emerging global challenges, **federalism in India is an evolving structure of cooperation and friction between states and the Centre**, underscoring its transformative potential.

- Amid these understandings, **it is important to examine the Constitution's choice of federalism, the political division of power between the Centre and states**, and how this choice has shaped India's legal and social landscape.

An Analysis of India's Unique Approach to Federalism

- **Federalism as a Constitution Choice**
  - **India's decision to adopt a federal structure**, influenced by the Partition and the secessionist threats at the dawn of independence, **is fundamental to the Constitution.**
  - Unlike some countries, **India avoided explicitly stating federalism in its Constitution; Instead, Dr. B.R. Ambedkar deliberately used union to signify the indestructible unity of the Indian state.**
  - Nonetheless, **the federal structure is inherent, with independent legislative powers assigned to both the Centre and states**, underscoring the states' autonomy within their spheres.
- **A Balanced Approach**
  - The **Seventh Schedule of the Indian Constitution, which demarcates subjects into three lists,** the Union List, State List, and Concurrent List, **illustrates a balanced approach.**
  - This **structure ensures that both the Centre and states can legislate on certain subjects**, while fundamental rights are universally safeguarded.
  - **The Constitution's anti-discriminatory provisions are not monopolised by the Centre but are also influenced by state-level legislative actions**, revealing an innovative approach to protecting rights and dignity across regions.
- **In Contrast to Federalism Elsewhere**
  - **India's approach contrasts with historical federalism in the U.S., where states' rights arguments were once invoked to justify** discriminatory practices, **including slavery.**
  - **India's Constitution, by contrast, employs federalism to prevent discrimination,** utilising both the Centre and states to uphold equal rights across diverse territories.
  - **India's federal structure,** characterised by a political integration that balances self-rule and shared rule, **resists oversimplified comparisons with federalism elsewhere**, such as in the U.S.
  - Here, **states share sovereignty, whereas in India, both the Centre and states operate with overlapping powers** under a unified constitutional framework.
  - **The federal design is, therefore, adapted to India's diversity, aiming to address social and regional differences** while ensuring national integrity.

The Role of Indian Judiciary in the Transformation of Indian Federalism

- **The Kesavananda Bharati Case and the Basic Structure Doctrine**
  - In the 1973 landmark case **Kesavananda Bharati v. State of Kerala**, **the Supreme Court established the basic structure doctrine.**
  - This holds that **certain elements of the Constitution are so fundamental that they cannot be altered,** even by a parliamentary majority.
  - Among these elements, **federalism was enshrined as an integral and enduring part of the Constitution.**
  - This **ruling marked a decisive shift**, **reinforcing the principle that federalism is not merely an administrative arrangement but an essential feature** that underpins India's democratic and constitutional identity.
  - **By including federalism as a basic feature, the judiciary recognised it as a crucial check on central authority**, protecting states' rights and powers within the Union and preventing an erosion of their autonomy.
  - **This case, therefore, laid the groundwork for the judiciary's role in safeguarding the federal balance** and promoting decentralized governance.
- **Centripetal and Centrifugal Eras in Judicial Interpretation**
  - **The Centripetal Era**
    - **Before the Supreme Court's judgment in S.R. Bommai v. Union of India (1994**), judicial interpretation largely **favoured centralising tendencies.**
    - This **era saw the judiciary upholding constitutional provisions that allowed the Centre significant control over states**, especially through emergency powers and residuary legislative authority.
    - **For instance, Article 356,** which allows the Centre to impose President's Rule in states in the event of a breakdown of constitutional machinery, **was frequently invoked, sometimes with contentious motives.**

        - The **judiciary often upheld these interventions**, consolidating the Centre's authority over state governments.
    - **The Centrifugal Era**
        - **The 1994 S.R. Bommai case marked a pivotal shift,** initiating what has been termed the centrifugal era of judicial interpretation.
        - In this case, **the Supreme Court ruled that states are not mere appendages of the Centre** and that the **imposition of President's Rule cannot be arbitrary or politically motivated.**
        - **By emphasising that the Centre cannot unilaterally dissolve a state government without judicial scrutiny, Bommai redefined federalism** to protect states' rights and independence.
- **Judicial Intervention and Interpretation of Cooperative and Asymmetric Federalism**
    - The **Indian Supreme Court coined the term cooperative federalism in 1977**, promoting a model in which the Centre and states collaborate to resolve conflicts and achieve common developmental goals.
    - However, **cooperative federalism, while essential, is not an exclusive means of developing federal relations.**
    - **A 2022 judgment noted that federalism in India also includes dialogues marked by both cooperation and friction,** highlighting the need for constructive negotiation between the two levels of government.
    - This **flexible interpretation underscores federalism as a dynamic, interactive framework.**
    - **Another unique aspect of India's federalism is its asymmetry and the Constitution acknowledges India's diversity,** allowing certain states to maintain distinctive relationships with the Union based on historical, regional, or cultural considerations.
    - **Constitutional courts have further refined this model, recognising that states need tailored provisions to protect their distinct identities** within a unified national framework.

Federalism, Modern Governance Challenges and Ways Ahead

- In contemporary India, **federalism faces new challenges that transcend traditional boundaries,** including climate change, artificial intelligence, data privacy, and cybercrimes.
- The **Constitution's framers could not have anticipated these globalised concerns,** which require unified yet flexible responses.
- These **issues compel both the Centre and states to adapt, harmonising their legislative capacities and judicial practices** to ensure that federalism supports, rather than hinders, modern governance.
- **Marc Galanter described the Indian Constitution as a radical readjustment** that replaced old rights with new ones.
- Today, **these new rights must include a focus on environmental preservation**, technological rights, and data protection.
- **Federalism's success lies in its capacity to uphold core constitutional values, democracy, equality, dignity, and freedom,** while simultaneously evolving to address complex modern issues that require cooperation across federal and state boundaries.

Conclusion

- **Federalism in India is an embodiment of constitutional resilience and adaptability**, evolving from a mechanism of political balance into a framework for tackling current challenges.
- **The Indian Constitution has proved capable of transforming federalism** to meet the needs of a diverse, complex society.
- **Moving forward, Indian federalism must be tested against its ability to foster democracy, equity, and innovation**, making it not only a structure of governance but also a vehicle for societal progress.

General Studies III

1. Sustaining Human-Lion Coexistence in Gujarat

Why in news?

Recently, new research revealed that the entire population of **674 Asiatic Lions, confined to Gujarat, coexists with humans due to mutual adaptation, strict legal protection, economic incentives, and government compensation for livestock losses.**

The research analyzed over 14,000 livestock depredations, 11,000 compensation claims, human attacks, and surveys from 277 villages to explore the factors enabling human-lion coexistence.

Asiatic Lion

- **About**
  - Also known as the **Indian Lion, it is a subspecies of the lion found exclusively in India**. It is a symbol of courage and strength in Indian culture and is an integral part of the country's wildlife heritage.
- **Features**
  - **Physical Appearance**: Smaller and more compact than African lions, with a less developed mane in males.
  - **Distinctive Traits**: A unique fold of skin runs along their belly, and they have shorter, sparser manes compared to their African counterparts.
- **Habitat**
  - **Preferred Habitat**: Dry deciduous forests, scrublands, and open grassy patches.
  - **Current Habitat**: Confined to the Gir Forest and surrounding areas in Gujarat, India.
- **Geographical Range**
  - Historically ranged across the Middle East and India but now restricted to Gujarat.
  - The population has expanded beyond Gir Forest into neighboring districts, covering an increasing geographic range.
- **IUCN Status**
  - It was listed as Endangered on the IUCN Red List. However, the organization has revised the **Asiatic lion's status to vulnerable in 2024**.
- **Challenges Faced**
  - **Habitat Loss**: Agricultural expansion, industrialization, and human settlements encroach on lion habitats.
  - **Human-Wildlife Conflict**: Livestock depredation and occasional attacks lead to tension with local communities.
  - **Genetic Bottleneck**: Small population size increases vulnerability to diseases and reduces genetic diversity.
  - **Poaching and Illegal Activities**: Threats from poaching and illegal wildlife tourism practices.
  - **Natural Calamities**: Risk from droughts, forest fires, and potential pandemics.
- **Conservation Efforts**
  - **Legal Protection**: Listed under Schedule I of the Indian Wildlife (Protection) Act, 1972. They are also listed in Appendix I of CITES.
  - **Conservation Projects**: Initiatives like the Lion Conservation Project and compensation schemes for livestock losses.
  - **Translocation Plans**: Efforts to establish a second population in Madhya Pradesh for long-term survival.

Key Findings of the Study

Factors enabling human-lion coexistence

- **Economic and Sociocultural Drivers**
  - Earnings from **regulated and unregulated wildlife tourism on private lands are significant.**
    - Regulated tourism happens in and around protected areas such as Gir National Park.
    - On the other hand, there is unregulated tourism on private land and this also includes offering livestock as bait, illegally.
  - **Proper implementation of livestock compensation schemes also reduced the human-lion conflict.**
    - A study in Kenya found that compensating for livestock killed by lions reduced the number of lions killed by pastoralists by 87–91%.
  - Sociocultural acceptance, including viewing lions as noble and charismatic, fosters tolerance.
- **Benefits to lions**

- Lions have benefitted on two key counts.
  - With **greater human acceptance, they can move around outside Gir's protected areas.**
  - Second, owing to legal and cultural practices, old cattle are abandoned, which forms a big chunk of the big cat's diet in the form of old livestock or carrion.

- **Conclusion**
  - The lions and communities are co-adapting to co-exist. And benefits to each other, lions and people, exceed the costs of living together, resulting in co-existence.

Challenges and Recommendations

- **Conservation Concerns**:
  - Co-existence is fragile and requires management to reduce conflicts and protect lions.
  - Translocation of lions to **Madhya Pradesh for genetic diversity** and disease prevention remains unimplemented despite Supreme Court orders.
- **Conflict Mitigation**:
  - Proactive monitoring of lion prides in risk areas using radio collars with virtual geofences that can trigger warning signals.
    - This can pre-empt lion movement and **mitigate negative human-lion interactions.**
  - Revising livestock compensation schemes to match market rates and exploring livestock insurance schemes.

Community Tolerance and Conflict

- High- and moderate-conflict villages showed greater tolerance due to economic benefits from lions.
- Pastoralist communities exhibited the highest intolerance, primarily due to economic losses.

Livestock Losses

- 91% of livestock depredations occurred outside protected areas.
- Amreli district reported the most livestock death claims, followed by Junagadh, Gir Somnath, and Bhavnagar.
- Cattle were the most common prey, followed by goats, sheep, and buffalo.

2. Wildfire Pollution Claims Over 1.5 Million Lives Annually, Study Reveals

Why in news?

According to a study published in **The Lancet journal, over 90 per cent of the global deaths per year linked to air pollution from landscape fires were in low and middle-income countries, including India.**

The study covers all kinds of fires in any landscape like **fires in forests, grasslands, vegetated areas or wildfires.**

Wildfires

- **About**
  - Wildfires are **uncontrolled fires that spread rapidly in natural or cultural landscapes, such as forests, grasslands, or agricultural areas.**
  - They are a significant environmental and public health concern, releasing smoke and pollutants like particulate matter (PM2.5) that can travel long distances, impacting air quality and human health.
- **Causes of Wildfires**
  - **Natural Causes**: Lightning strikes; Volcanic eruptions; Droughts or prolonged dry seasons, making vegetation highly flammable.
  - **Human-Induced Causes**: Agricultural burning; Discarded cigarettes and campfires; Arson or accidental ignitions; Poor Forest management practices.
  - **Climate Change Influence**: Increased temperatures and reduced precipitation exacerbate the frequency and severity of wildfires.

Types of Wildfires

- **Ground Fires**
  - Burn organic matter in the soil, such as peat or decaying vegetation, beneath the surface. **Example:** Peat fires in Indonesia.

- **Characteristics:** Typically smolder rather than flame; Spread slowly but are difficult to detect and extinguish; **Produce significant smoke and carbon emissions.**

- **Surface Fires**
  - Burn vegetation on or just above the ground, such as grass, leaves, and low shrubs. **Example:** Fires in savannas or grasslands
  - **Characteristics: Most common type of wildfire**; Can be low-intensity or high-intensity, depending on fuel and weather conditions; Spread relatively quickly but are easier to control.
- **Crown Fires**
  - Burn the canopy of trees in forested areas, often fueled by surface fires. **Example:** Wildfires in coniferous forests, such as those in Canada or the western United States.
  - **Characteristics: Extremely intense and fast-spreading**; Hard to control due to their height and ability to leap from tree to tree; Occur in dense forests with abundant dry fuel.
- **Ladder Fires**
  - Begin as surface fires and climb vegetation (shrubs, small trees) to reach the canopy, transitioning into crown fires. **Example:** Fires in mixed forests with dense undergrowth.
  - **Characteristics: Act as a "ladder" for flames to ascend; Facilitate the spread of more destructive crown fires.**
- **Spot Fires**
  - Occur when embers or burning debris are carried by wind to ignite new fires away from the main blaze. **Example:** Fires in windy conditions near large wildfires.
  - **Characteristics:** Often create unpredictable fire behavior; Can rapidly spread the wildfire across large areas.

Global and Local Impact of Landscape Fire Pollution

- **Key Findings from the Study**
  - **Global Mortality:** More than 1.53 million deaths annually are attributed to pollution from landscape fires, including forest fires, agricultural burns, and wildfires.
  - **India's Burden:** Approximately 1.2 lakh deaths annually in India (2000-2019) were linked to such fires, amounting to 25.54 lakh deaths over 20 years.
  - **Primary Health Risks:** Cardiovascular (450,000 deaths/year) and respiratory diseases (220,000 deaths/year) are major contributors.
- **Geographic and Socio-Economic Disparities**
  - **Low-Income Countries:** Deaths due to respiratory illnesses caused by fires are four times higher in low-income nations compared to high-income nations.
  - **Top-Affected Nations:** China, Democratic Republic of Congo, India, Indonesia, and Nigeria.
- **Role of PM2.5 and Climate Change**
  - **Airborne Risks:** Fine particulate matter (PM2.5) and ozone from fires travel hundreds of kilometers, affecting large populations.
  - **Climate Feedback Loop:** Increased wildfires due to global warming contribute to long-term climate impacts and disrupt ecosystems.
- **Preventive Measures and Observations in India**
  - **Forest Fires in Maharashtra:** Fire incidents often start from agricultural burns, spreading to forests. Awareness programs and fire watchers are deployed as preventive steps.
  - **Local Emissions:** Large-scale fires release smoke containing black carbon and fine particles, adversely impacting health, air quality, and climate.
- **Outlook and Recommendations**
  - **Increasing Risk:** The frequency and severity of wildfires are expected to rise due to climate change, escalating the global health burden.
  - **Call for Action:** Stronger preventive measures, improved air quality management, and international collaboration are needed to mitigate the growing health and climate impacts of fire pollution.

3. Why India's trade deficit is not necessarily a weakness

Context:

India's persistent trade deficit, where imports exceed exports, does not signify weak manufacturing but **highlights its relative strengths in services and its appeal as an investment destination**.

Given these strengths, the goods trade deficit is likely to persist. To accelerate the growth of Indian manufacturing, the focus should be on **domestic demand** rather than relying on exports.

Link Between Capital Inflows and Current Account Deficit

- **Current account deficit (CAD)**
  - A current account deficit occurs when a country imports more goods and services than it exports, making it a net importer overall.
  - **India's CAD widened marginally to $ 9.7 billion (1.1% of GDP) in Q1:2024-25 from $8.9 billion (1.0% of GDP) in Q1:2023-24.**
- **Foreign investment and current account deficit are two sides of the same coin**
  - Countries attracting investment through net capital account inflows must either run a current account deficit (net outflow) or accumulate foreign exchange reserves.
    - This happens because, in economic terms, **the total amount of money flowing in and out of the country must balance out**.
    - If money is coming in through foreign investment, there needs to be an equivalent outflow to maintain the balance.
    - If not through reserves, the outflow happens through buying goods and services from other countries (imports).
  - This relationship is a mathematical certainty, where: **Capital Inflows = Current Account Deficit + Increase in Reserves.**

India's approach

- **India's Approach to Capital Inflows**
  - India aims to attract foreign investment to supplement **domestic savings, enabling higher investments and fostering faster economic growth.**
  - This strategic inflow on the capital account aligns with India's developmental goals.
- **Role and Cost of Foreign Exchange Reserves**
  - **Foreign exchange reserves act as a buffer against economic shocks**, like oil price spikes, allowing flexibility in addressing current account deficits.
  - However, holding reserves incurs costs, as India pays higher returns to foreign investors than it earns on its reserves.
- **Capital Inflows and Current Account Deficits**
  - **Capital inflows must match the sum of the current account deficit and reserve accumulation.**
  - Since India doesn't need significant reserve accumulation, inflows correspond directly to the current account deficit.
  - This means attracting foreign investment implies accepting a net import of goods and services.
- **India's Balanced Policy**
  - India maintains a prudent policy of running a current account deficit of ~2% of GDP, balanced by equivalent capital inflows, showcasing its status as an attractive investment destination.

India's deficit – not a sign of weakness

- **Composition of India's Current Account Deficit: Goods and Services**
  - India's current account deficit arises because it imports more than it exports.
  - However, this deficit is influenced by the country's comparative advantage in different sectors.
  - **India excels in services**, making it a net exporter of services. This includes sectors like IT, pharmaceuticals, and automobiles, where India holds a significant edge globally.
  - As a result, India is able to offset the higher import bills by exporting services.
  - Since India is a net exporter of services, it must inevitably be a net importer of goods to maintain the overall current account deficit.

- This means India imports manufactured goods, but its export strength in services helps to keep the deficit within manageable levels.

- **Manufacturing and Comparative Advantage**
  - **India's manufacturing exports, especially in pharmaceuticals and auto components, are sufficient to maintain the current account deficit.**
  - This success is tied to India's comparative advantage in these sectors, not necessarily a lack of productivity in manufacturing compared to countries like Vietnam or Bangladesh.
  - India's advantage in services simply outweighs its advantage in manufacturing.
- **Scope for Faster Manufacturing Growth**
  - While India's manufacturing sector is performing well, there is room for faster growth. However, achieving this requires stronger domestic demand.
  - If domestic consumption rises and the current account deficit remains stable, this increased demand would drive greater domestic production, leading to faster manufacturing growth.
  - This highlights that the expansion of India's manufacturing sector is closely tied to internal market dynamics rather than solely relying on export markets.

4. Need for a Global Plastic Treaty- Securing a Sustainable Future

Why in news?

Representatives from over 170 countries have gathered in **Busan, South Korea**, for the fifth and final round of negotiations on a legally binding global treaty to end plastic pollution, including marine pollution.

This initiative follows the **2022 UN Environmental Assembly's agreement to finalize the treaty by the end of 2024.**

Background:

- **Resolution to end plastic pollution:**
  - The United Nations Environment Assembly (UNEA) passed a resolution to "end plastic pollution" in 2022.
- **Setting up of an Intergovernmental Negotiating Committee (INC)**
  - INC was set up and tasked to develop a legally binding instrument - a global treaty - to govern plastic production and use across all nations.
- **Global Plastics Treaty:**
  - In 2022, 175 nations agreed to develop a legally binding agreement on plastic pollution by 2024 to reduce GHG emissions from plastic production, use and disposal.

Need for a global plastic treaty

- **The Growing Dependence on Plastic**
  - Plastic's global production doubled from 234 million tonnes in 2000 to 460 million tonnes in 2019. By 2040, production is projected to reach 700 million tonnes.
- **Plastic Waste and Environmental Crisis**
  - **Plastic decomposition takes 20–500 years, with less than 10% recycled to date.**
  - Annual plastic waste generation is approximately 400 million tonnes and could increase by 62% by 2050.
  - A significant amount of waste leaks into rivers and oceans, breaking down into harmful microplastics and nanoplastics.
- **Impact on Environment and Health**
  - Chemicals in plastics can cause endocrine disruption, cancer, diabetes, reproductive disorders, and neurodevelopmental impairments.
  - **Marine, freshwater, and terrestrial species are severely affected.**
- **Plastic's Role in Climate Change**
  - **Plastic production and waste management** contribute significantly to greenhouse gas (GHG) emissions.
  - In 2020, **plastics accounted for 3.6% of global emissions, primarily from fossil fuel-based production.** Emissions could increase by 20% by 2050 if trends persist.
- **India's Contribution to Plastic Pollution**
  - **India is the largest contributor to global plastic pollution, accounting for 20% of emissions (9.3 million tonnes annually), surpassing Nigeria (3.5 mt), Indonesia (3.4 mt), and China (2.8 mt).**

What is on the negotiating table?

- **Focus of Negotiations**
  - The talks aim to establish global rules to tackle **plastic pollution across its lifecycle, from production to disposal**.
  - Proposed measures include banning specific plastics, setting binding recycling targets, and regulating chemical additives in plastics.
- **'Just Transition' Considerations**
  - Discussions include ensuring a fair transition for workers, communities, and livelihoods affected by reduced plastic production and the elimination of certain products.
- **Diverging Positions Among Nations**
  - Countries remain divided on key issues, particularly on production caps for plastics:
    - **Opposition to Production Caps**: Oil and gas-rich nations like **Saudi Arabia, Iran, Russia, and India** oppose strict production limits, favoring downstream measures like improved waste management.
    - **Support for Ambitious Targets**: **Rwanda, Peru, and the EU** advocate aggressive pollution reduction, with Rwanda proposing a 40% cut by 2040 using 2025 as the baseline.

India's Stance on the Global Plastic Treaty

- **Opposition to Production Caps**
  - India opposes restrictions on polymer production, arguing that such measures exceed the UNEA 2022 resolution's mandate.
- **Focus on Financial and Technical Assistance**
  - **India advocates for financial aid, technology transfer, and technical support** to be part of the treaty's core provisions.
- **Regulation of Harmful Chemicals**
  - Decisions on harmful chemicals in plastic production should be based on scientific studies and regulated domestically.
- **Approach to Plastic Phase-Out**
  - **While India banned 19 categories of single-use plastics in 2022**, it emphasizes that any phase-out in the treaty should be pragmatic and driven by national circumstances.
    - **In 2022**, India brought into effect the **Plastic Waste Management Amendment Rules (2021)** that banned 19 categories of single-use plastics.
- **Safe Waste Management Mechanism**
  - India calls for mechanisms to assess infrastructure needs, financial requirements, and predictable funding for scientific and safe waste management.

5. Understanding the Changing Face of Extremist Violence

Context

- The nearly **three-year-old war in Ukraine and the Israel-Hamas conflict in the Middle East have overshadowed other global instances** of violence, especially those **perpetrated by extremist groups.**
- These **conflicts have diverted attention** from changing patterns of extremist violence, which, if ignored, could have serious repercussions in the future.
- **An understanding of these developments and their implications is essential** for maintaining global stability.

An Overview of Shifting Trends in Extremism

- **A RAND study published in the United States highlighted constant changes in domestic terrorism and violent extremism,** emphasising the importance of law enforcement agencies adapting to these shifts.
- While this study primarily focused on the U.S., **its findings have global relevance.**
- **Extremist movements, regardless of ideology, thrive on societal vulnerabilities** and demand vigilance from both governments and societies.

Post-Independence India and the Left-Wing Challenge

- **Early Communist Movements: Tebhaga and Telangana**

- Two prominent early examples of left-wing agitation were the **Tebhaga Movement in Bengal and the Communist-led Telangana uprising.**
- **The Tebhaga Movement in the 1940s sought to reduce the share of crops landlords could demand from tenant farmers**, advocating for two-thirds of the produce to remain with the farmers.
- **While it gained traction among the rural poor, the movement faced brutal suppression**, and its revolutionary aspirations were ultimately curtailed.
- Similarly, **the Telangana uprising, led by the Communist Party of India, was a radical peasant rebellion against oppressive landlords** and feudal systems in the Hyderabad state.
- The **movement also sought to implement land redistribution and abolish exploitative practices.**

- **The Naxalite Movement: A Persistent Challenge**
  - The **revolutionary fervour of the early years did not dissipate entirely and by the late 1960s, a new wave of Communist extremism emerged,** known as the Naxalite Movement.
  - **Originating in the village of Naxalbari in West Bengal, this movement was driven by radical Maoist ideology** that sought to overthrow the state through armed struggle.
  - **Unlike earlier Communist movements, which had a broader social agenda, the Naxalites focused on violent class warfare and targeted government institutions**, landlords, and perceived enemies of the proletariat.
- **The Role of Ideological Appeal**
  - A critical factor behind the longevity of left-wing extremism in India is **its ideological resonance.**
  - **The promises of land redistribution, social justice, and equality continue to attract those marginalised by mainstream** socio-economic policies.
  - This **ideological magnetism underscores the importance of addressing root causes, such as poverty, unemployment, and systemic corruption**, to prevent the resurgence of such movements.
- **Lessons for the Present**
  - **India's experience with left-wing extremism demonstrates the need for a multi-faceted approach** to countering such threats.
  - Military and police action, **while necessary to combat violent insurgency, must be complemented by social and economic reforms.**
  - **Developmental initiatives targeting affected regions, such as improving infrastructure, healthcare, and education, can help win the trust of local populations** and weaken the appeal of extremist ideologies.

The Rise of Right Wing

- **The Global Spread of Right-Wing Ideologies**
  - The spread of right-wing extremism is **not confined to one region but has become a global issue.**
  - **In Europe, the rise of right-wing populist parties and movements is particularly notable.**
  - Countries such as **Germany, France, and Italy have seen significant increases in nationalist rhetoric and xenophobic policies.**
  - **Germany, once a bastion of post-war liberal democracy, has faced a surge in far-right movements** such as the **Alternative for Germany (AfD)** party and neo-Nazi groups.
  - These movements often **capitalise on fears of immigration, economic instability, and the perceived erosion of traditional values.**
- **Catalysts for the Rise of Right-Wing Extremism**
  - Economic instability, particularly **in the aftermath of the 2008 global financial crisis and the COVID-19 pandemic, has fuelled populist resentment.**
  - **Right-wing groups often exploit these anxieties,** blaming immigrants, minorities, and globalist elites for economic hardships.
  - **Rapid social changes, including increasing diversity and evolving gender norms, have triggered cultural anxiety** among certain groups.
  - Right-wing ideologies often **present a narrative of returning to a mythical "golden age" of cultural purity and national greatness.**
  - **Large-scale migrations**, particularly from conflict zones like Syria and Afghanistan, **have intensified anti-immigrant sentiment in many countries.**
  - Right-wing extremists frame immigrants as threats to national security, cultural identity, and economic stability.

The Role of Islamist Extremism in Global Spread of Extremism

- The rise of the Islamic State **marked a turning point in global extremism, spreading instability across West Asia and beyond.**
- While its direct influence has waned, **the movement inspired a new wave of right-wing extremism in response.**
- **Small, decentralised cells of jihadist sympathizers and homegrown extremists have contributed to a fractured threat landscape**, requiring law enforcement agencies to act proactively to prevent further escalation.

Addressing Right-Wing Islamist Militancy in India and the Path Forward

- **Addressing Right-Wing Militancy in India**
  - India, like many other nations, faces the dual challenges of right-wing and Islamist extremism.
  - **Recent government actions against organizations such as the Popular Front of India (PFI) and the Social Democratic Party of India (SDPI)** illustrate the complexity of combating extremist ideologies.
  - These groups **have been accused of fostering right-wing Islamist militancy, drawing attention to the need for balanced yet decisive measures to ensure national security.**
  - While security measures may necessitate difficult choices, they must be implemented with care to preserve civil liberties and avoid alienating communities.
- **Addressing Underlying Causes of Radicalisation**
  - The evolving nature of extremism **demands a comprehensive and adaptive approach. Governments must address the underlying causes of radicalisation**, such as economic inequality, political disenfranchisement, and social fragmentation.
  - At the same time, **they must enhance intelligence capabilities and foster international cooperation to combat the cross-border spread of extremist ideologies.**
  - The lessons of history, **from India's struggles with left-wing extremism to Europe's current challenges with right-wing ideologies, highlight the importance of vigilance and adaptability**.
  - In a world increasingly shaped by ideological divides, maintaining democratic values and creating inclusive societies are essential for countering the threats posed by extremism.

Conclusion

- **The changing face of extremism requires a nuanced understanding and robust responses from governments**, law enforcement agencies, and civil societies.
- While the immediate crises in Ukraine and the Middle East dominate headlines, **the persistent threat of both left-wing and right-wing extremism should not be overlooked.**
- Eternal vigilance, as the saying goes, is the price of liberty, and **addressing these evolving threats is crucial for safeguarding the future of democracies worldwide.**

6. Strategic Necessity to Enhance Domestic Coking Coal Production in India

Why in News?

A recent NITI Aayog report titled '**Enhancing Domestic Coking Coal Availability to Reduce the Import of Coking Coal**' outlines measures to reduce import dependency and strengthen domestic production.

What is Coking Coal?

- **About:**
  - Also known as metallurgical coal, it is **a naturally occurring sedimentary rock found within the earth's crust**.
  - A type of **bituminous** coal, it typically contains **more carbon, less ash, and less moisture** than thermal coal, which is used for electricity generation.
  - It is a **vital raw material for steel production** (constituting 42% of steel costs), making it **indispensable for infrastructure and industrial growth**.
- **Application in steel production:**
  - **Coke**/ metallurgical coke, which is created through the high-temperature carbonisation of coking coal, plays a crucial role in steelmaking.
  - Coke is used in blast furnaces to produce pig iron, serving as both **a reducing agent for iron ore and structural support for the furnace charge.**

- **The largest producers of coking coal in the world:** China (676 million tons in 2022-62%), Australia (169 million tons in 2022-15%), Russia (96 million tons in 2022-9%), USA (55 million tons-5%), and Canada (34 million tons-3%).
- **Case of India:**
  - Despite India's vast reserves, **reliance on imports remains at a staggering 85%.**
  - **For example,** India's coking coal imports for the first six months of the current fiscal (April – Sept) were at a six-year-high at 29.6 million tonnes (mt) with shipments from Russia witnessing a substantial rise of over 200% during this period.

Current Challenges in Domestic Production of Coking Coal:

- **Inefficiency in coal washeries:**
  - Public Sector Undertaking (PSU) washeries operate at less than 32% capacity, with washed coal yields of only 35–36%.
  - In contrast, private washeries achieve over 75% capacity utilisation and higher yields, showcasing the need for improved efficiency in PSU washeries.
- **High import dependency:** Integrated Steel Plants (ISPs) imported 58 MT of coking coal at an enormous cost of ₹1.5 lakh crore in FY 2023-24, despite significant domestic reserves.

Key Recommendations from the NITI Aayog Report:

- **Recognising coking coal as a critical mineral:**
  - This will align India with global practices such as in the European Union, which recognises coking coal as critical.
  - Designating it as critical can **justify policy support to boost domestic production** and ensure security for India's steel sector.
- **Leveraging domestic reserves:**
  - India holds 5.13 billion tonnes of prime coking coal and 16.5 billion tonnes of medium-quality reserves.
  - These resources should be fully utilised, considering the country's Net Zero 2070 commitments and economic needs.
- **Policy and structural changes:**
  - **Amending the Coal Bearing Areas (CBA) Act, 1957:** To ensure that Special Purpose Vehicles (SPVs) under public-private partnership (PPP) arrangements retain operational rights, even after majority ownership shifts to the private sector.
  - **Facilitating byproduct sales:** The Ministry of Coal must enable joint ventures to sell byproducts (middling and tailings) from washeries, benefitting steel plants with lower coking coal expenses.

What are Critical Minerals?

- **Meaning:**
  - A mineral is critical when the **risk of supply shortage** and associated impact on the economy is (relatively) higher than other raw materials.
  - These (such as **lithium, graphite, cobalt, titanium, and rare earth elements**) form part of multiple strategic value chains, including
    - Clean technologies,
    - Information and communication technologies (including semiconductors) and
    - Advanced manufacturing inputs and materials.
- **Identification of 30 critical minerals by the Indian Govt:** This was done by the Ministry of Mines on the basis of a **3-stage assessment** -
  - **In the first stage**, a total of 69 elements/ minerals were identified on the basis of the strategies of various countries such as Australia, USA, Canada, UK, Japan and South Korea.
  - **In the second stage**, an inter ministerial consultation was carried out with different ministries to identify minerals critical to their sectors.
  - **In the third stage**, taking cognisance of the EU methodology (that considers two major factors - **economic importance and supply risk),** an empirical formula for evaluating minerals criticality was derived**.**
  - Based on this process, **a total of 30 minerals** were found to be most critical for India:

1. Antimony	15. Nickel	iv. Neodymium	20. Rhenium
2. Beryllium	16. PGE	v. Promethium	21. Selenium
3. Bismuth	i. Platinum	vi. Samarium	22. Silicon
4. Cadmium	ii. Palladium	vii. Europium	23. Strontium
5. Cobalt	iii. Rhodium	viii. Gadolinium	24. Tantalum
6. Copper	iv. Ruthenium	ix. Terbium	25. Tellurium
7. Gallium	v. Iridium	x. Dysprosium	26. Tin
8. Germanium	vi. Osmium	xi. Holmium	27. Titanium
9. Graphite	17. Phosphorous	xii. Erbium	28. Tungsten
10. Hafnium	18. Potash	xiii. Thulium	29. Vanadium
11. Indium	19. REE	xiv. Ytterbium	30. Zirconium
12. Lithium	i. Lanthanum	xv. Lutetium	
13. Molybdenum	ii. Cerium	xvi. Scandium	
14. Niobium	iii. Praseodymium	xvii. Yttrium	

7. Space, India's Final Frontier and Through the Government, a Gateway to the Stars

Context

- **India is on the brink of transforming its role in the global space economy** from a participant to a leader.
- **With the Union Cabinet's approval of a ₹1,000 crore venture capital (VC)** fund dedicated to the space sector, **this ambitious vision is becoming tangible.**
- This **initiative promises not only to advance India's space exploration capabilities but also to drive economic growth,** develop innovation, and create jobs in emerging industries.

An Analysis of the Growth and Transformation of India's Space Industry

- **The Cornerstone of Indian Space Industry**
  - The **cornerstone of this transformation is IN-SPACe (Indian National Space Promotion and Authorisation Centre),** a platform designed to encourage and oversee private sector participation in space activities.
  - Acting as a gateway to the cosmos for Indian startups, **IN-SPACe, with the support of the new VC fund, provides crucial financial resources to budding enterprises.**
  - This **funding ensures these startups can innovate and grow,** contributing to India's space economy and the global space landscape.
- **From Idea to Impact: The Startup Ecosystem**
  - The **₹1,000 crore VC fund provides a lifeline**, enabling the company to scale operations, attract top talent, and launch its satellites.
  - **This success not only positions StarTech as a leader in its field but also bridges the digital divide,** transforming underserved communities through improved connectivity.
  - The **fund's influence extends beyond individual startups and it seeks to create a multiplier effect by attracting additional funding** for later-stage development and instilling confidence in private investors.
  - This **is crucial in the space sector, where capital-intensive projects require sustained investment** to thrive.
  - By addressing these challenges, **the VC fund ensures Indian startups can grow domestically without seeking foreign assistance.**

Future Projections for Indian Space Economy

- **Revolutionising Supply Chain and Transportation**
  - The **integration of satellite technology into supply chain and transportation systems can significantly enhance efficiency** and reduce costs.
  - Positioning, Navigation, and Timing (PNT) technologies **will enable real-time tracking and optimal fleet management, ensuring better route planning and timely deliveries.**
  - For instance, **a logistics company leveraging satellite data can pre-empt traffic congestion, adverse weather conditions, or route disruptions, minimising delivery delays** and operational inefficiencies.
- **Transforming the Food and Beverage Industry**
  - Space technologies **will also make a significant impact on the food and beverage sector.**

- **Precision agriculture enabled by satellite data can optimise crop yields**, improve irrigation management, and monitor soil health.
- For example, **farmers could use Earth observation imagery to identify water stress areas in their fields,** ensuring resources are allocated efficiently.

- **Advancements in Space-Based Research**
  - Beyond Earth, **advancements in space-based research, such as studying nutrient development in zero-gravity environments**, could lead to groundbreaking solutions for food security.
  - **Imagine nutrient-rich, lab-grown foods designed in space being used to combat malnutrition** or to support long-term space exploration missions.
  - On Earth, **satellite-enabled logistics systems can improve the accuracy of food deliveries**, reducing spoilage and ensuring fresh produce reaches consumers.
- **Strengthening Defence Capabilities and Early Warning Systems**
  - The **space economy's impact on national security cannot be overstated.** Space-based technologies offer unparalleled capabilities in intelligence, surveillance, and reconnaissance (ISR).
  - **Real-time satellite imagery and data can provide defence forces with critical insights** into potential threats, ensuring rapid deployment and enhanced operational efficiency.
  - For example, s**atellite-based early warning systems could detect missile launches or troop movements,** giving the armed forces a strategic advantage.
  - Additionally, **secure satellite communication networks can ensure seamless coordination between units,** even in the most remote areas, enhancing national defence preparedness.
- **Expanding E-Commerce and Consumer Accessibility**
  - **Satellite internet connectivity promises to extend the reach of e-commerce to the remotest corners** of India.
  - This transformation **will empower rural and underserved communities,** enabling them to participate in the digital economy.
  - The **integration of PNT receivers in consumer electronics will further enhance the convenience of location-based services**, such as real-time navigation, local business recommendations, or geotagging.

Challenges and Opportunities for India in Space Sector

- **Space Debris Management**
  - The **increasing number of satellites and space missions poses a significant challenge** in the form of space debris.
  - **Defunct satellites, spent rocket stages, and collision fragments** are creating a crowded and **hazardous orbital environment.**
  - **Without effective debris management policies, the risk of collisions could undermine future launches** and damage active satellites, potentially leading to a "Kessler Syndrome" where space becomes inaccessible due to cascading collisions.
  - **India must invest in debris mitigation technologies,** such as deorbiting mechanisms for satellites and active debris removal systems.
  - **Collaborating with international agencies** to establish global norms for debris management is also
- **Regulatory Constraints**
  - **Navigating the complex regulatory environment is a persistent challenge** for space startups.
  - Lengthy approval processes, unclear policies, and a lack of harmonisation with global standards can hinder innovation and discourage private sector investment.
  - **Streamlining regulatory frameworks through simplified procedures**, transparent policies, and alignment **with international space laws can reduce barriers.**
  - Establishing clear guidelines for licensing, liability, and insurance will further encourage private sector participation.
- **Capital-Intensive Nature of Space Projects**
  - **The space sector is inherently capital-intensive**, requiring significant upfront investment for research, development, and deployment.
  - **Startups often struggle to secure sufficient funding** for high-risk, long-term projects.
  - While the ₹1,000 crore venture capital fund is a step in the right direction, **sustaining growth will require continuous financial support.**

- **India can encourage more public-private partnerships (PPPs) and attract foreign direct investment (FDI)** by creating a favourable investment climate. Tax incentives and risk-sharing mechanisms can also help de-risk investments in space ventures.

Conclusion

- The ₹1,000 crore venture capital fund is more than just a financial tool; **it is a cornerstone of India's ambition to lead the global space economy.**
- **By nurturing startups, it lays the groundwork for innovation**, job creation, and technological sovereignty.
- The **ripple effects of this initiative promise to revolutionise industries,** bridge social divides, and position India as a global leader in space exploration.
- **This bold step marks the beginning of a transformative journey**; one where India reaches for the stars and inspires the world.

8. Carbon Credit Mechanism

What is a Carbon Credit?

- A **carbon credit represents a permit or certificate granting its holder the right to emit one tonne of carbon dioxide (CO2) or an equivalent amount of another GHG.**
- These credits are generated through activities that reduce emissions or remove CO2 from the atmosphere, such as:
  - **Renewable energy projects like wind or solar farms**
  - **Energy efficiency initiatives**
  - **Reforestation or afforestation projects**
  - **Methane capture at landfills or industrial sites**

How the Carbon Credit Mechanism Works?

- **Setting Emission Caps**: Governments or regulatory bodies establish emission caps for industries or companies.
  - Organizations emitting less than their allowed quota can sell their surplus as carbon credits.
  - Those exceeding their limits must buy additional credits to comply with regulations.
- **Generating Carbon Credits**: Credits are issued to projects that demonstrate measurable and verifiable GHG reductions.
  - Certification is typically provided by international bodies such as the Verified Carbon Standard (VCS) or the Gold Standard.
- **Trading Carbon Credits**: Carbon credits are traded on platforms such as the **European Union Emissions Trading System (EU ETS) or voluntary markets.**
  - This trade creates a financial incentive for emission reduction.
- **Offsetting Emissions**: Organizations can purchase credits to offset their emissions and achieve carbon neutrality.

Types of Carbon Credit Markets:

- **Compliance Market**: Operates under legally binding frameworks, such as the **Kyoto Protocol or the Paris Agreement.** Companies are mandated to adhere to emission caps.
- **Voluntary Market**: Allows companies, individuals, or organizations to purchase credits voluntarily to meet corporate social responsibility (CSR) goals or personal commitments to sustainability.

Benefits of the Carbon Credit Mechanism:

- **Environmental Impact**: Encourages adoption of cleaner technologies and sustainable practices.
- **Economic Incentives**: Rewards projects that actively reduce emissions, fostering innovation.
- **Flexibility**: Provides industries with cost-effective options to comply with emission targets.
- **Global Collaboration**: Facilitates cooperation across countries, addressing climate change on a global scale.

Challenges and Criticisms:

- **Verification and Accountability**: Ensuring that carbon credits represent genuine and measurable emission reductions can be complex.

- **Market Volatility**: Prices for carbon credits can fluctuate, affecting market stability.
- **Greenwashing**: Companies may misuse credits to appear environmentally responsible without making substantive changes.
- **Inequitable Access**: Developing countries may face challenges in accessing the resources needed to generate credits.

Carbon Credits in the Indian Context:

- India, as a developing economy, has significant potential in the carbon credit market:
  - **Renewable Energy**: India's focus on solar, wind, and hydropower projects aligns with carbon credit generation.
  - **Afforestation**: Programs like the National Afforestation Programme can contribute to offsetting emissions.
  - **Export Potential**: Indian companies can sell surplus carbon credits on international markets, generating revenue.
  - **Government Initiatives**: Policies such as the Perform, Achieve, and Trade (PAT) scheme encourage energy efficiency and the creation of carbon assets.

News Summary:

- A new study published in the journal Nature has highlighted the ineffectiveness of carbon trading mechanisms in achieving meaningful emission reductions.
- The study, conducted by researchers from European and American institutions, reviewed thousands of projects responsible for generating carbon credits equivalent to one billion tonnes of carbon dioxide.
- It found that only **16% of these credits corresponded to actual emission reductions.**
- **Key Findings:**
  - **Kyoto Protocol Mechanisms:**
    - The majority of credits studied were created under **the Kyoto Protocol, the predecessor to the Paris Agreement. These mechanisms, now defunct, have long faced criticism for their lack of integrity.**
  - **Effectiveness by Project Type:**
    - Projects focused on the **abatement of HFC-23 chemicals were found to be the most effective, with 68% of the credits leading to genuine reductions.**
    - The study emphasized the importance of "additionality" in carbon crediting—ensuring that emission reductions would not have occurred without the revenue from carbon credits.
    - However, many existing approaches to assess additionality have led to non-additional projects being registered.
  - **Recommendations:**
    - Researchers suggest **tightening eligibility for carbon credit projects to those with a high likelihood of additionality and robust financial reliance on carbon credit revenues**.
    - Standards and methodologies for quantifying emission reductions also need significant improvements to ensure credibility.
  - **Developments Under the Paris Agreement:**
    - The **carbon market mechanism remains the final element of the 2015 Paris Agreement** yet to be fully operationalized.
    - New, more stringent frameworks for carbon trade are being designed to address the flaws of the Kyoto-era mechanisms.
  - **Two Mechanisms Under Development:**
    - **Bilateral Country-Level Trade:** Countries exceeding their emission reduction targets can sell credits to others through negotiated agreements.
    - **International Carbon Market:** Open to multiple participants, with institutions being established to regulate, verify, and authenticate the trade of credits.
  - **Progress at COP29:**
    - At the ongoing COP29 meeting in **Baku**, two key rules for carbon markets were approved on the opening day, but substantial work remains.
    - These new mechanisms aim to ensure the integrity of carbon credits and enhance their role in combating climate change.

9. The Green Transition India Needs

Context

- **The urgency for countries worldwide to decarbonise** has never been more pronounced.
- However, **for nations such as India, the challenge lies in ensuring that the shift to cleaner energy sources does not hinder economic growth** or development.
- **As COP29 negotiations unfold amid complex global issues, India's path to decarbonisation demands careful attention to equity, growth, and the role of people** at the core of this transformation.

The Increasing Energy Demand and Need for Flexibility

- **India's Increasing Energy Demand**
  - India, as one of the world's fastest-growing economies, **is experiencing a rapid surge in energy demand driven by industrial expansion**, **urbanisation, and a rising standard of living**.
  - **By 2032, peak power demand in the country is expected to reach nearly 370 gigawatts (GW),** nearly double its current capacity.
  - This **exponential growth in energy needs is a critical factor shaping India's approach** to sustainable energy.
  - The **country's response requires not just scaling up energy capacity but also creating a flexible, adaptive energy system capable of meeting fluctuating demands** while integrating renewable sources and reducing emissions.
- **The Need for Flexibility**
  - **Renewable energy,** while sustainable and eco-friendly, **presents unique challenges in terms of reliability and predictability.**
  - Unlike coal or natural gas, which can provide continuous power output, **renewables such as solar and wind are intermittent; their production depends on weather and environmental conditions**, which can be unpredictable.
  - **India's push to generate a substantial portion of its electricity from renewables thus necessitates a system with built-in flexibility**—one that can absorb fluctuations in supply and balance them with demand.
  - **This flexible infrastructure will allow India to achieve both energy security and sustainability,** making renewables a viable backbone for its growing economy.

A Strategic Roadmap for India to Build a Robust Green Energy System and Achieve Flexibility

- **Moving from Centralised to Decentralised Energy Systems**
  - Decentralised energy systems **offer a sustainable approach** for large-scale renewable energy adoption.
  - Distributed Renewable Energy (DRE) solutions, such as rooftop solar, are crucial to this shift.
  - **Despite India's ambitious goal to solarize 10 million households, making rooftop solar economically viable** for lower-income households **remains a challenge.**
  - **According to a Council on Energy, Environment, and Water (CEEW) study, approximately 30% of India's rooftop solar potential lies within the 0-1 kW capacity range**, which remains costly even after subsidies.
  - **Alternative market-driven interventions, such as community-based solar initiatives, can make rooftop solar accessible to a broader demographic**, encouraging widespread adoption of clean energy.
- **Transitioning from Capital Expenditure to Operational Expenditure Models**
  - Traditionally, energy investments have focused on capital expenditure (capex), prioritizing infrastructure costs upfront.
  - However, **for a sustainable energy transition, India must adopt an operational expenditure (opex) model.**
  - This **approach allows consumers to pay for energy services on a usage basis** rather than incurring high initial costs.
  - For instance, **rather than individual households purchasing solar panels, utility companies could set up community solar installations**, charging consumers based on consumption.
  - This **model can also be applied to energy-efficient systems, district cooling, and clean mobility,** aligning costs with actual energy use and promoting efficient energy distribution.
- **Prioritising Climate-Resilient Investments over Short-Term Financial Gains**
  - Investing in climate-resilient infrastructure and clean energy systems is **crucial for long-term stability, especially as climate change intensifies.**

- **Currently, over 80% of India's districts are considered climate-vulnerable**, increasing the risk of economic and infrastructural shocks.
- **By focusing on resilience, India can mitigate future risks** and reduce potential costs associated with climate-induced disasters.
- **Encouraging businesses and investors to consider climate risk assessments and climate-proofing strategies ensures that economic growth aligns with sustainable practices,** safeguarding both the economy and the environment.

Some Other Required Shifts for India to Build an Economy Sustained by Clean Energy

- **Focusing on Global Supply Chain Integration Rather than Protectionist Policies**
  - To ensure energy security and position itself in the global clean energy landscape, **India should pursue strategic integration into global supply chains rather than adopting protectionist industrial policies.**
  - **By collaborating with other countries, India can contribute to the solar photovoltaic (PV) and green hydrogen industries**, leveraging its strengths in specific segments.
  - This **shift also promotes an international rules-based system that prioritises cooperation and interdependence,** a contrast to more unilateral or protectionist approaches seen in other economies.
- **Merging Decarbonisation with Digitalisation**
  - India's **dual revolutions in decarbonisation and digitalisation present a unique opportunity** to create synergy between energy infrastructure and digital technology.
  - The **widespread adoption of smart meters and the rise of rural internet users signal the beginning of a shift** from hardware-centric to software-centric energy management.
  - **Digital solutions, such as AI-based systems** and smart appliances, **can optimise energy flow, enabling real-time management and increased resilience.**
  - This **shift not only improves efficiency but also ensures that renewable energy sources can be seamlessly integrated into existing systems**, making energy management more adaptive and consumer-focused.
- **Moving from a Linear to a Circular Economy**
  - A **circular economy approach enhances India's energy resilience** by maximising resource efficiency and securing critical mineral resources.
  - **With India's solar energy capacity** set to produce substantial waste by 2030, **effective waste management and mineral recovery processes are essential.**
  - **The government's vision to establish India as a circular economy hub for minerals and agricultural waste will help address environmental concerns**.
  - It will **also improve resource security, and support other sectors like water and agriculture**, contributing to a holistic approach to sustainability.
- **People-centric Energy Transition**
  - **A people-centric approach is indispensable in India's energy transition** and while significant funding flows toward large-scale renewable energy projects, **consumer-focused financing is often lacking.**
  - **Support for end-use consumers,** such as financing for electric vehicles, rooftop solar, and energy-efficient building materials, **can drive demand and create consumer ownership of the green economy.**
  - **By creating portfolios of small-scale investments, India can leverage consumer demand to build a robust market for clean energy** solutions that empower individuals and communities.

Conclusion

- **India's energy transition in the coming decade is not just about replacing fossil fuels** with renewable sources; **it requires a comprehensive rethinking of how energy, economics, and environment interact.**
- **By implementing these strategic shifts, India can develop a clean, resilient, and inclusive energy economy** that balances growth with sustainability.
- **Above all, placing people at the centre of this transition ensures that India's energy future is not only sustainable but also equitable,** empowering its citizens to actively participate in and benefit from this profound transformation.

10. RBI retains SBI, HDFC, ICICI as D-SIBs

Why in news?

The Reserve Bank of India (RBI) has maintained the State Bank of India, HDFC Bank, and ICICI Bank as Domestic Systemically Important Banks (D-SIBs), meaning they are classified as "Too Big To Fail."

This status indicates that their stability is essential for providing uninterrupted banking services to the economy. The banks remain in the same risk category as in the 2023 D-SIB list.

Domestic Systemically Important Banks (D-SIBs)

- **About**
  - D-SIBs are **highly integrated into cross-jurisdictional activities and possess complex financial structures, making them essential to the economy.**
  - Their failure could cause widespread disruption and economic panic. Consequently, the government is likely to bail them out during financial crises.
    - **SIBs are perceived as "Too Big To Fail" (TBTF),** creating expectations of government support during crises.
    - This perception enables SIBs to enjoy advantages in funding markets but also encourages risk-taking and reduces market discipline.
  - D-SIBs are also subject to specific regulations addressing systemic risks and moral hazard concerns.
- **Need for the creation of D-SIBs**
  - To address the systemic risks and moral hazard issues associated with SIBs, the RBI requires these banks to follow additional regulatory measures.
  - These measures are aimed at controlling potential competitive distortions and future financial distress.
- **Background – Framework for D-SIBs**
  - RBI had issued the Framework for dealing with D-SIBs in July 2014.
  - The D-SIB framework mandates annual disclosure of banks designated as D-SIBs since 2015.
  - It **categorizes them into buckets** based on their Systemic Importance Scores (SISs).
- **Regulations these banks need to follow**
  - Depending on the bucket in which a D-SIB is placed, an additional common equity requirement [**Common Equity Tier 1 (CET1)]** is applicable to it.
    - **Tier 1 capital (measured by the capital adequacy ratio (CAR)) is the core measure of a bank's financial strength from a regulator's point of view.**
  - It means that these banks have to earmark additional capital and provisions to safeguard their operations.
  - **Foreign banks in India that are classified as Global Systemically Important Banks (G-SIBs).**
    - G-SIBs must maintain an additional CET1 capital surcharge in India, proportionate to their Risk Weighted Assets (RWAs) in India, as specified by their home regulator.
    - Notable G-SIBs for 2023 include JP Morgan Chase, Bank of America, Citigroup, HSBC, Agricultural Bank of China, Bank of China, Barclays, and BNP Paribas.
- **Two-Step Process for Selecting D-SIBs**
  - **RBI uses a two-step process to assess banks' systemic importance.**
  - **A sample of banks is selected**, excluding smaller banks to avoid unnecessary data burden.
    - **Only banks above a certain size are assessed**, as smaller banks are deemed lower in systemic importance.
    - **Banks are chosen based on their size, calculated as a percentage of GDP using the Basel III Leverage Ratio Exposure Measure.**
    - Banks with a size above 2% of GDP are included in the sample.
  - **Once the sample is selected, RBI calculates a composite score based on various indicators.**
    - Banks that exceed a set threshold are classified as D-SIBs and placed into different buckets depending on their systemic importance.
    - D-SIBs in lower buckets face a smaller capital surcharge, while those in higher buckets face a higher surcharge, ensuring a graded approach to capital requirements based on risk.

Which banks have been classified as D-SIBs by the RBI?

- **RBI has reaffirmed SBI, HDFC Bank, and ICICI Bank as D-SIBs, retaining their positions from the 2023 list.**
  - SBI and ICICI Bank were first designated as D-SIBs in 2015 and 2016, with HDFC Bank joining them in 2017.
- **SBI has been placed in bucket 4, HDFC Bank in bucket 3 and ICICI Bank in bucket 1.**

- **Capital requirements for these D-SIBs**
  - The RBI requires additional CET1 capital for D-SIBs based on their assigned buckets, ranging from 0.20% to 0.80% of risk-weighted assets (RWAs).
  - Currently, **SBI's additional CET1 requirement is 0.80%, HDFC Bank's is 0.40%, and ICICI Bank's is 0.20%.**
  - G-SIBs with branches in India must maintain an additional CET1 surcharge proportionate to their Indian RWAs, based on the CET1 buffer set by their home regulator.

11. India's Missed Opportunities in Global Trade Integration- A Call for Rethink on RCEP and CPTPP

Why in news?

With shifting global investments and export opportunities away from China, many Asian countries have capitalized on the **"China-plus-one" strategy, leaving India lagging**. The recent victory of Donald Trump in the US elections adds new uncertainties to American trade policies, sparking debate on India's trade strategies.

Recently, NITI Aayog CEO BVR Subrahmanyam argued that India should consider joining major multilateral trade agreements, such as RCEP and CPTPP, to better integrate into the global economy. Highlighting that nations like Vietnam and Indonesia have gained significantly, he emphasized that India's Micro, Small & Medium Enterprises (MSME) sector, which accounts for 40% of exports, would benefit from such trade alliances.

India's Trade Dilemma

- **Balancing Protectionism and Integration**
  - In **September 2024, Commerce and Industry Minister Piyush Goyal highlighted the risks of joining the China-led RCEP.**
  - He cautioned that it would essentially open the door to a free trade agreement (FTA) with China, increasing the likelihood of goods being dumped into India and worsening the trade deficit.
  - **He noted that India's trade deficit with China had grown at a compounded annual rate of 42.85% between 2004 and 2014, which he argued has weakened domestic manufacturing.**
- **Global Protectionism and India's Policy Challenges**
  - As Western nations, including **the US and Europe, adopt protectionist measures against rising imports from China, India faces additional challenges.**
  - The US has pledged to increase tariffs on Chinese goods, while Europe has imposed tariffs on Chinese EVs and solar equipment.
  - NITI Aayog CEO BVR Subrahmanyam emphasized India's need to lower tariffs to improve private-sector capacity utilization and attract investment, as the sector's utilization currently stands at 70%.
- **Trade Negotiation Pause Amid Growing Deficits**
  - In response to rising trade deficits with partners like the UAE and ASEAN, the Commerce Ministry has paused new trade negotiations to establish a new standard operating procedure (SOP).

India missing the China-plus-one opportunity

- **About China-plus-one strategy**
  - **China Plus One, also known as Plus One or C+1,** is a business strategy that involves diversifying manufacturing and sourcing away from China.
  - The **goal is to reduce the risk of over-reliance on China for manufacturing and sourcing.**
  - The China Plus One strategy has become more popular in recent years due to a number of factors, including: The COVID-19 pandemic, The US–China trade war, Rising labor costs in China, and Geopolitical and economic factors.
- **India's Missed Opportunity in US-China Trade Shift**
  - According to a recent Oxford Economics **report, India has lagged behind other Asian countries in capitalizing on the US import demand shift away from China, especially in high-growth sectors.**
  - Although India has achieved production gains, they have not significantly contributed to domestic value addition, unlike in its peer economies.
    - The report notes a concerning trend in India's high-tech sector: while exports surged by 350% between 2017 and 2023, domestic value-added output actually fell by 18%.

    - Manufacturing, by contrast, has shown some promise, with domestic value-added growth at 26%, though still trailing behind merchandise export growth of 44%.
- **Limited Gains in Electronics and Manufacturing**
    - The **US-China tensions** and tariff disputes from 2018-2019 spurred hopes for increased US demand for Indian goods, particularly in manufacturing.
    - In electronics, India's share in US imports has grown from 0.2% in 2017 to 2.1% in 2023, a result of the government's push toward high-tech exports.
    - However, competitors like Vietnam, Taiwan, Malaysia, and Thailand continue to dominate, with each holding a substantially higher market share in US electronics imports.

Attracting Chinese FDI – pros and Cons

- **Chinese Investment Abroad Hits Record High Amid Global Protectionism**
    - Amid escalating **protectionist barriers from Western nations**, Chinese companies have been ramping up their overseas investments, with overseas assets increasing by approximately $71 billion in Q2 this year — an 80% rise from last year.
    - However, **India has seen limited Chinese investment due to ongoing border tensions**, with India's share in China's outward direct investment to Asia dropping from 2.6% in 2019 to 1% in 2021.
- **Concerns Over Chinese Investment in India's Strategic Sectors**
    - **Experts warned that while Chinese firms investing in India could boost short-term trade, this could undermine India's long-term economic security and strategic independence.**
    - They cautioned that heavy reliance on Chinese companies could expose India to supply chain vulnerabilities and limit opportunities for local industries.
    - Additionally, Chinese firms might prioritize their own supply chain interests and potentially bring in foreign staff, which could curb benefits to the Indian workforce and hinder the growth of domestic firms.

Uncertainty with Trump's policy

- **Trump's Trade Policies: Potential Implications for India**
    - Donald Trump's return to the presidency has heightened concerns over potential tariff actions against India.
    - **During his first term, Trump removed India's duty-free benefits under the Generalised System of Preferences (GSP) program, impacting $5.7 billion worth of Indian exports.**
    - Additionally, Trump's tariff increases on Chinese goods could indirectly benefit India by driving investment interest toward the country.
- **Impact on WTO Dispute Resolution and Smaller Economies**
    - Trump previously blocked judge appointments to the WTO's dispute resolution body, effectively paralyzing it.
    - While large economies have managed to resolve trade disputes bilaterally, smaller nations remain in a difficult position.
- **Concerns Over Future Tariffs and Stringent Trade Terms**
    - Analysts fear that a **Trump presidency could extend tariff policies beyond China, potentially targeting Indian goods.**
        - Trump might press for reciprocal tariffs and apply increased tariffs on sectors critical to India, such as **automobiles, textiles, pharmaceuticals, and wines.**
    - This would reduce Indian competitiveness in the U.S. market, posing risks to revenue and market access for Indian exports.
- **New opportunities may open for Indian exporters**
    - As the US intensifies its stance on China, new opportunities may open for Indian exporters to fill gaps left by restricted Chinese imports.

12. Anti-terror conference 2024

Why in news?

A two-day anti-terror conference 2024 in New Delhi will be inaugurated by the Union Home Minister. The event, hosted by the National Investigation Agency (NIA), aims to shape future counter-terrorism policies and strategies. NIA

has outlined major issues for an upcoming two-day anti-terror conference in New Delhi, including the **role of organized crime in terror funding** in northeast India, the use of encrypted apps, connections between organized criminal gangs and terrorism, and the regulation of social media in terror cases.
These topics will be discussed with intelligence agency heads and state counter-terrorism squads.

Organised Crime and Terror Funding

- **About Organised Crime**
  - Organized crime refers to **criminal enterprises that are systematically structured to engage in illegal activities for profit.**
  - These criminal groups often operate with a high level of coordination, secrecy, and persistence, using violence and corruption to exert control over their operations.
  - In India, organized crime includes activities such as **drug trafficking, arms smuggling, human trafficking, extortion, and illegal mining.**
- **Symbiosis between Organized Crime and Terrorism**
  - **Organized crime has developed a symbiotic relationship with terrorist groups**. This collaboration allows both entities to thrive.
  - Terrorist organizations, such as those active in the region, often rely on the financial support provided by organized criminal gangs.
  - These groups, in turn, benefit **from the protection and resources offered by the terrorist organizations.**
  - This partnership helps sustain their operations, often in remote areas where the government has limited reach.
- **Role of Organized Crime in Terror Funding**
  - **Organized crime and terrorism are linked in several ways, including:**
    - **Illegal activities -** Terrorist groups can fund their activities through illegal activities like: **Drug trafficking; Human trafficking; Weapons trafficking; Extortion; Smuggling; Kidnapping for ransom.**
    - **Legal sources -** Terrorist groups can also fund their activities through legal sources like: **Donations from wealthy benefactors; Front organizations; Business activities.**
    - **Money laundering -** Criminals can use the financial system to support terrorism through: The formal financial system; New payment methods like bitcoin and Ripple; **Traditional methods of value transfer like hawala; Trade based money-laundering; Cash couriers.**
- **Case Example: Northeast India**
  - In the northeastern states of India, particularly in **Manipur, Nagaland, and Assam**, insurgent groups have had long-standing ties with organized crime.
  - For instance, groups like the **United Liberation Front of Asom (ULFA) and National Socialist Council of Nagaland (NSCN) have been known to engage in extortion from businesses**, smuggling of arms and drugs, and even running illegal taxation operations.
  - These activities have helped them finance their operations and sustain insurgency movements.
  - In recent years, the **NIA and intelligence agencies have reported the increasing involvement of organized crime in financing terrorism.**
  - The rise of criminal syndicates engaging in **cross-border smuggling**, coupled with the proliferation of firearms, has exacerbated the security situation in these regions.
  - The use of drones to drop drugs and arms across the **India-Myanmar border has also become a significant concern.**

Anti-terror conference 2024

- The two-day anti-terror conference, organized by the National Investigation Agency (NIA), will address several critical issues, including:
  - **Terrorist Group Formation and Criminal Linkages**
    - A focus on preventing the formation of new terrorist groups through a "ruthless" approach, as directed by Union Home Minister.
    - Discussion of organized crime's role in terror funding, especially in northeast India.
    - The **rise of Hizb-ut-Tahrir (HuT) in southern states** and transnational crime syndicates' links to terrorism.
  - **Case Studies and Emerging Threats**

    - Detailed discussion of the **Rameshwaram cafe blast**, including the arrest of the accused through coordination between West Bengal police and the NIA.
    - Examination of new methods for arms and drug trafficking across borders using drones.
  - **Counter-Terrorism Coordination and Strategy**
    - **Importance of a uniform anti-terror structure**, with better coordination between counter-terrorism squads and local police at the district level.
    - **Strategy to tackle terror financing and dismantle the terror ecosystem in areas affected by Left Wing Extremism.**
  - **Technological Challenges in Terrorism**
    - The **role of social media and encrypted applications in terrorism**, including the use of VPNs, virtual numbers, and encrypted apps by terror groups.
    - The impact of narcotics trafficking on national security.
  - **National Databases for Counter-Terrorism**
    - Use of the NIA's national-level terror database, which includes data on fingerprint records, terrorist cases, narco-offenders, and human trafficking offenders, to aid in investigations.

13. A New Tryst with Destiny: India Could Not Create Mass Prosperity. It Is Not Too Late

Context

- In the past 50 years, **the economic trajectories of China and India have presented economic historians with a compelling puzzle**; China, an autocracy, has seen robust wage growth yet meagre public market returns, **reporting an approximate 13% decline in the last two decades.**
- In contrast, **India, a democracy, has experienced substantial returns in its public market, around 1,300% in the same period**, while wage growth has been comparatively weak.
- Amid these developments, **it is crucial to examine India's economic journey, persistent challenges and underlying factors shaping these outcomes, as well as potential strategies** for addressing India's unique challenges.

An Analysis of India's Economic Journey: Progress and Persistent Challenges

- **India's Progress**
  - **India has made noteworthy progress since its independence in 1947**, transforming itself into the world's largest democracy despite its deeply hierarchical society.
  - **In just a few decades, life expectancy increased from 31 to 68 years**, and the country rose to middle-income status.
  - **However, India's aspirations** for social justice are **hindered by historical constraints.**
  - Social mobility, **critical for economic growth and equity, remains 40% lower in middle-income nations like India** than in high-income countries.
  - Additionally, **the global track record for countries transitioning to high-income status** is dismal.
  - **Only 34 economies, with a combined population of around 250 million, have reached this milestone since 1990,** underscoring the considerable challenges India faces.
- **India's Challenges**
  - **India's challenge centres on employed poverty** rather than unemployment.
  - The **labour force distribution reveals a stagnant structure: 45% in agriculture, 14% in construction, 30% in services,** and only 11% in manufacturing.
  - **Most of India's agricultural workers are trapped in informal self-employment,** eking out a living with minimal productivity.
  - **This phenomenon, termed self-exploitation, stands in stark contrast to China's success** in shifting millions from farms to factories.
  - **While India has a sizeable labour force and adequate land and capital, it has not replicated China's scale of manufacturing growth** despite substantial foreign direct investment and macroeconomic stability.

The Importance of Manufacturing for India's Economic Growth

- **A Pathway Out of Poverty by Providing Jobs**

- **Manufacturing can play a crucial role in India's development** due to its capacity to create jobs across the skill spectrum, enhance productivity, **and stimulate broader economic activity.**
- **In countries like China, manufacturing provided a pathway out of poverty for millions, who transitioned from farming to factory work**, gaining access to stable wages and better working conditions.
- In India, **however, only 11% of the labour force is employed in manufacturing**, which has kept wage growth sluggish and poverty levels high despite overall economic growth.

- **Less Reliance on Agriculture**
  - For India, **expanding the manufacturing sector could transform its labour force structure,** decreasing the reliance on low-productivity agriculture and creating new opportunities for unskilled and semi-skilled workers.
  - **The goal would be to gradually increase manufacturing employment to 25%** of the labour force by 2035.
  - **It would require a combination of policy reforms, infrastructure investments,** and regulatory changes to support industry growth.

Structural Constraints Hindering Manufacturing Growth

- **Regulatory Barriers and Regulatory Cholesterol**
  - **One of the biggest challenges** for manufacturing in India is **what is often referred to as regulatory cholesterol.**
  - It is a **complex and burdensome regulatory environment** that **disproportionately affects small and medium enterprises (SMEs).**
  - The **Indian business landscape is dotted with myriad compliance requirements, filings, and licensing needs** that can be especially cumbersome for smaller firms.
  - These regulations, **while intended to ensure standards and safety, often lead to excessive compliance costs, and discourage formalisation**, which in turn limits these firms' growth potential and productivity.
- **Informal Employment and Limited Scale of Small Enterprises**
  - **A significant portion of India's manufacturing sector is dominated by informal enterprises,** which are typically small-scale and lack the resources to upgrade technology, train workers, or access formal financing.
  - The **informal nature of these enterprises makes it challenging to improve productivity and achieve economies of scale**, which are crucial for competing in global markets.
  - **Large companies, which tend to be more productive and capable of employing thousands of workers,** are relatively rare in India's manufacturing sector.
  - **This structural characteristic has kept the manufacturing sector fragmented** and unable to drive large-scale employment.
- **Infrastructure and Skill Gaps**
  - While infrastructure and skills were previously cited as major obstacles **to manufacturing, recent improvements have lessened these barriers.**
  - **Massive investments in infrastructure have improved India's transportation networks,** energy supply, and logistics systems, essential for the smooth functioning of manufacturing operations.
  - **Skill development has also seen significant progress through initiatives like the National Education Policy (NEP) 2020**, which aims to enhance educational quality and employability by promoting holistic learning and vocational training.
  - **Despite these advances, gaps remain, particularly in skill alignment with industry needs.**
  - Although education levels are rising, there remains a mismatch between the skills workers possess and the skills required by modern manufacturing jobs.
- **Low Levels of Investment in Technology and Innovation**
  - **Another structural constraint** in India's manufacturing sector is the relatively **low level of technological investment and innovation.**
  - **Many Indian firms, especially small and medium-sized enterprises**, operate with limited technological resources, which reduces their competitiveness on a global scale.
  - **Unlike China, where technological advancements and productivity gains have fuelled rapid manufacturing growth**, India's manufacturing sector is still heavily reliant on labour-intensive, low-productivity activities.

India's Path Forward to Realising the Full Potential of India's Manufacturing Sector

- **Balancing Democracy and Economic Development**
  - India faces a unique challenge in **balancing democratic values with economic growth.**

- **Unlike China, which prioritised rapid industrialisation at the expense of personal freedoms,** India's democratic framework calls for a more nuanced approach.
- The **potential for manufacturing employment to rise to 18-20% of the workforce** within the next decade is a realistic goal.

- **Domestic Consumption as a Growth Engine and Strategic Manufacturing Policy**
  - **India's large domestic market presents a growth opportunity** that China has historically underutilised, having prioritized exports and investment, however, India must harness this market to bolster manufacturing.
  - **By promoting Make for India policies**, domestic manufacturing **could fulfil local demand while also building the foundation for export competitiveness.**
  - For instance, **the automotive sector in India has flourished by supporting both domestic and international manufacturers**, creating a level playing field that enabled the development of supply chains, scale, and exports.
- **Infrastructure Investments**
  - **Infrastructure investments should continue**, with a particular focus on improving logistics and transportation networks to reduce costs for manufacturers.
  - **Expanding vocational training programs to bridge skill gaps** and align educational outcomes with industry **demands is also critical.**
  - **Finally, policies that encourage innovation, research, and technology adoption** within manufacturing **can help India move up the value chain and compete globally.**

Conclusion

- Despite its democratic achievements, **India has yet to fulfil its tryst with destiny by establishing widespread prosperity.**
- Nevertheless, **recent reforms and a policy focus on manufacturing could help India overcome its economic challenges.**
- **By creating high-productivity firms and expanding employment opportunities** in manufacturing, **India can set a course toward sustained economic growth.**

14. Paradox of India's Stagnant Rural Wages Amidst Economic Growth

Why in News?

The Indian economy has shown impressive growth in recent years, yet rural wages remain stagnant, especially in real terms.

Hence, there is the need to explore the dichotomy between macroeconomic growth and the subdued rise in rural wages, **examining contributing factors and potential mitigation through government schemes.**

Rural Wages vs Economic Growth:

- **Economic growth overview:**
  - India's GDP grew at an average rate of **4.6% from 2019-20 to 2023-24**, reaching 7.8% over the last three fiscal years (April-March).
  - **Agricultural sector growth** rates were also robust, averaging 4.2% and 3.6% for the same periods.
- **Wage growth data:**
  - The Labour Bureau compiles daily wage rate data for 25 agricultural and non-agricultural occupations, collected every month from 600 sample villages spread over 20 states.
  - **From 2019 to 2024**, rural wages grew by 5.2% annually in nominal terms; however, **adjusted for inflation, the real growth was -0.4%.**
  - Even in the current fiscal year, wage growth remains low, h**ighlighting a disconnect between GDP growth and real wage gains.**

Factors Behind Stagnant Rural Wages:

- **Rising female labour force participation (LFPR):**
  - The female LFPR has risen sharply, from 24.5% in 2018-19 to 41.7% in 2023-24, with **rural female LFPR jumping to 47.6%.**

- According to the Economic Survey 2023-24, programs like **Ujjwala, Har Ghar Jal, and Swachh Bharat have freed up time for rural women**, enabling their entry into the workforce.
- Higher workforce participation, especially among rural women, has led to a **larger labour pool, exerting downward pressure on wages** due to a supply-demand imbalance.

- **Shift in labour demand:**
  - Although more women are entering the labour force, **most are finding employment in agriculture**, not higher-paying industrial jobs.
  - Economic growth in India has leaned towards **capital-intensive industries** that **require less labour**, further limiting wage growth in rural areas.
  - With more workers in agriculture, where **productivity per worker is already low**, additional labour supply only depresses wages further.

Steps Taken to Address the Issue of Low Rural Wages:

- **Income transfer schemes:**
  - **State initiatives:** Various state governments have introduced income support schemes targeting women, amounting to around Rs 2 lakh crore annually.
  - **Impact of transfers:** Programs like Maharashtra's **Ladki Bahin Yojana** provide significant financial support to women, supplementing their low wages and offering a buffer in challenging times.
- **Central government schemes:**
  - The Centre's income transfer schemes, including
    - Rs 6,000-per-year aid to farmer households (**PM-KISAN**) and
    - the free-grain scheme (**PM Garib Kalyan Anna Yojana** [PMGKAY]),
  - Also help mitigate low rural income levels.

Conclusion:

- Despite substantial economic growth, rural wage growth remains subdued, with real wages barely improving.
- While government interventions provide some relief, **addressing the root causes of stagnant rural wages** - such as limited labour demand in higher-paying industries and the oversupply of rural labour - is essential for achieving inclusive economic prosperity.

1st November

1. Kumbh Mela

Context

Uttar Pradesh is preparing for the 2025 Maha Kumbh.

About

It is a **45-day religious event that is held once in 12 years**. It is slated to begin on **January 14, 2025**. Pilgrims come to bathe in sacred rivers, believing it purifies their sins and promotes spiritual liberation.

The location of the Mela also keeps rotating between four pilgrimages namely:

- Kumbh Mela in **Haridwar on the Ganges in Uttarakhand**.
- Kumbh Mela in Ujjain on the **Shipra River in Madhya Pradesh**.
- Kumbh Mela in Nashik on the **Godavari River in Maharashtra**.
- Kumbh Mela in Prayagraj at the confluence of **Ganga, Yamuna, and Saraswati in Uttar Pradesh.**

Each site is chosen as per the astrological positions of the **Sun, the Moon and the Jupiter**. The mela is held at the exact time when these three positions are fully occupied, and it is the holiest time in Hinduism.

Maha Kumbh Mela: It comes once in every 144 years after 12 Purna Kumbh Melas. **Maha Kumbh is held only in Prayagraj.**

2. Mobile App for Birth and Death Registration

Context

Union Home Minister Amit Shah launched the **Civil Registration System (CRS) mobile application to "integrate technology with governance".**

Civil Registration System (CRS) App

The mobile app, prepared by the **Registrar General and Census Commissioner of India**, is expected to significantly reduce the time required for the registration of births and deaths. **According to the Registration of Births and Deaths (Amendment) Act, 2023, all reported births and deaths in the country occurring from October 1, 2023 are to be digitally registered.** The digital birth certificates will be a single document to prove the date of birth for various services such as admission to educational institutions, government jobs and marriage registration. The centralized database will also help update the **National Population Register (NPR), ration cards, property registration and electoral rolls**.

3. BRIC-NABI

Context

The Union Science and Technology Minister has inaugurated the **BRIC-National Agri-Food Biomanufacturing Institute (NABI).**

About

The establishment of BRIC-NABI is a strategic merger between the **National Agri-Food Biotechnology Institute (NABI), and the Centre of Innovative and Applied Bioprocessing (CIAB),** Both are autonomous institutes under the Department of Biotechnology (DBT). **The facility aims to transform India's agri-food sector through advanced biotechnology** The combined expertise of NABI and CIAB will enhance agricultural productivity through innovations such as genetically modified crops with higher yields, better disease resistance, and improved nutritional content.

4. Pradhan Mantri Mudra Yojana

In News

Mudra Loan Limit Increased to Rs 20 Lakh Following Budget Announcement.

About PM MUDRA Yojana (PMMY)

MUDRA stands for **Micro Units Development & Refinance Agency Ltd, providing financial inclusiveness for marginalized groups under PMMY**. It **launched on April 8, 2015,** to support non-corporate, non-farm small and micro enterprises with loans up to ₹10 lakh.

Loan Limit Increase: The loan limit was raised to ₹20 lakh in the Union Budget 2024-25, effective from October 24, 2024. Enhanced loans under the new limit are covered by the Credit Guarantee Fund for Micro Units (CGFMU), strengthening the government's commitment to entrepreneurship.

Objective: MUDRA aims to nurture India's young entrepreneurial talent by addressing gaps in the economic ecosystem.

Loan Categories: Shishu: Loans up to ₹50,000.
Kishore: Loans above ₹50,000 and up to ₹5 lakh.
Tarun: Loans above ₹5 lakh and up to ₹10 lakh.
Tarun Plus: Loans between ₹10 lakh and ₹20 lakh.

5. Bail Provisions Under PMLA

Context

Delhi High Court has said that the **Stringent provisions of the Prevention of Money Laundering Act (PMLA) cannot be used as a "tool for incarceration".** The court underlined that bail is the rule and jail an exception.

The Prevention of Money-Laundering Act (PMLA)

It was **enacted under Article 253 of the Constitution in 2002 to prevent money laundering and provide for the confiscation of property derived from or involved in money laundering**. It came into force from 2005, and it was further amended in 2009 and in 2012. The offence under the PMLA mainly involves money laundering obtained through criminal activities (e.g., drug trafficking, terrorism, corruption).

Bail Provisions under the Law

Section 45 of the PMLA, which deals with bail, first states that no court can grant bail for offences under this law, and then proceeds to mention a few exceptions. T**he negative language in the provision itself shows that bail is not the rule but the exception under PML**A. The provision makes it mandatory to hear the public prosecutor in all bail applications, and when the prosecutor opposes bail, the court is required to apply a twin test.

These two conditions are:

(i) that there are "reasonable grounds for believing that [the accused] is not guilty of such offence"; and

(ii) that "he is not likely to commit any offence while on bail".

6. Mission for Integrated Development of Horticulture (MIDH)

It is a **Central Sponsored Scheme (CSS) implemented from 2014-15** that promotes the cultivation of fruits, vegetables, root and tuber crops, mushrooms, spices, flowers, aromatic plants, coconut, cashew, cocoa and bamboo. **Under MIDH, financial & technical assistance is provided to States/UTs for following major interventions/activities;**

- Setting up of **nurseries, tissue culture units for production of quality seed and planting material**.
- **Area expansion** i.e. Establishment of new orchards and gardens for fruits, vegetables, and flowers.
- **Protected cultivation**, i.e. poly-house, green-house, etc, to improve the productivity & grow off season high value vegetables and flowers.
- **Organic farming and certification**. Creation of water resources structures and watershed management.
- **Bee-keeping for pollination**.
- Creation of Post Harvest Management and Marketing infrastructure.

2nd November

1. Asset Recovery Interagency Network–Asia Pacific (ARIN-AP):

It is a **prominent multi-agency network dedicated to tackling crime proceeds across the Asia-Pacific region.** It was established to facilitate cross-border collaboration on asset tracing, freezing, and confiscation. **The aim of ARIN-AP is to increase the effectiveness of members' efforts in depriving criminals of their illicit profits on a multi-agency basis by establishing itself as the center of professionals' network in tackling the proceeds of crime**. The network includes 28 member jurisdictions and nine observers, serving as an informal yet robust framework within the CARIN, or Camden Asset Recovery Inter-Agency Network. ARIN-AP operates through a network of contact points, enabling effective communication and intelligence exchange among member agencies, and of more than 100 jurisdictions in the CARIN Network. **The Directorate of Enforcement (ED) is the nodal agency for India in this network.** The law enforcement agencies across ARIN-AP and CARIN jurisdictions benefit from this network, as it aids in tracing assets related to criminal activities, both movable and immovable, across frontiers. **Through ARIN-AP and the larger CARIN Network, agencies can exchange information on individuals, assets, and companies informally, often expediting the identification and recovery of proceeds of crime.**

2. Arsenic:

Arsenic is a **naturally occurring substance that can be found in air, water, and soil**. It can also be released into the environment by certain agricultural and industrial processes, such as mining and metal smelting. It is a **chemical element in the nitrogen group (Group 15 of the periodic table), existing in both gray and yellow crystalline forms. Arsenic comes in two forms (organic and inorganic).** It is highly toxic in its inorganic form. People in the general population may be exposed to arsenic through drinking contaminated water, using contaminated water in food preparation and irrigation of food crops, industrial processes, eating contaminated food, and smoking tobacco.

Arsenic poisoning:

It can occur when you take in high levels of arsenic.

Drinking contaminated water causes most cases.
Symptoms of immediate arsenic poisoning include nausea, vomiting, and diarrhea. **Long-term exposure can cause skin changes such as darkening and lesions.** Treatment may include the use of a chelating agent or bowel irrigation.

Applications:
Arsenic is a well-known poison. Arsenic compounds are sometimes used as rat poisons and insecticides, but their use is strictly controlled. **Arsenic is used as a doping agent in semiconductors (gallium arsenide) for solid-state devices**. It is also used in **bronzing, pyrotechnics, and for hardening shot**. Arsenic compounds can be used to make special glass and preserve wood.

3. Hwasong-19:

It is a **North Korean intercontinental ballistic missile (ICBM)**. As the latest addition to the Hwasong series, the Hwasong-19 incorporates solid-fuel propulsion, which allows it to be deployed more rapidly than liquid-fueled missiles, making it harder to detect and intercept. **It is estimated to be at least 28 meters long (92 feet), while advanced U.S. and Russian ICBMs are less than 20 meters long (66 feet).** Analysts estimate that if launched on a standard trajectory, the Hwasong-19 could cover distances exceeding 13,000 kilometers, enough to target the U.S. mainland.

What is an intercontinental ballistic missile (ICBM)?
An ICBM is a long-range missile that is designed to deliver nuclear warheads, although it could also deliver other payloads. According to the Federation of American Scientists, ICBMs have a minimum range of 5,500 kilometres (3,400 miles), with maximum ranges varying from 7,000 to 16,000 kilometres. **ICBMs are much faster and have a greater range than other types of ballistic missiles.** Designed primarily for strategic purposes, **ICBMs are usually launched from land or submarines and travel through space before re-entering the Earth's atmosphere to reach distant targets.** Agni-V is an Indian ICBM with a range of over 5,000 km.

4. GARUD SHAKTI 2024:

It is the **9th edition of the India-Indonesia Joint Special Forces exercise**. The Indian contingent is being represented by troops from the Parachute Regiment (Special Forces). **The Exercise aims to acquaint both sides with each other's operating procedures and enhance mutual understanding, cooperation and interoperability between the Special Forces of both armies.** It is designed to develop bilateral military cooperation and strengthen bonds between two armies through the conduct of discussions and rehearsal of tactical military drills. It will involve planning and execution of special operations, orientation to advance special forces skills, and sharing of information on weapons, equipment, innovations, tactics, techniques & procedures. **It will also involve jointly practising Special Forces Operations in Jungle terrain, strikes on terrorist camps and a Validation Exercise integrating basic and advanced special forces skills apart from gaining an insight into the lifestyle and culture of both countries to foster military cooperation**.
Significance: It will provide an opportunity for both the contingents to strengthen their bond and share best practices. It will also **act as a platform to achieve shared security objectives and foster bilateral relations between two friendly nations**

5. LiDAR:

Light Detection and Ranging (LiDAR) is a remote sensing technology that uses light in the form of a pulsed laser to measure ranges (or variable distances) of a sensor, usually mounted aboard an aircraft, to Earth's surface. LiDAR data can be used to create high-resolution 3-D models of ground elevation with a vertical accuracy of up to 10 cm.

Working
LiDAR instrumentation comprises a **laser, a scanner, and a GPS receiver**. The rapidly firing laser travels to the ground where it hits vegetation, buildings, and various topographic features. This light is reflected or scattered, and recorded by the LiDAR sensor. **The system calculates the light pulses' two-way travel time to arrive at the distance between the terrain and the sensor. It processes this information with Global Positioning System (GPS) and Inertial Measurement System (IMS) data, to create an elevation map of Earth**. LiDAR data is initially collected as a "point cloud" of all individual points reflected from everything on the surface, including structures and vegetation. The specific of how much light energy was returned to the sensor allows further identification of different features, such as vegetation, buildings, etc. For example, tree canopies, however dense they may be, allow some light to pass through and hit the ground. Its data can be further refined to produce what scientists call a "bare earth" Digital Elevation Model, in which structures and vegetation are stripped away.

Applications

It is used to **generate precise, three-dimensional information about the shape of the Earth and its surface characteristics.** This is obviously very useful information for geographers, policymakers, conservationists, and engineers. It has also shown potential as a tool of archaeological discovery.

6. Analogue Space Mission:

The Analogue space missions are simulated missions conducted on Earth that mimic the conditions and challenges of actual space exploration. These **missions are crucial for testing technologies, studying human behaviour, and preparing for future long-duration space flights.**

Aim:

It **aims to replicate the living conditions astronauts would face on missions to destinations like the Moon, Mars, or asteroids.**

Objective: To replicate conditions of living in an interplanetary habitat, tackling the potential obstacles that astronauts may face on future deep-space missions. **They provide a controlled environment to study the physical and psychological effects of isolation and confinement, which are critical for understanding how humans will cope with extended space travel.** It will attempt to simulate life in an interplanetary habitat to tackle the challenges of a base station beyond Earth. **India's mission is a joint effort which involves the Human Spaceflight Centre of ISRO, AAKA Space Studio, the University of Ladakh, and IIT Bombay and is backed by the Ladakh Autonomous Hill Development Council.** Throughout the mission, participants will conduct activities to simulate life on another planet, such as habitat design testing, resource management research, and psychological studies on isolation's impact on crew members.

Significance

It serves as a platform for testing new technologies and operational concepts. **They help in evaluating systems related to habitat design, life support, in-situ resource utilisation (ISRU), and crew health monitoring**. It aligns with India's larger goal of advancing its human spaceflight and interplanetary exploration capabilities, including the Gaganyaan project, which seeks to send Indian astronauts into space.

Examples of Analogue Missions

NASA's NEEMO: Conducted underwater to simulate microgravity conditions, allowing crews to perform tasks similar to those expected in space.

SIRIUS Program (UAE): It focuses on understanding the psychological impacts of isolation during long-duration missions. It includes international collaborations to conduct various scientific experiments.

Arctic Mars analogue Svalbard Expedition (AMASE): Uses the Svalbard archipelago's extreme environments to test equipment and procedures relevant to Mars exploration.

3rd November

1. Gastrodia lohitensis:

It is a leafless orchid species found in bamboo thickets around **Tezu and it is named after Lohit district.**

Features

The orchid presents unique adaptations, thriving without sunlight by extracting nutrients from fungi in decomposing leaf litter. It **grows 50-110 cm tall, the orchid's defining features include a pair of linear calli and ridges on its flower lip, setting it apart from closely related species in Southeast Asia**. It flourishes only in dense, shaded bamboo canopies, underlining its limited ecological niche.

Threats: With just a small range in the district, **Gastrodia lohitensis faces pressures from local land use, including bamboo harvesting and agriculture.** Conservationists stress that the survival of this rare orchid depends on protecting its fragile habitat in Arunachal Pradesh's biodiverse landscape.

2. VAJRA PRAHAR 2024:

It is a **joint military exercise between the Indian army and the US army**. The exercise is scheduled to be conducted at Orchard Combat Training Centre in Idaho, USA. **The Indian Army contingent will be represented by Special Forces units and the US Army contingent will be represented by Green Berets of US**. Exercise VAJRA PRAHAR aims to promote military cooperation between India and the US through the enhancement of interoperability, jointness and mutual exchange of special operations tactics. **The exercise will enhance combined capabilities in executing joint Special Forces Operations in desert/semi-desert environments**. And also will focus on a high degree of physical fitness, joint planning and joint tactical drills. Drills/ aspects to be rehearsed during the exercise will include planning a Joint Team Mission, Reconnaissance Mission, employment of Unmanned Aerial Systems, execution of Special Operations, actions of Joint Terminal Attack

Controller and Psychological Warfare in Special Operations.

Significance: It will enable the two sides to share their best practices and experiences for the conduct of joint Special Forces Operations. The exercise will facilitate the development of inter-operability, bonhomie and camaraderie between soldiers of both countries.

3. Kodo millet:

Kodo millet (Paspalum scrobiculatum) is also known as **Kodra and Varagu in India. It is one of the "hardiest crops, drought tolerant with high yield potential and excellent storage properties**," It is rich in vitamins and minerals. It is a staple food for many tribal and economically weaker sections in India.

Required climatic conditions:

The **tropical and subtropical regions are best suited for Kodo millet cultivation.** It is grown on poor soils, and widely distributed in arid and semi-arid regions. **The millet is believed to have originated in India and Madhya Pradesh (MP) is one of the largest producers of the crop, according to a 2020 research paper**. Apart from MP, the millet is cultivated in Gujarat, Karnataka, Chhattisgarh, and parts of Tamil Nadu. The crop is grown in India, Pakistan, the Philippines, Indonesia, Vietnam, Thailand, and West Africa. According to the research paper, "CPA (Cyclopiazonic acid) is one of the major mycotoxins associated with the kodo millet seeds causing kodo poisoning which was first recognised during the mid-eighties".

Kodo poisoning occurs mainly due to the consumption of Kodo grains, when "maturing and harvesting if the grains had encountered with rainfall, resulting in a fungal infection leading to 'poisoned Kodo' which is locally known as 'Matawna Kodoo' or 'Matona Kodo' in northern India." Kodo poisoning mainly affects the nervous and cardiovascular systems and the chief symptoms include "vomiting, giddiness, and unconsciousness, small and rapid pulse, cold extremities, shaking of limbs and tremors."

4. Wildlife Crime Control Bureau:

It is a statutory multi-disciplinary body established by the Government of India to combat organized wildlife crime in the country. It was **constituted by amending the Wild Life (Protection) Act, 1972.**

Mandate: Under the Wild Life (Protection) Act, 1972 it is mandated to Collect and collate intelligence related to organized wildlife crime activities and disseminate the same to the state and other enforcement agencies for immediate action so as to apprehend the criminals. **Establish a centralized wildlife crime data bank**. Assist foreign authorities and international organization concerned to facilitate co-ordination and universal action for wildlife crime control.

In the **capacity building of the wildlife crime enforcement agencies for a scientific and professional investigation into wildlife crimes and assist State Governments to ensure success in prosecutions related to wildlife crime**s; It advises the Government of India on issues relating to wildlife crimes having national and international ramifications, relevant policies and laws. It also assists and advises the Customs authorities in the inspection of the consignments of flora & fauna as per the provisions of the Wild Life Protection Act, CITES and EXIM Policy governing such an item. **It has developed an online Wildlife Crime Database Management System to get real-time data in order to help analyse trends in crime and devise effective measures to prevent and detect wildlife crimes across India**. This system has been successfully used to analyse trends, helping put in preventive measures as well as for successfully carrying out operations such as **Operation SAVE KURMA, THUNDERBIRD, WILDNET, LESKNOW, BIRBIL, THUNDERSTORM, LESKNOW-II**

Nodal Ministry: Ministry of Environment, Forest and Climate change

Headquarter: New Delhi

5. Thadou Tribe:

They are an indigenous people who live in the hill country adjacent to the Imphal Valley in the northeastern state of Manipur.

Other names: Chillya, Kuki, Kukihin, Teizang and Theruvan.

Language: They speak Chin and Thado which belongs to the Tibeto-Burman family of the Sino-Tibetan languages.

The village chief's house is usually the largest dwelling within the village. Outside it, there is a platform upon which men gather to discuss matters of importance and to mediate disputes.

Economy: They practice subsistence activities including animal domestication, cultivation, hunting, and fishing**. Jhum (slash-and-burn) agriculture is predominant.**

Religious Beliefs: The **god Pathen is believed by the Thadou to have created everything**. He is also believed to be the ruler of the universe. Sacrifice is offered to Pathen for health or assistance in times of trouble.

Festival: The Hun-Thadou cultural festival is an annual celebration of this community which is celebrated at the arrival of the New Year.

6. WHO's Global Tuberculosis Report 2024

The World Health Organization (WHO) has highlighted both progress and ongoing challenges in India's fight against tuberculosis (TB) in its latest Global TB Report.

About

Global TB Cases: TB remains the leading infectious killer, surpassing COVID-19, with 8.2 million new cases in 2023.

India's TB Burden: India, with the highest TB burden globally, recorded 2.8 million cases in 2023. India alone accounted for 26% of global cases and 29% of global TB deaths (315,000 deaths**). India is followed by Indonesia (10%), China (6.8%), the Philippines (6.8%), and Pakistan (6.3%).**

Multidrug-Resistant TB: India represents 27% of the world's multi-drug-resistant TB cases, underscoring the need for specialized treatment approaches.

What is Tuberculosis?

Tuberculosis (TB) is an **infectious disease that most often affects the lungs and is caused by the bacteria Mycobacterium tuberculosis**. It spreads through the air when infected people cough, sneeze or spit.

Symptoms: prolonged cough (sometimes with blood), chest pain, weakness, fatigue, weight loss, fever, night sweats. While TB usually affects the lungs, it also affects the kidneys, brain, spine and skin.

7. Asset Recovery Interagency Network-Asia Pacific (ARIN-AP)

ARIN-AP, with 28 member jurisdictions and nine observers, enables cross-border collaboration for asset tracing, freezing, and confiscation through a network of contact points. It is part of the Global CARIN Network dedicated to combating the proceeds of crime across Asia-Pacific. **It facilitates intelligence-sharing, helping agencies trace and recover assets linked to crimes across borders**. India is set to assume the ARIN-AP presidency and host its Annual General Meeting in 2026, reinforcing its leadership in asset recovery This role will enhance India's involvement in ARIN-AP's decision-making and administrative processes, supporting global asset recovery efforts.

8. First 'black hole triple' System Discovered

Astronomers have found a rare triple black hole system called V404 Cygni that changes our understanding of how black holes form

About

Located about 8,000 light-years from Earth, V404 Cygni has a black hole with two orbiting stars—one very close, circling every 6.5 days, and a second much farther away, around 100 times the distance of Pluto from our Sun.

Insights from V404 Cygni

This **V404 Cygni system suggests a different formation method called "direct collapse," where a black hole forms quietly without a supernova explosion**. Thousands of simulations confirmed that this was the most likely way V404 Cygni's black hole formed, sparing the second, distant star from being ejected by a violent explosion.

9. What is Black Hole?

It is a **region in space with such strong gravity that nothing, not even light, can escape from it.** According to Einstein's theory of general relativity, a black hole is created when a large mass becomes very compact, bending spacetime. **The boundary of no return is called the event horizon.**

Types: There are four main types of black holes:

Stellar Black Holes: Formed by collapsing stars.

Intermediate Black Holes: Larger than stellar but smaller than supermassive.

Supermassive Black Holes (SMBH): The largest type, found at the centers of galaxies, like Sagittarius A* in our galaxy.

Micro Black Holes: Very small, hypothetical black holes, proposed by Stephen Hawking in 1971.

Black holes form when a massive star runs out of fuel. Stars shine because of nuclear fusion, which pushes outward against gravity. But when a star exhausts its fuel, this outward pressure stops, and gravity takes over, causing the star to collapse.

5th November

1. Iron Beam:

The **Iron Beam, also known as Magen or Light Shield, is a new laser-based missile defence system developed by Israel.** It is a 100kW class High Energy Laser Weapon System (HELWS) that is expected to become the first operational system in its class. It is a directed-energy weapon air defence system that fires powerful beams of light that can destroy fast-moving projectiles. Built by **Rafael Advanced Defense Systems, Iron Beam was first unveiled in 2014.** Its operational range extends up to 7 km (4.3 miles).

Advantages:

With a continuous energy supply for the laser, the advantage lies in never depleting ammunition, ensuring a sustained capability for defense. The absence of conventional ammunition will directly result in significant cost savings. **Complementing Israel's Irom Dome, it can be integrated with a range of platforms and can become part of any multilayer defence system.**

Disadvantages:

Diminished effectiveness during restricted visibility, such as heavy cloud cover or adverse weather conditions. It cannot operate effectively in wet conditions—the more moisture in the atmosphere, the more water particles absorb the laser's energy. **Iron Beam requires a direct line of sight between the system and its target, making its placement far more critical**. It also has a much **slower rate of fire**, requiring five seconds or so to transmit sufficient energy to destroy its target.

2. Alstonia scholaris:

Alstonia scholaris, commonly called **blackboard tree, scholar tree, milkwood, or devil's tree** in English, is an evergreen tropical tree in the dogbane family (Apocynaceae). It is called **'Saptaparna' in India. It has been cited in the Charaka and Sushrutha Samhithas.**

Distribution: This tree is widespread across the Indian subcontinent, Southeast Asia, and southern China, thriving in tropical and subtropical climates.

Features:

It grows to a **height of 10–20 meters, sometimes reaching up to 40 meters**. It has dark grey bark and a crown of simple, whorled leaves arranged in clusters of seven, giving rise to the name "saptaparni" (meaning "seven leaves").

Flowers: Small, fragrant, and greenish-white flowers bloom in clusters during late autumn and early winter.

Uses:

The **bark, leaves, and other parts of Alstonia scholaris have been used in traditional medicine for treating respiratory conditions, fever, skin disorders, and digestive issues**. The soft, lightweight wood of the blackboard tree was historically used for making writing slates and blackboards, which is how it got the common name "blackboard tree."

IUCN status: Least Concern

3. Transponder:

A transponder is a wireless communication, monitoring, or control device that picks up and automatically responds to an incoming signal. The term is a combination of transmitter and responder. Transponders are typically used for **detecting, identifying, and locating objects, but they can also be used in other technologies, such as satellites to relay communications signals.** Transponders are commonly found in both civilian and military aircraft and in objects, such as car keys.

How do transponders work?

Transponders operate using **radio frequencies and respond to wireless monitoring, communications, and control device signals.** When sent a signal-also called an **interrogator-a transponder** responds by returning an identifying signal. The information included in the response varies depending on the type of transponder but can include location and identifying codes. The transponder automatically sends back a radio signal at a predetermined frequency. To receive and send signals simultaneously, receiving and transmitting signals must be set at different frequencies.

For Example: An air traffic controller can send an interrogator signal and receive identifying information on an aircraft. This enables the control tower to track the aircraft in the surrounding airspace and provide other information to help the pilots maintain adequate distance from other aircraft. **Transponders are used with the following technologies: aircraft identification; communications satellites; vehicle keys; optical communications; sonar; electronic toll collection systems; lap timing and tyre identification for motorsports; and magnetic labels on credit cards.**

4. Turtle Wildlife Sanctuary:

Turtle (Kachhua) Wildlife Sanctuary is located in the **Varanasi District of Uttar** Pradesh. It was touted as the first freshwater turtle wildlife sanctuary in the country. **The protected area is a 7 km stretch of the Ganga River flowing through Varanasi city from Ramnagar Fort to Malviya Rail/Road Bridge**. The sanctuary was declared to ensure the survival of turtles released into the Ganga River in Varanasi. The turtles were released to promote the organic removal of half-burnt human corpses, which are dumped into the river after final rites under Hindu tradition. To get rid of these without hurting the sentiments of the people, the Ganga Action Plan supported the breeding and release of turtles into the river. **The idea behind the action was that this would in turn nurture a good population of the already dwindling population of Indian softshell turtles**. Turtle hatchlings are reared at the breeding center in Sarnath and subsequently released into the

Ganges River once they get become mature enough to survive in their natural habitat. According to local officials, about 2,000 turtle eggs are brought to the centre from the Chambal and Yamuna rivers every year. **The sanctuary is also home to the Gangetic Dolphin, other species of turtles, and several species of fish, including Rohu, Tengra, and Bhakur.**

5. Hydrogels:

It is a **three-dimensional network composed of hydrophobic polymers synthesized by crosslinking water-soluble polymer**s. Hydrogels can retain a large quantity of water within their network without disturbing their original structure. This imparts flexibility and swelling properties to the hydrogel structures. It is a **"smart" material that can change its structure in response to its environment, such as the local temperature, pH, salt or water concentration.**

What is SARS?

Severe Acute Respiratory Syndrome (SARS) is a **viral respiratory disease caused by the virus SARS-CoV-1**. It is an airborne virus and can spread through small droplets of saliva in a similar way to the cold and influenza. It can also be spread indirectly via surfaces that have been touched by someone who is infected with the virus.

Symptoms of SARS include: Persistent, high fever, Chills, Headache and Body aches.

Treatment: There's no established treatment specifically for SARS.

6. Balfour Declaration

Context

The Balfour Declaration was made **107 years ago on November 2, 1917.**

The Balfour Declaration

It was a letter that Balfour, then British foreign secretary, wrote to Lionel Walter Rothschild, 2nd Baron Rothschild of Tring, a prominent member of the Anglo-Jewish community**. It expressed support for the establishment of a national home for the Jewish people in Palestine. T**he declaration is seen as a significant moment in the lead-up to the **1948 creation of Israel.**

7. Ningol Chakkouba

Ningol Chakkouba, one of Manipur's most significant festivals, was celebrated with great enthusiasm.

About

The festival is traditionally held on the **second lunar day of the Manipuri calendar's Hiyangei month** and its history dates back to the time when King Nongda Lairen Pakhangba ruled in Manipur. **Ningol means 'married woman' and Chakouba means 'invitation for feast'; so the festival is the one where the married women are invited to their parents' home for a feast**. The invitation comes from the son(s) of the parental family of the ningols, generally a week in advance; it strengthens the bond of affections among the brothers and sisters, daughters and parents of a family.

Earlier, the festival was mainly celebrated by the Meiteis but nowadays many other communities also have started to celebrate it.

8. Digital India Common Service Centre (DICSC) Project

The Ministry of Electronics and Information Technology (MeitY) has announced the launch of the **Digital India Common Service Centre (DICSC) project.**

About

Project aims to bridge the digital divide in rural India by providing citizens with **accessible e-governance, financial, and commercial services.** Each centre will serve as a one-stop solution for essential services, including Aadhaar registration, banking, and tele-law, equipped with high-speed broadband connectivity and modern infrastructure. **The implementation is managed by Common Services Centres e-Governance Services India Limited**

9. Laika: First Living Creature to Orbit the Earth.

November 3 marks 67 years since the Soviet Union sent Laika to orbit the Earth on its Sputnik 2 mission.

About: Laika

Laika (Barker) was a Soviet space dog who became the first living creature to orbit the earth. **The dog was promoted to cosmonaut (a term referring to an astronaut in the Soviet or Russian space program) based on her 'small' size and 'calm' demeanour.** As the technology to re-enter the atmosphere had not yet been developed, Laika's survival was never expected. It is likely that she died of hyperthermia a few hours after reaching orbit. Laika ended up providing scientists with the first data on the behaviour of a living organism orbiting in the space environment. **Four years later, Yuri Gagarin became the first human to orbit earth.**

6th November

1. Yanadi Tribe:

Yanadis are one of the major scheduled tribes of Andhra Pradesh. They are among the most vulnerable tribal groups in India. They live in extreme conditions of poverty and social exclusion. **A significant population of Yanadis live in the plains of Nellore, a district in the eastern coastal state of Andhra Pradesh.** Their population according to 2001 census reports is 4,62,167 in Andhra Pradesh. **Their mother tongue is Telugu**. Historically, the Yanadis have been associated with occupations such as **hunting, gathering, and agriculture, relying on their intimate knowledge of the land and its resources for sustenance.** They have rich traditional health knowledge, including knowledge for everyday healthcare and specialized knowledge (e.g., snakebite cures). **They harness the medicinal potential of plants for treating gastrointestinal disorders, respiratory ailments, skin conditions, and reproductive health issues**. Yanadis have many religious beliefs and festivals connected with the forest flora.

Dhimsa Dance: It is a dance performed by the Yanadi tribe during festivals and special occasions.

2. Central Water Commission (CWC):

It is a premier technical organization of India in the field of water resources. It is presently functioning as an attached office of the **Ministry of Jal Shakti, Department of Water Resources, River Development, and Ganga Rejuvenation, Government of India.**
Headquarters: New Delhi

Functions:

The Commission is entrusted with the general responsibilities of initiating, coordinating, and furthering, in consultation with the State Governments concerned, schemes for control, conservation, and utilization of water resources throughout the country for purposes of **Flood Control, Irrigation, Navigation, Drinking Water Supply, and Water Power Development.** It also undertakes the investigations, construction and execution of any such schemes as required.

Organisation Structure:

It is headed by a **chairman, with the status of Ex-Officio Secretary to the Government of India**. The work of the Commission is divided among 3 wings, namely, **Designs and Research (D&R) Wing, River Management (RM) Wing and Water Planning and Projects (WP&P) Wing**. Each wing is placed under the charge of a full-time member with the status of Ex-Officio Additional Secretary to the Government of India. Each wing, comprising a number of organisations, is responsible for the disposal of tasks and duties falling within the scope of functions assigned to them. **The National Water Academy, located in Pune, is responsible for training of central and state in-service engineers and it functions directly under the guidance of the Chairman.**

3. Gobind Sagar Lake:

It is a **manmade reservoir located in the Una and Bilaspur districts of Himachal Pradesh**. It is named in honour of **Guru Gobind Singh, the tenth Sikh Guru. Its** source is the Bhakra Dam on the Sutlej River. **One of the world's highest gravity dams, the Bhakra Dam is perched at an elevation of 225.5 m above its lowest foundations**. Gobind Sagar reservoir is 90 km long and encompasses an area of approximately 170 sq. km. The maximum and mean depths of the reservoir are 163.07 m and 55 m, respectively, making it one of the deepest man-made lakes in the world. It is surrounded by lush green hills and the snow-capped peaks of the Himalayas. It **is also the third-largest in the country concerning the storage of water**. It helps in supplying water for irrigation to the states of Himachal Pradesh, Punjab, Haryana, and Rajasthan, significantly benefiting agriculture in the region.

4. LignoSat:

LignoSat", a fusion of "ligno" (the Latin word for wood) and "satellite". It is developed through collaborative research and development by a team comprising members from Kyoto University and Sumitomo Forestry Co.

Objective: Their objective is to leverage the eco-friendliness and cost-effectiveness of wood in space exploration. It is tasked to demonstrate the cosmic potential of renewable material as humans explore living in space. It is constructed from magnolia wood, chosen for its durability and adaptability. **It will first be sent to the International Space Station (ISS) aboard a SpaceX rocket from the Kennedy Space Center.** Once it reaches the ISS, it will be released from the Japanese experiment module to test its durability and strength. Researchers will receive data from the satellite to monitor its performance, including signs of strain and its ability to withstand extreme temperature changes.

Why is wood used?

Wooden satellites are viewed as more environmentally friendly upon reentering the Earth's

atmosphere after their mission. Unlike metal satellites, which pose air pollution risks due to the generation of metal particles during reentry, wooden satellites mitigate these concerns.

5. Mount Lewotobi Laki-Laki:

It is **located on Flores Island**. It is a volcanic mountain situated in East Nusa Tenggara province of Indonesia . **The volcano is part of a twin-volcano system that the local residents perceive as male and female mountains.** The ongoing volcanic eruption has occurred at the **male counterpart of the system (Lewotobi Lakilaki) while the female mountain is known as Lewotobi Perempuan.** The **two mountains are classified as stratovolcanoes** which are the most commonly occurring volcanoes around the world and are formed by the layers of lava that repeatedly oozes out of the crater. It is not uncommon for Indonesia to witness such volcanic eruptions as it is situated along the famous 'Ring of Fire' in the Pacific region- an encirclement dotted by active volcanoes that sit on top of vigorous tectonic plates that often collide and lead to seismic activity causing earthquakes and tsunamis.

What are Stratovolcanoes?

It is a **tall, steep, and cone-shaped type of volcano**. Unlike flat shield volcanoes, they have higher peaks. **They are typically found above subduction zones,** and they are often part of large volcanically active regions, such as the Ring of Fire that frames much of the Pacific Ocean. **Strato Volcanoes comprise the largest percentage(~60%) of the Earth's individual volcanoes, and most are characterized by eruptions of andesite and dacite, lavas that are cooler and more viscous than basalt.**

6. Ningol Chakkouba Festival:

The festival is held every year on the second day of the lunar month of Hiyangei of the Meitei calendar. **The festival is mainly celebrated by the Meiteis** but nowadays many other communities also have started to celebrate it as it emphasises the importance of happiness and the reunion of a family in bringing peace and harmony in a society. **Ningol means 'married woman' and Chakouba means 'invitation for feast'; so, the festival is the one where the married women are invited to their parent's home for a feast**. The main component of the festival is the visit of married sisters to their maternal homes for a grand feast and joyous reunion followed by the giving away the gifts. It is customary for the son of the family to extend a formal invitation to his sister for Ningol Chakkouba a week in advance of the gathering. **The festival is held today outside Manipur where Manipuris are settled.**

7. DANA Causes Flash Floods in Spain

In News

Catastrophic flash floods in Spain caused havoc mainly attributed to the DANA Phenomenon.

About DANA

Known in **Spain as DANA (Depresión Aislada en Niveles Altos)** or high-altitude isolated depression, this system can develop independently of typical jet streams, unlike regular storms.

Formation Mechanism: Cold air moves over warm Mediterranean waters, causing warm air to rise quickly. This forms dense, moisture-filled clouds that can stay in one area, increasing the likelihood of severe flooding. **DANA mostly occurs in autumn, when summer's warm surface heat meets sudden cold air from polar regions, creating a low-pressure system that remains over a specific region.**

8. PM Vishwakarma Scheme

The PM Vishwakarma Scheme has received over 25 million applications.

About: Named after Lord Vishwakarma (deity of artisans and craftspeople in Indian culture); it was launched in 2023.

Nodal Ministry: Ministry of Micro, Small and Medium Enterprises

Type: Central Sector Scheme (fully funded by the Government of India)

Objectives: Provides comprehensive support to artisans and craftspeople across 18 specified trades (e.g., carpenter, blacksmith, potter, tailor, etc.). **Enabling artisans to sell their products both domestically and internationally. Strengthen the local economy by promoting traditional crafts and artisanal products.**

Key Features:

Recognition to Artisans: PM Vishwakarma certificate and ID card.

Skill Upgradation: Basic Training: 5–7 days, stipend of Rs. 500/day.

Advanced Training: 15+ days, with stipend.

Toolkit Incentive: E-voucher of up to Rs. 15,000 for tools at start of Basic Training.

Credit Support to Artisans: Collateral-free loans up to Rs. 3 lakh, split into Rs. 1 lakh and Rs. 2 lakh tranches. 5% concessional interest, with an 8% government subvention.

Marketing Support: Includes quality certification, branding, onboarding on e-commerce platforms (e.g., GeM), and advertising for improved market linkage

9. Aditya-L1 Mission

The first scientific result from Aditya-L1 has been released.

About

Using data from the Visible Emission Line Coronagraph (VELC), scientists were able to observe the precise onset of a coronal mass ejection (CME) from the Sun. **The Coronal Mass Ejection (CME) can damage the electronics in satellites in near-earth space and disrupt radio communication networks on the earth**. Understanding and predicting CMEs is crucial for protecting technology and infrastructure.

About Aditya L1 mission

The Aditya-L1 mission is India's first dedicated scientific mission to study the Sun. The mission aims to observe and analyze various aspects of the Sun from **Lagrangian Point 1 (L1). Lagrangian Point 1 (L1)** is a position in space where the gravitational forces of two celestial bodies, such as the Sun and Earth, are in equilibrium. At this point, Aditya-L1 can continuously observe the Sun without any interference.

10. International Solar Alliance (ISA)

About: It is an intergovernmental organization launched in 2015 by India and France at the UN Climate Change Conference (COP21) in Paris.

Objectives:

Achieve 1000 GW of solar capacity worldwide by 2030. Mobilize over USD 1 trillion in solar investments for member countries. Develop financial mechanisms to reduce solar energy costs. Establish solar energy as a mainstream source globally.

Evolution: Initially for tropical countries, ISA expanded its scope in 2020, allowing all UN member states to join. **Currently, over 110 countries have signed the ISA Framework Agreement, with 90 full members**. It became the first international intergovernmental organization headquartered in India at **National Institute of Solar Energy (NISE) in Gurugram.**

Governance Structure:

ISA Assembly: The main decision-making body comprising representatives from member countries.

Steering Committee: Provides strategic guidance and oversight.

Secretariat: Administrative body responsible for implementing decisions.

Director General: Leads the ISA Secretariat for a term of 4 years with the possibility of re-election

11. Exercise VINBAX-2024

Context

The **5th Edition of Vietnam Indian Bilateral Army Exercise "VINBAX-2024"** commenced at Ambala, India.

About

Instituted in **2018, exercise VINBAX is an annual training event conducted alternatively in India and Vietnam.** Aim of the exercise is to foster collaborative partnership, promote inter-operability and share best practices between the two sides under **Chapter VII of United Nations Charter on Peace Keeping Operations**. This edition marks a significant increase in the scope with Bi Service level participation for the first time by personnel of Army and Air Force from both the countries.

12. India, Algeria sign MoU on Defence Cooperation

Context

India and Algeria signed the Memorandum of Understanding (MoU) to **elevate defence ties, foster mutual understanding, and strengthen strategic interests.**

About Algeria (Capital: Algiers)

Situated: Maghreb region of North Africa on the Mediterranean coast. Algeria, Libya, Mauritania, Morocco and Tunisia are referred to as the Maghreb countries.

Bordered By: Mediterranean Sea on the North, Morocco, Sahrawi Arab Republic and Mauritania on the West, Mali and Niger on the South, Libya and Tunisia on the East.

Physiography: The major mountain ranges in Algeria are the Atlas Mountains, which run from the Moroccan border to the eastern border of Tunisia. **The highest peak in Algeria is Mount Tahat, which is located in the Ahaggar Mountains. Chelif River is the longest and most important river of Algeria.**

7th November

1. International Energy Agency (IEA):

It is an **autonomous intergovernmental organisation within the Organisation for Economic Co-operation and Development (OECD) framework.**

Mission: It works with governments and industry to shape a secure and sustainable energy future for all.

Background:
It was created in response to the 1973-1974 oil crisis when an oil embargo by major producers pushed prices to historic levels and exposed the vulnerability of industrialised countries to dependency on oil imports. It was **founded in 1974 to ensure the security of oil supplies.** IEA's mandate has expanded over time to include tracking and analyzing global key energy trends, promoting sound energy policy, and fostering multinational energy technology cooperation**. It is the global energy authority, providing data, analysis, and solutions on all fuels and all technologies.** In recent years, the IEA has also focused on renewable energy and initiatives focused on environmental protection and stopping climate change.

Membership: It is made up of 31 member countries, 13 association countries, and 5 accession countries.

Criteria for membership: A candidate country to the IEA must be a member country of the OECD. In addition, it must demonstrate several requirements.

Crude oil and/or product reserves equivalent to 90 days of the previous year's net imports, to which the government has immediate access (even if it does not own them directly) and could be used to address disruptions to global oil supply; A demand restraint programme to reduce national oil consumption by up to 10%; Legislation and organisation to operate the Co-ordinated Emergency Response Measures (CERM) on a national basis; Legislation and measures to ensure that all oil companies under its jurisdiction report information upon request; Measures are in place to ensure the capability of contributing its share of an IEA collective action.

India joined this organization in 2017 as an Associate member.

Reports published by IEA: World Energy Outlook, World Energy Balances, Energy Technology Perspectives, World Energy Statistics and Net Zero by 2050.

2. Visible Emission Line Coronagraph (VELC):

It is the **primary payload of the Aditya-L1 Mission- India's first mission to observe the Sun from a vantage point 1.5 million kilometres from the Earth**. It is an internally occulted solar coronagraph capable of simultaneous imaging, spectroscopy, and spectro-polarimetry close to the solar limb. It is built by the Indian Institute of Astrophysics (IIA) at its CREST (Centre for Research and Education in Science and Technology) campus at Hosakote, Karnataka. **The VELC consists of a coronagraph, spectrograph, polarimetry module, and detectors, aside from auxiliary optics.**

Purpose:
It will **observe the solar corona, which is the tenuous, outermost layer of the solar atmosphere**. VELC can image the solar corona down to 1.05 times the solar radius, which is the closest any such payload has imaged. It will analyze the coronal temperature, plasma velocity, density, etc. It will **also study Coronal Mass Ejections (CMEs) and the solar wind.**

3. What is a Coronagraph?

It is a **specialized instrument designed to block out the light of the sun so that researchers can glimpse the burning star's hot, thin, outermost layer, called the corona**. The French astronomer Bernard Lyot invented the coronagraph in the 1930s. The sun's corona is normally visible only during solar eclipses when the moon's shadow covers the bright central layers of our parent star and allows its dimmer corona to appear. A coronagraph mimics this natural phenomenon with a circular mask that sits inside a telescope and selectively blocks the bulk of the sun's light. The specialized coronagraphs act as filters on the central star, allowing the tiny fragments of planetary light to shine through.

4. Vitamin D:

Vitamin D (also referred to as calciferol) is a **fat-soluble vitamin** that is naturally present in a few foods, added to others, and available as a dietary supplement. **It is also produced endogenously when ultraviolet (UV) rays from sunlight strike the skin and trigger vitamin D synthesis**. During periods of sunlight, vitamin D is stored in fat and then released when sunlight is not available. **Foods that naturally have vitamin D include egg yolks, saltwater fish, and liver.**

Why is vitamin D so important?
Vitamin D **promotes calcium absorption and helps maintain adequate levels of calcium and phosphorus in the blood, which is necessary for healthy bones and teeth**. Without sufficient vitamin D, bones can become thin, brittle, or misshapen. Vitamin D also plays a role in your nervous system, musculoskeletal system, and immune system.

Vitamin D Deficiency:
A lack of vitamin D can lead to bone diseases such as **osteoporosis or rickets**. **Osteoporosis is a disease in which your bones become weak and are likely to fracture (break).** With chronic and/or severe vitamin D deficiency, a decline in calcium and phosphorus absorption by your intestines leads to **hypocalcemia(low calcium levels in your blood).** This leads to secondary hyperparathyroidism (overactive

parathyroid glands attempting to keep blood calcium levels normal). **Both hypocalcemia and hyperparathyroidism, if severe, can cause symptoms, including muscle weakness and cramps, fatigue, and depression.**

5. IL-35 Protein:

It is a specific protein of IL-12α and IL-27β chains. **It helps protect against type 1 and autoimmune diabetes**. It regulates macrophage activation, T-cell proteins and regulatory B cells. **It inhibited pancreatic beta cell-attacking immune cells.** Additionally, IL-35 lowered particular immune cells that produce inflammatory chemicals, reducing pancreatic cell infiltration, a key contributor in type 1 diabetes and autoimmune diabetes mellitus.

What is autoimmune diabetes mellitus?

Autoimmune diabetes mellitus or T1DM is an organ-specific autoimmune disease. It affects the insulin-producing pancreatic beta cells after an inflammatory process, leading to a chronic deficiency of insulin in genetically susceptible individuals. It ultimately results in lifelong dependence on exogenous insulin. **It is a complex multifactorial disease in which both genetic susceptibility and environmental factors promote the autoimmune responses against beta cells.** Several environmental risk factors have been suggested as candidate triggers of islet autoimmunity, including certain viruses higher birth weight, infant weight gain, dysbiosis of the gut microbiota and various dietary factors (**e.g., vitamin D deficiency, omega-3 fatty acid deficiency, high milk consumption)** There are no preventive or immunosuppressive therapies that can prevent damage or disease manifestations.

6. Proba-3 Mission:

It is the **European Space Agency's (ESA) first mission dedicated to precision formation flying**. It is an innovative mission which will demonstrate precision formation flying between two satellites to create an artificial eclipse, revealing new views of the Sun's faint corona. **The core objective of the mission is to create an artificial eclipse by precisely coordinating two independent satellites.** This capability will enable scientists to observe the Sun's corona, a region typically obscured by the intense brightness of the Sun. **It consists of two small satellites — a Coronagraph spacecraft and a solar-disc-shaped Occulter spacecraft.**

7. Gravity Energy Storage:

It is a new technology that stores energy using gravity.

How it works?

It **involves lifting a heavy mass during excess energy generation and releasing it to produce electricity when demand rises or solar energy is unavailable**. The types of weights used are often water, concrete blocks or compressed earth blocks. Unlike pumped-hydro energy storage, gravity energy storage offers more flexibility in site selection. A typical setup involves a heavy piston within a fluid-filled cylindrical container. **When solar energy production exceeds demand, surplus electricity lifts the piston, converting the surplus electrical energy into stored energy.** When demand surpasses supply, the piston descends, driving water through a turbine to generate electricity supply to meet demand.

Advantages

It can last for decades with minimal maintenance, unlike batteries that degrade over time. It avoids harmful chemical reactions, reducing environmental impact and disposal issues, an important consideration in the move towards a greener planet. **It can also be more cost-effective for large-scale applications, with lower level costs of energy and storage.** It is particularly advantageous in areas with space constraints or environmental concerns that restrict the deployment of other storage systems.

8. Deshbandhu Chittaranjan Das

Parliamentarians paid tribute to Deshbandhu Chittaranjan Das on his Birth Anniversary.

About Deshbandhu Chittaranjan Das (1870 – 1925)

He was a freedom fighter, leader, and social reformer, regarded as one of the key figures in the early 20th-century nationalist movement. **He became an active member of the Indian National Congress (INC)** and aligned himself with the more radical wing of the party. His early political ideas were influenced by **Bankim Chandra and 'Rashtraguru' Surendernath Banerjee who was twice the President of INC, in 1895 and 1902**. He was a key figure in the Swadeshi Movement (1905–1908), which aimed at boycotting British goods in protest against the partition of Bengal by the British. He **established the Swarajya Party within the Congress in collaboration with Pt. Motilal Nehru, the Ali brothers, Ajmal Khan, Vittihalbhai Patel and others.**

9. T.N. Declares Heatwaves a State-specific Disaster

The Tamil Nadu government has notified the heatwave as a State-specific disaster.

About

The **World Meteorological Organization declared that 2023 was the hottest year on record**. In the summer of 2024, a severe and long heatwave impacted India, blistering plains and hills, causing deaths and heat strokes.

State Specific Disaster: It would entail providing relief to people affected by heatwaves and launch interim measures to help manage the heat.

Expenditure for this will be incurred from the State Disaster Response Fund.

Heatwave

A **heatwave is defined as a prolonged period of unusually and excessively hot weather, accompanied by high humidity.** The India Meteorological Department (IMD) has specified the following criteria: a heatwave need not be considered till the maximum temperature of a station reaches at least 40°C for plains and at least 30°C for hilly regions.

10. Chalo India Campaign

Context

The Ministry of Tourism is going to launch the Chalo India campaign on the sidelines of the ongoing World Travel Mart in London.

About

Chalo India is a first-of-its-kind initiative to bring more foreign tourists to India, wherein the government will allow "friends" of diaspora members to get free visas. Five foreign nationals nominated by each Overseas Citizen of India (OCI) cardholder on a special portal will be eligible for a gratis e-visa (visa granted without fees).

11. SC Upholds validity of U.P. Madrasa Act

The Supreme Court held that the validity of a law cannot be challenged for violating the Basic Structure of the Constitution.

Supreme Court ruling

The Supreme Court upheld the constitutional validity of the '**Uttar Pradesh Board of Madarsa Education Act 2004' and set aside the Allahabad High Court's judgment which had struck it down earlier**. The reason is that concepts such as democracy, federalism, and secularism are undefined concepts. Allowing courts to strike down legislation for violation of such concepts will introduce an element of uncertainty in our constitutional adjudication. The court referred to the observation made by the **Indira Nehru Gandhi v. Raj Narain case.**

What is Indira Nehru Gandhi v. Raj Narain case.

The basic structure doctrine, established **in Kesavananda Bharati v. State of Kerala (1973), held that certain foundational aspects of the Constitution cannot be amended even by Parliament**. However, in Indira Nehru Gandhi v. Raj Narain (1975), a majority of the Bench ruled that the doctrine does not apply to ordinary legislation, as statutes are subordinate to constitutional amendments and remain within the bounds of legislative competence.

12. LignoSat: World's First Wooden Satellite

Context

Japan has launched LignoSat, the world's first wooden satellite into space to prove that wood is a space-grade material.

About: LignoSat

Named after the Latin word for "wood", **LignoSat is made of honoki, using a traditional Japanese crafts technique without screws or glue.** Honoki, a kind of magnolia tree native to Japan and traditionally used to make sword sheaths **Developed by Kyoto University and Sumitomo Forestry Co. is scheduled to orbit the Earth for six month**s. The satellite will measure how wood endures the extreme environment of space, where temperatures fluctuate from -100 to 100 degrees Celsius every 45 minutes as objects orbit through darkness and sunlight. It will also gauge timber's ability to reduce the impact of space radiation on semiconductors, making it useful for applications such as data centre construction.

13. River City Alliance

It is an organization that now includes 145 river cities nationwide. **The alliance's main objective is to promote healthy urban rivers through an integrated approach to river-sensitive urban planning.** The Alliance is open to all river cities of India. Any river city can join the Alliance at any time.

14. PM E-DRIVE Scheme

It promotes mass mobility through the support of public transportation systems. **Its primary aim is to accelerate the adoption of electric vehicles (EVs),**

establish charging infrastructure, and build a robust EV manufacturing ecosystem in the country.

Objectives:
Promote mass mobility via EVs.
Offer upfront incentives for EV purchases to boost adoption.
Establish a competitive EV manufacturing ecosystem aligned with the Aatmanirbhar Bharat initiative.
Improve air quality and reduce transportation-related environmental impacts.

Key Components:
Subsidies: Incentives for various EV types, including e-2Ws, e-3Ws, e-ambulances, e-trucks, and other emerging EV categories.
Grants for Capital Assets: Funding for electric buses, charging stations, and upgrades to testing facilities.
Administrative Costs: Includes funding for IEC (Information Education & Communication) activities and a project management agency.

8th November

1. Regional Comprehensive Economic Partnership:

It is a **proposed agreement between the member states of the Association of Southeast Asian Nations (ASEAN) and its Free Trade Agreement (FTA) partners**. The pact aims to cover trade in goods and services, intellectual property, etc.
Member Countries: The RCEP bloc comprises 10 ASEAN group members (Brunei, Cambodia, Indonesia, Malaysia, Myanmar, Singapore, Thailand, the Philippines, Laos and Vietnam) and their six FTA partners - China, Japan, South Korea, Australia and New Zealand. RCEP negotiations were launched in November 2012 and entered into force on **1 January 2022**

Objective- RCEP aims to create an integrated market with 16 countries, making it easier for products and services of each of these countries to be available across this region. The negotiations are focused on the following: Trade in goods and services, investment, intellectual property, dispute settlement, e-commerce, small and medium enterprises, and economic cooperation.

2. Airships:

Airships are lighter-than-air, vertical-lift vehicles that achieve flight by using buoyant gasses that are less dense than surrounding air. **There are three main types of airships: non-rigid (or blimps), semi-rigid and rigid**. Typically, these bullet-shaped craft are filled with helium or hydrogen, and composed of three main parts: a balloon-like hull, a gondola and a propulsion system. **Airships were the first aircraft capable of controlled powered flight and were thought to be the future of travel for some years in the early 20th century.**

How airships work?
Airships are lighter-than-air aircraft that are lifted by gas with a density lower than atmospheric gases. **This principle also operates in helium balloons. Early airships used hydrogen as the lifting gas since it was cheap, easy to produce, and the lightest existing gas**. But hydrogen was also extremely flammable. Most modern airships use helium, which is non-combustible.
Uses: They see limited use today as advertising platforms, for aerial observation by scientists and militaries, and in the tourism industry.
Advantages: Airships are significantly less polluting than aeroplanes as they do not burn fossil fuels to achieve lift. They can also reach more places than ships or trucks.

3. Bran:

It is the **edible broken seed coat, or protective outer layer, of wheat, rye, or other cereal grains, separated from the kernel.** In flour processing, the coarse chaff, or bran, is removed from the ground kernels by sifting or bolting in a rotating, meshed, cylindrical frame. **It provides dietary fiber and many different bioactive substances, including phenolic compounds, which can exert a beneficial effect on human health**. Removing the bran from millets results in decreasing the protein, dietary fibre, fat, mineral and phytate content in them while increasing the carbohydrates and amylose content. **Dehusked millets are nutritious and should be promoted in Indian diets to improve diet quality, debranned millets are nutritionally inferior and can increase the glycemic load of Indian diets.**

What are Millets?
Millets are a highly varied group of small-seeded grasses, widely grown around the world as cereal crops or grains for fodder and human food. **This crop is favoured due to its productivity and short growing season under dry, high temperature conditions (hardy and drought-resistant crops). Millets are a powerhouse of nutrients,** which score over rice and wheat in terms of minerals, vitamins, and dietary fibre content, as well as amino acid profile. Though rich in both iron and zinc, wheat's protein content comprises

glutens, known to trigger gastrointestinal and autoimmune disorders in many people. **Millets are high in minerals such as calcium, iron, phosphorus, and potassium, and they are an excellent source of phytochemicals such as phenolic compounds when compared to other major cereals (rice, wheat, maize).** Millets provide a range of health benefits such as **antiaging, anticarcinogenic, anti-atherosclerogenic, antibacterial and antioxidant effects.**

4. Allulose:

It is also known as D-**allulose and d-psicose and is naturally present in only certain foods like wheat, raisins, figs and molasse**s. It is also commercially produced from beet sugar or corn using specific enzymes. It's **also available as a sugar substitute** and can be used in recipes for people who want to cut back (or cut out) sugar, including people with diabetes. Manufacturers and researchers say it is 70% as sweet as sugar and almost calorie-free.

Side effects: High doses may cause side effects like nausea, diarrhea, and other gastrointestinal symptoms. **It is approved by the U.S. Food and Drug Administration (FDA), which considers it "generally recognized as safe" (GRAS).** It's also approved in some other countries, including Japan, Mexico, Singapore and South Korea.

5. Millimeter Wave:

It **refers to electromagnetic waves with frequency between 30-300 GHz and wavelength between 10 mm and 1 mm. I**ts frequency spectrum is used for wireless high-speed communications. It is also known as the **extremely high frequency, or EHF, band by the International Telecommunication Union.**

Advantages

It **enables higher data rates compared with lower frequencies when used in telecommunications, such as those used for Wi-Fi and current cellular networks**. The higher frequency range has a high tolerance for bandwidth. It offers less latency due to its higher speeds and bandwidth. There is less interference, as mm waves don't propagate and interfere with other neighboring cellular systems.

Significance of recent agreement

It will **also encourage small and medium-scale industries to set up their manufacturing units in India which will create job opportunities for our own engineering graduates, due to the use of polymer-based structure in conjunction with metals.** This will also reduce our over-dependence on semiconductor fabrication industries. The proposed cost for the development of technology is extremely small as against the opportunities it would create. Additionally, the project also aims to contribute to generating Intellectual Property Rights (IPRs) and develop a skilled workforce to support the emerging millimetre wave/Sub-THz technology for 5G/6G.

6. Agrivoltaic Farming:

It is the **practice of growing crops underneath solar panels.** The panels are positioned 2-3 metres off the ground and sit at an angle of 30 degrees, providing shade and offering crops protection from the weather. **This farming primarily focuses on the simultaneous use of land for both agriculture and solar energy generation. It's also sometimes referred to as Agri solar, dual-use solar, or low-impact solar.** Solar panels have to sometimes be elevated or suspended to allow plants to grow beneath them. **Another option is putting them on the roofs of greenhouses**. This allows enough light and rainwater to reach the crops, as well as providing access to farm machinery. It uses poles or frames to mount solar panels on the ground, leaving space for crops to grow under or around them**. Some solar panels can also rotate or form a canopy to adjust the amount of sunlight and shade on the crops.**

Advantages

This **increases land-use efficiency**, as it lets solar farms and agriculture share ground, rather than making them compete against one another. And certain crops appear to thrive when grown in such environments, according to a number of recent studies The shade from the panels protects vegetables from heat stress and water loss.

11th November

1. Menhir:

A menhir is a large upright standing stone. **Menhirs may be found singly as monoliths, or as part of a group of similar stones. They are widely distributed across Europe, Africa, and Asia**, but are most numerous in Western Europe. Their size can vary considerably; but their shape is generally uneven and squared, often tapering towards the top. Often menhirs were placed together, forming circles, semicircles, or vast ellipses. Megalithic menhirs were also placed in several parallel rows, called alignments. **The most famous of these are the Carnac, France, alignments, which include 2,935 menhirs.** They are sometimes engraved with abstract forms (line, spiral) or with objects' images like axes. Identifying the uses of

menhirs remains speculation. However, it is likely that many uses involved fertility rites and seasonal cycles.

2. Shettihalli Wildlife Sanctuary:

Location: It is located in Shimoga District of Karnataka. It covers an area of 395.6 sq. km. It was declared a wildlife sanctuary on 23rd November 1974. **Mandagadde Natural Bird Sanctuary, present on a small island in the River Tunga, is also a part of this sanctuary.** The Tunga Anicut Dam is situated within the sanctuary and provides shelter for otters and water birds. There are a large number of human settlements inside Shettihalli Sanctuary, mainly consisting of families that were displaced by the construction of the Sharavathi Dam in the 1960s.

Vegetation:

The sanctuary has mostly **Dry and Moist Deciduous Forests in the eastern and central parts**. Towards the west, with an increase in rainfall, there are Semi-evergreen Forests.

Flora: Major tree species include silver oak, teak, Indian Thorny Bamboo, Calcutta Bamboo, Asan, Tectona Grandis, Sweet Indrajao, Amla, etc.

Fauna: It houses mammals like Tiger, Leopard, Wild Dog, Jackal, Gaur, Elephant, Sloth Bear Sambar, Spotted Deer, Wild Pig, Common Langur, Bonnet Macaque, etc. Birds include Hornbills, Kingfishers, Bulbuls, Parakeets, Doves, Pigeons, Babblers, Flycatchers, Munias, Swallows, Woodpeckers, Peafowl, Jungle fowl and Partridges.

3. National Company Law Tribunal:

It is a quasi-judicial authority incorporated for dealing with corporate disputes that are of civil nature arising under the Companies Act,2013. It was **constituted on 1 June 2016 under the Companies Act, 2013. It was established based on the recommendation of the Balakrishna Eradi committee** on law relating to the insolvency and the winding up of companies.

Composition: It shall consist of a President and such number of Judicial and Technical Members as may be required.

What are the Powers of NCLT?

It is not limited or bound by the rules laid down in the Code of Civil Procedure and is guided by the principles of natural justice, subject to the other provisions of this Act and of any rules that are made by the Central Government. It can enforce any order that it gives in the same manner as a court would enforce it. **It has the power to scrutinize its own orders. It has the power to regulate their own procedure. I**t is the adjudicating authority for the insolvency resolution process of companies and limited liability partnerships under the Insolvency and Bankruptcy Code, 2016.

4. Caterpillar fungus:

Caterpillar fungus (Ophiocordyceps Sinensis) is a fungal parasite of larvae (caterpillars) that belongs to the ghost moth. It is endemic to the Tibetan Plateau, including the adjoining high Himalaya (3,200-4,500 metres above sea level). It is locally known as Kira Jari (in India), Yartsagunbu (in Tibet), Yarso Gumbub (Bhutan), Dong Chong Xia Cao (China) and Yarsagumba (in Nepal). **In the Indian Himalayas, the species has been documented in the region from the alpine meadows of protected areas such as Nanda Devi Biosphere Reserve, Askot Wildlife Sanctuary, Kanchendzonga Biosphere Reserve and Dehan-Debang Biosphere Reserve.**

Conservation status

IUCN: Vulnerable

What researchers found?

The chemical Cordycepin, interrupts the cell growth signals that are overactive in cancer, an approach that could be less damaging to healthy tissues than most currently available treatments. **Cordycepin is converted to cordycepin triphosphate, and this molecule was found to directly affect cancer cells.**

5. Seaplane:

It is any of a class of aircraft that can land, float and take off on water. It is a fixed-winged aeroplane designed for taking off and landing on water. It offers the public the speed of an aeroplane with the utility of a boat.

Types of Seaplanes

Floatplanes: Floatplanes are the most common type of seaplane. They have floats, which are buoyant structures, permanently attached to the fuselage. Floatplanes rely solely on water for takeoff and landing, making them ideal for flying over lakes, rivers, and coastal areas.

Flying Boats: Unlike amphibious seaplanes and floatplanes, flying boats have their hull entirely designed to float on water. These aircraft have a boat-like shape, with the main body of the plane floating on the water's surface. Flying boats are capable of carrying larger passenger loads and have the capability to take off and land in rougher water conditions.

Advantages of seaplanes

They **can fly low and have access to both land and sea**, they are perfectly suitable for coastal surveillance. They can observe coastal activity such as border control, investigations or weather anomalies.

6. 51st Chief Justice of India (CJI)

Supreme Court (SC) judge **Justice Sanjiv Khanna was sworn in as the 51st Chief Justice of India (CJI),** and his term will last until May 13, 2025.

About: Appointment of the CJI

The Constitution of India does not mention any procedure for appointment of the CJI. **Article 124 (1) of the Constitution merely says, "there shall be a Supreme Court of India consisting of a Chief Justice of India**." Clause (2) of Article 124 of the Constitution says that **every Judge of the Supreme Court shall be appointed by the President.** Thus, in the absence of a constitutional provision, the procedure to appoint CJI relies on convention.

What is the Convention?

The outgoing CJI recommends his successor a practice, which is based on seniority. Seniority at the apex court, however, is not defined by age, but by the date a judge was appointed to the SC. If **two judges are elevated to the Supreme Court on the same day, the one who was sworn in first as a judge would trump another**; if both were sworn in as judges on the same day, the one with more years of high court service would 'win' in the seniority stakes; an appointment from the bench would 'trump' in seniority an appointee from the bar.

7. Lightning Rods to Prevent Lightning Strikes

Context

The need for lightning rods to prevent strikes is rising as climate change amplifies lightning frequency, causing about 24,000 deaths annually.

What is lightning?

Lightning is an **electrical discharge between charged particles in a cloud and the ground**. Although air is typically an electrical insulator, when exposed to a high voltage of approximately 3 million V/m, its insulating properties break down, allowing it to conduct current.

What is a lightning rod?

While a lightning strike occurs between a cloud and an object on or near the ground, it takes the path of least resistance, which means it moves towards the closest object with the highest electric potential. A lightning rod is a pointed metal rod installed on top of buildings and structures. The pointed shape of the rod creates a stronger electric field around it, ionizing the surrounding air first and offering a clear path for the lightning to flow.

Where does the current in a lightning rod go?

An electric current flows from a place with higher electric potential to a place with lower electric potential. The lightning rod is connected to a wire that drops through the length of the building into the ground, where it dissipates its electric charges into its surroundings**. The earth acts as an abundant source of lower electric potential, helping to dissipate the electric charges safely.**

8. Pinaka Multi-Barrel Rocket Launch (MBRL) System

Context

France is considering India's Pinaka Multi-Barrel Rocket Launch (MBRL) system for its requirements and is soon going to carry out a detailed evaluation of the system.

About

The Pinaka MBRL system was developed by the Defence Research and Development Organisation (DRDO) of India. The system is named after "Pinaka," a mythical weapon used by Lord Shiva. It has the capability to hit targets at 75 kilometers and beyond The Pinaka MBRL is capable of launching a salvo of 12 rockets in 44 seconds, which makes it an effective weapon for quickly overwhelming enemy defenses.**Armenia became the first export customer for the indigenously developed Pinaka with interest expressed by several countries in the system.**

12th November

1. Amchang Wildlife Sanctuary:

It is **located in the state of Assam**. It comprises three Reserve forests-**Khanapara, Amchang, and South Amchang.** It stretches from the Brahmaputra River in the north to the hilly forests of Meghalaya in the south, forming a continuous forest belt through Meghalaya's Maradakdola Reserve Forests.

Flora: Khasi Hill Sal Forests, East Himalayan Mixed Deciduous Forest, Eastern Alluvial Secondary Semi-evergreen Forests and East Himalayan Sal Forests.

Fauna: Flying fox, Slow loris, Assamese macaque, Rhesus macaque, Hoolock gibbon, Porcupine. White-backed Vulture, Slender-billed Vulture. Tree yellow butterflies (gancana harina) are found at the Amchang

Wildlife Sanctuary which is Indigenous to Thailand, Malaysia, Singapore and northeast India.

2. Arrow-3 Missile Defence System:

It is an **exo-atmospheric anti-ballistic missile defence system for long-range threat engagement**. The Arrow 3 interceptor is part of a series of the Arrow Weapon System (AWS), the world's first national, operational, and stand-alone Anti Tactical Ballistic Missiles (ATBM) defense system. It was jointly developed by **Israel Aerospace Industries and the Missile Defence Agency in the US**. Initially deployed in 2017, Arrow-3 is the top layer of Israel's sophisticated air-defence network, which also includes the Arrow 2, David's Sling, and the Iron Dome active defence systems. It is designed to take out ballistic missiles while they are still outside of the atmosphere.

Features:

It uses two-stage solid-fueled interceptors to engage short- and medium-range ballistic missiles and consists of a launcher, radar, and battle management system. It is hypersonic, which travels five times the speed of sound. It provides a range of 2,400 km and can intercept threats at an altitude of 100 It has early warning and fire control radar. It provides extended-range acquisition as well as multi-target acquisition and tracking capabilities.

How does it work?

It uses hit-to-kill technology to destroy incoming missiles. The missile is launched vertically, and then the direction is changed towards the estimated interception point. The high-resolution electro-optical sensor acquires the target for the kill vehicle to hit the target and destroy the warhead.

3. Scarborough Shoal:

The **Scarborough Shoal (also known in English as the Scarborough Reef) is an oceanic coral atoll that developed on top of a seamount into a triangle shape in the eastern part of the South China Sea**. It is located some 220 kilometers west of the Philippines' Island of Luzon. **It is the largest atoll in the South China Sea**, submerged at high tide with few rocks above sea level. This atoll extends 18 km along its northwest-southeast axis and reaches 10 km along its northeast-southwest axis. **The deep waters around the shoal make it a productive fishing area, rich in marine life, and the lagoon also contains many commercially valuable shellfish and sea cucumbers**. The shoal is the source of an ongoing and, so far, unresolved dispute between the People's Republic of China and the Philippines, with both countries claiming that the shoal lies within their territory and saying they have exclusive rights to access its waters. There are no structures built on Scarborough Shoal, but the feature is effectively controlled by China, which has maintained a constant coast guard presence at the feature since 2012. **China, which now refers to the shoal as Huangyan Island, makes a historical claim to the area, stating that they can trace their ownership of the area back to the Yuan Dynasty of the 1200s.** The Philippines claim the area based on geography, as it is much closer to the Philippines' main island of Luzon, which contains the capital, Manila, but lies over 500 miles from China. It is considered within the Philippines' 200-nautical mile exclusive economic zone, based on the 1982 United Nations Convention on the Law of the Sea (UNCLOS).

4. Arpactophilus pulawskii:

It is a new species of aphid wasp (target aphids as prey). It was **discovered in Nagaland's Khuzama district at an altitude of over 1,800 meters.** Arpactophilus species are primarily native to the Australasian region. Members of this genus display remarkable morphological variation, including differences in body length and head shape, and some exhibit modifications in head size and shape. They are particularly fascinating because they are among the few social wasps that exhibit social behavior. **They are known for their distinctive nesting behavior, with females using silk from their abdomen to create protective cells in old termite galleries or mud nests**. This discovery marks the first recorded presence of the genus Arpactophilus outside Australasia. Arpactophilus pulawskii features a distinct square-shaped head with an inverted V-shaped uplifted clypeus and rust-colored body markings. Additionally, it has a uniquely textured thorax that further sets it apart.

5. Kayakalp Scheme:

It is an initiative launched by the **Ministry of Health and Family Welfare (MoHFW) on May 15, 2015, under Swachh Bharat Abhiyan** to promote cleanliness and enhance the quality of healthcare facilities in India.

Objectives:

To promote cleanliness, hygiene, infection control, and environment-friendly practices in Public Health Facilities (PHFs). **To incentivise and recognise PHFs that show exemplary performance in adhering to standard cleanliness and infection control protocols**. To inculcate a culture of ongoing assessment and peer review of performance related to hygiene, cleanliness, and sanitation. To create and share sustainable

practices related to improved cleanliness in PHFs linked to positive health outcomes.

The Kayakalp assessment is a three-tier process involving internal, peer, and external assessment. At the beginning of each financial year, a health facility is assessed, scored, and documented using the pre-defined assessment tool.

The parameters on which the performance of the facility would be judged are as follows:

Hospital/Facility Upkeep
Sanitation and Hygiene
Waste Management
Infection Control
Support Services
Hygiene Promotion

To appreciate the hard work and dedication of the healthcare centres, five awards are provided under this scheme:

Two best district hospitals

Two best community health centres or sub-district hospitals

One primary health centre in every district

Cash awards and citations are provided to the winners judged by the set criteria.

6. Toto Tribe:

Toto is an aboriginal Indo-Bhutanese tribe concentrated in the village of Totopara in the Alipurduar district of West Bengal. **The Totopara village falls under the periphery of the Jaldapara Wildlife Sanctuary.** It nestles just to the south of the border between Bhutan and West Bengal, on the bank of the Torsa River. **Anthropologically, the Toto tribe is a branch of the Tibetan-Mongoloid ethnic group.** They are one of the most endangered tribes in the world, with just over 1,600 members **The Toto tribe is often described as 'a vanishing tribe' on the verge of extinction. They are categorised as a Particularly Vulnerable Tribal Group (PVTG).**

Toto Language: It is a Sino-Tibetan language spoken by the Toto people and is written in the Bengali script.

Totos are endogamous and are divided into 13 exogamous clans, from which, they choose to marry. Unique to their culture is the idea of having only a single wife, and they strongly advocate an anti-dowry system, unlike neighbouring tribal practices. Their houses are elevated bamboo huts covered by thatched roofs.

Beliefs: Toto people consider themselves Hindus who also worship nature.

Economy: In the past, **Totos were mainly food gatherers and practiced slashes and burn types, of cultivation.** Along with this, the Toto families earn a good amount of money by working as porters carrying oranges from the different gardens of Bhutan to Totopara. With the passage of time, occupational diversification has taken place. **At present, they have become settled agriculturists.**

7. Animal Health Security

The central government launched the 'Animal Health Security Strengthening in India for Pandemic Preparedness and Response' initiative.

About the Initiative

1**. Launched by:** Ministery of Fisheries, Animal Husbandry and Dairying

2. **Aim:** The project aims to enhance monitoring of animal health to prevent future pandemics.

3. Objective: The primary goal is to strengthen animal health security in order to prepare for and respond to potential pandemics. As about two-thirds of infectious diseases affecting humans have animal origins, monitoring animal health becomes essential for pandemic preparedness.

4. Importance: The project emphasizes the need for greater attention to animal health as part of a broader strategy to safeguard public health from zoonotic diseases.

5. The project was approved by the **Pandemic Fund** and was created by G20 countries under Indonesian presidency in 2022.

6. Purpose: To support low- and middle-income countries in building their capacities to detect, report, and control potential future pandemics.

7. Implementing agency: Asian Development Bank (ADB), the World Bank, and the Food and Agriculture Organisation (FAO**). It is expected to be completed by August 2026.**

8. Key expected outcomes for the project:

i) Enhancement of **laboratory systems and vaccine manufacturing facilities.**

ii) Strengthening of **surveillance and early warning systems.**

iii) Development of human resources with improved capacity and competencies.

iv) Improvement of data systems, analytics, risk analysis, and risk communication.

v) Addressing institutional capacity gaps at both national and regional levels.

8. About First Digital Population Clock Launched

1. The initiative is a collaboration **between ISEC and the Union Ministry of Health and Family Welfare (MoHFW).**

2**. Purpose: The** main aim is to raise awareness of population dynamics among citizens.

3. Objectives: The clock provides reliable and updated demographic data, essential for research and planning. It serves as a tool to boost awareness of demographic changes and trends in real-time.

4. Clock Functionality: The clock is installed prominently at the entrance of ISEC for easy visibility. Karnataka's population estimate updates every minute and 10 seconds, reflecting regional growth patterns.

India's total population estimate ticks up every two seconds, providing a continuous update on national demographics.

9. About PyPIM Platform

1. About: PyPIM Platform is a platform combining Python programming with digital processing-in-memory (PIM) technology, to facilitate in-memory computing.

2. Functionality and Compatibility: PyPIM includes new instructions that allow certain computations to be executed directly in memory, enabling developers to use familiar programming languages, such as **Python, for PIM-based computing systems.**

3. It **tackles the "memory wall" issue**, where CPU and memory speeds surpass the data transfer rates, creating energy and time bottlenecks in modern computing.

4. Performance Simulation: A simulation tool is also provided within the platform to help developers assess potential performance gains from using in-memory processing.

5. By performing computations directly in memory, the technology minimizes the energy-intensive and time-consuming data transfers between the memory and CPU, achieving significant time and energy savings.

Demonstrated Benefits: Studies showed that tasks performed using PyPIM achieved faster processing with minimal changes in code, demonstrating the platform's ease of use and performance advantage in mathematical and algorithmic applications.

10. About Agrivoltaic farming

1. Agrivoltaic farming, also known as **agrophotovoltaics**, combines agriculture with solar energy production by placing solar panels over crops or farmland.

2. This dual-use system leverages sunlight not only to grow plants but also to generate clean, renewable energy, enhancing land productivity.

Benefits of Agrivoltaics

1. **Agrivoltaics addresses the issue of land competition between agriculture and solar farms**. Instead of using land solely for solar panels or crops, it integrates both, making it especially valuable in areas with limited space.

2. This system is particularly **advantageous for regions aiming to boost food and energy production** without expanding land use.

3. Microclimate Benefits: The shade provided by solar panels creates a cooler microclimate beneath, which can reduce water evaporation from the soil, benefiting crops in arid regions.

4. This shade can protect certain plants from **extreme heat, increasing their yield and resilience during hot, dry periods.**

5**. Improved Energy Efficiency:** Solar panels tend to perform better when kept cool, and the plants beneath them create a cooling effect, improving the panels' efficiency. This synergy can lead to higher energy output than standalone solar farms in certain climates, maximizing renewable energy generation.

6. Economic Incentives: Agrivoltaics offers farmers an additional income stream by generating electricity, which can be sold back to the grid or used to power farm operations, reducing energy costs.

This extra revenue can be especially valuable for small-scale or struggling farms, helping them remain financially viable and resilient against market fluctuations.

11. About Sagarmala Parikrama

1. Sagarmala Parikrama was undertaken in collaboration with the **Indian Navy to advance autonomous maritime technology.**

2. It was supported by the **Indian Navy's Naval Innovation and Indigenisation Organisation (NIIO).** It received backing from the Technology Development Acceleration Cell (TDAC) and Innovations for Defence Excellence (iDEX) under the Defence Innovation Organisation (DIO).

3. The project was virtually launched by **Defence Minister Rajnath Singh on October 29, during the Swavlamban event organized by NIIO.**

4. **Significance of the Journey:** It marks a major milestone in India's capabilities in autonomous and unmanned maritime systems. It also **highlights India's strides towards self-reliance (Aatmanirbharta) in advanced defence technologies.**

5. Future Implications: The success of Sagarmala Parikrama sets the foundation for deploying autonomous vessels for: Monitoring critical sea lanes, coastal surveillance, anti-piracy operations and also aligns with global advancements in autonomous surface and underwater systems.

13th November

1. Subansiri Lower Hydro Electric Project (SLHEP):

It is an **under-construction gravity dam on the Subansiri River in North Eastern India on the borders of Arunachal Pradesh and Assam.** It is a run-of-river project. It will be the single largest hydroelectric plant in India when completed. The project is being developed by the state-run **National Hydro Power Corporation (NHPC).**

It is expected to supply 2,000 MW of power (eight 250 MW units) when completed.

Key Facts about Subansiri River: It is a trans-Himalayan River and a right-bank tributary of the Brahmaputra River. **Also called the Gold River, the Subansiri River is famous for its gold dust.**

Course:

It originates from the **Himalayas in China** and flows towards the east and southeast into India. It flows through **Assam, Arunachal Pradesh,and the Tibet Autonomous Region of China**. It joins the Brahmaputra River in the Lakhimpur district of Assam. It is approx. 518 km long, with a drainage basin of 32,640 s km. It is the largest tributary of the Brahmaputra, contributing 7.92% of the Brahmaputra's total flow.

2. Toxic Epidermal Necrolysis (TEN):

TEN, also known as **Lyell's syndrome, is a rare, life-threatening skin condition**. TEN is the most severe form of Stevens-Johnson syndrome (SJS). Both conditions are caused by a reaction to medications-often antibiotics or anticonvulsives. People with weakened immune systems are more likely to develop SJS or TEN.

Symptoms may include:

A painful, red area that spreads quickly
The skin may peel without blistering
Raw areas of skin
Discomfort
Fever
Condition spread to eyes, mouth/throat, and genitals/urethra/anus

TEN causes large areas of blistering and peeling skin on at least 30% of your body, including mucous membranes like the mouth, eyes and genitals. Because the skin normally acts as a protective barrier, extensive skin damage can lead to a dangerous loss of fluids and allow infections to develop. Serious complications can include pneumonia, overwhelming bacterial infections (sepsis), shock, multiple organ failure, and death. It has a mortality rate of approximately 30 percent.

Treatment:

TEN requires emergency medical treatment at a hospital. If a medicine is causing the skin reaction, it is discontinued. While the skin heals, supportive care includes controlling pain, caring for wounds and making sure you're getting enough fluids.

3. Pinaka Multi-Barrel Rocket Launcher:

It is designed by the **Armament Research and Development Establishment (ARDE), a laboratory of the DRDO**. It was first used during the Kargil War, where it successfully neutralised Pakistan Army positions on the mountain tops. It delivers lethal and responsive fire against a variety of area targets, such as exposed enemy troops, armoured and soft-skin vehicles, communication centres, air terminal complexes, and fuel and ammunition dumps.

Features:

It consists **of a multi-tube launcher vehicle, a replenishment-cum-loader vehicle, a replenishment vehicle, and a command post vehicle**. The rocket launcher has two pods containing six rockets each and can neutralise an area of 700 × 500 square metres within 48 seconds. **The launcher system is supported on four hydraulically-actuated outriggers at the time of firing.**

Range: It has a range of 60 to 75 kilometers.

The system is mounted on a Tatra truck for mobility. Its success has already extended beyond India's borders, with countries like Armenia placing orders, and many others expressing interest in acquiring the system. It is **suitable for different types of military engagements, such as counter-terrorism, border defence and conventional warfare.**

4. 'EV as a Service' Programme:

It **aims to boost e-mobility in government offices**; to deploy 5,000 E-Cars in government departments over the next two years. It is an **initiative of Convergence Energy Services Limited (CESL), a subsidiary of Energy Efficiency Services Limited (EESL)**. By leveraging a flexible procurement model, the programme allows for

the deployment of a variety of E-Car makes/models, enabling Govt. offices to choose E-Cars that best align with their operational requirements. It may be noted that CESL has already deployed nearly 2000 nos. of E-Cars across India and is also facilitating the deployment of approx. 17,000 E-Buses. It **not only supports the government's environmental sustainability vision but also aligns with India's ambitious goal of achieving net zero emissions by 2070.**

What is CESL?

It is a **newly established subsidiary of state-owned Energy Efficiency Services Limited, itself a joint venture of public sector companies under the Ministry of Power, Government of India**. It builds upon the decentralized solar development experience in under-served rural communities in India, and over time, using battery energy storage, will deliver renewable energy solutions to power agricultural pumps, street lighting, domestic lighting and cooking appliances in villages. **CESL will also work to enable battery-powered electric mobility and its infrastructure and design business models to increase the uptake of electric vehicles in India.**

5. Dicliptera Polymorpha:

It is a distinctive species, notable for its fire-resilient, pyrophytic habit and its unusual dual-blooming pattern. In addition to its typical post-monsoon flowering, the species exhibits a second, vigorous burst of flowering triggered by the grassland fires commonly set by locals in the region. **This species is taxonomically unique, with inflorescence units (cymules) that develop into spicate inflorescences.** It is the only known Indian species with this spicate inflorescence structure, with its closest allied being found in Africa. **The species was named Dicliptera polymorpha to reflect its diverse morphological traits.** It thrives on slopes in open grasslands of the northern Western Ghats, an area exposed to extreme climatic conditions such as summer droughts and frequent human-induced fires. Despite these harsh conditions, the species has adapted to survive and bloom twice a year. **The first flowering phase occurs from post-monsoon (early November) to March or April, while the second flowering phase in May and June is triggered by fires**. During this second phase, the woody rootstocks produce dwarf flowering shoots, leading to a more abundant but shorter flowering period. The species' unique adaptation to fire and its limited habitat range in the Western Ghats highlight the need for careful management of grassland ecosystems.

6. Gluten:

It is a protein found in the wheat plant and some other grains. Many cereal grains — but in particular barley, wheat, and rye — contain specific proteins that, when mixed with water and kneaded, create an elastic mass. **Two important types of these proteins are gliadins and glutenins**. At the microscopic level, gluten is an elastic mesh of the protein molecules. It is naturally occurring, but it can be extracted, concentrated and added to food and other products to add protein, texture and flavor. **It also works as a binding agent to hold processed foods together and give them shape**. It allows the dough to rise and gives it its chewy character. The **ability of gliadins and glutenins to create gluten makes them prized ingredients in the food industry.**

Issues of Gluten

An enzyme called **protease helps digest proteins but it cannot break down gluten**. When such gluten reaches the small intestine, the body can develop gastrointestinal problems.

Coeliac disease: It's characterised by a severe allergic reaction in the small intestine, prompting the immune system to produce a large number of antibodies that attack the body's own proteins. **The disease is present in around 2% of the general population.**

7. About Acharya Kripalani

Birth and Early Life: Born in 1888 in Hyderabad, Sind (now in Pakistan).

Nationalist Involvement: He was a distinguished freedom fighter, Gandhian, parliamentarian, and advocate for social justice. First came into contact with Gandhiji during the Champaran Satyagraha in 1917. Association with Gandhian **Movement:** Engaged in Ashram work in Gujarat from 1927 onwards. Involved in political movements of the Indian **National Congress.** The Title "Acharya": Came to be known as "Acharya" while working at Gujarat Vidyapeeth, a title that stayed with him throughout his life.

Role in Indian National Congress: Served as General Secretary of the Indian National Congress from 1934 to 1946. Arrested several times for his role in the National Movement.

Constituent Assembly: Elected as a member of the Constituent Assembly of India from 1946 to 1951.

Political Career

Post-Independence: Resigned from the Praja Socialist Party in 1954. Remained an independent political figure thereafter. Elected to the Lok Sabha in 1952, 1957, 1963, and 1967.

8. Maulana Abul Kalam Azad

November 11 is observed as National Education Day, to commemorate the birth anniversary of Maulana Abul Kalam Azad.

About

Maulana Azad was a journalist, freedom fighter, and senior Congress leader. **He founded Al-Hilal, a weekly Urdu journal, in 1912 to increase revolutionary recruits among Muslims**. In 1920, he was elected as a member of the foundation committee to establish **Jamia Millia Islamia University at Aligarh in UP. He was chosen President of the Congress's Special Session in Delhi (1923).** At the age of 35, he became the youngest President of the Indian National Congress.

Legacy: He was also the first Minister of Education in independent India and is credited with shaping the country's modern educational system. During his tenure, the first IIT, IISc, School of Planning and Architecture, and University Grants Commission were established.

The **Sangeet Natak Academy, Lalit Kala Academy, Sahitya Academy, and Indian Council for Cultural Relations were among the most well-known cultural and literary institutes established during his tenure.**

9. Inter-State Council Has Been Reconstituted

The Inter-State Council, which works for Centre-State and interstate coordination and cooperation, has been reconstituted with the Prime Minister as its Chairman.

About Inter-State Council

Objective: To facilitate discussion on policies, resolve inter-state disputes, and foster a collaborative approach between the Union and states on matters of national importance.

Establishment: Though **Article 263** provided for the possibility of such a council, the ISC was formally established in 1990 by a presidential order based on the recommendations of the Sarkaria Commission on center-state relations.

Composition: The Prime Minister serves as the Chairperson of the Council. Members include Chief Ministers of all states, Chief Ministers of Union Territories with legislatures, and Administrators of Union Territories without legislatures. Certain Union Cabinet Ministers, particularly those concerned with interstate affairs, are also part of the ISC.

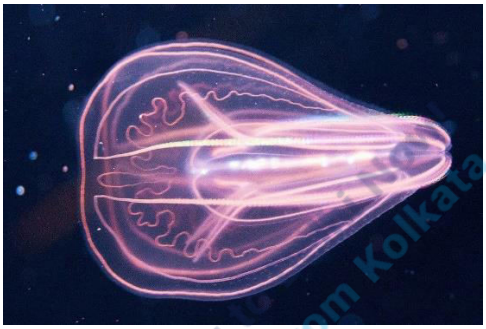
Functions: Policy coordination, conflict resolution Review and makes recommendations to improve administration and governance across states.

10. About Gotti Koya Tribals

They are **adivasi tribals and native of Chattisgarh**. They speak Gondi, a South-Central Dravidian language that is part of their rich cultural heritage. They have a strong spiritual connection to nature. Gotti Koya villages have a traditional political structure led by a village head called the Patel.

14th November

1. Comb Jellies

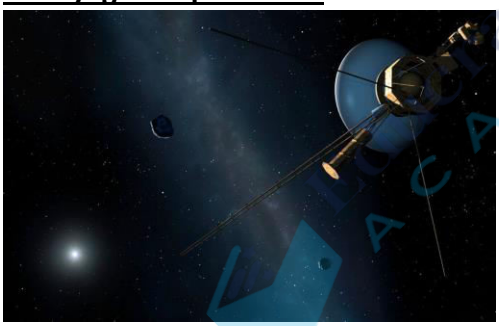


Comb jellies, also known as **ctenophore Mnemiopsis leidyi**, can defy age and revert to younger versions of themselves, according to a study published recently. They are **transparent, gelatinous invertebrates that drift through the waters of our global ocean.** They are one of the oldest multicellular phyla in the animal kingdom, probably existing already more than 500 million years. **There are between 100 and 150 known species of comb jellies, the best known of which are found close to shore.** They are colorful, simple invertebrates that are part of the family Ctenophora. Each species varies in length, but the average size of a comb jelly is about four inches long. **Comb jellies get their name from their eight rows of plates made of fused cilia (little hairs) that they use to move through the water, which looks like combs. They are the largest animals known to use cilia for locomotion**. They have two large, trailing tentacles that branch out to create the appearance of a net-like structure of many tentacles. These organs serve as sticky fishing lines, which they use to trap and move prey to their bodies. **These animals have two major cell layers, the external epidermis and internal gastrodermis**; in between these cell layers is the mesoderm which is what gives the animals their gelatinous appearance. Many species are bioluminescent, meaning they can use proteins in their bodies to create an ethereal blue or green glow in response to stimuli like touch. **Comb jellies are carnivorous and opportunistic, feeding on whatever passes them by.** Unlike their close relative, the jellyfish, comb jellies do not have stinging tentacles and are harmless to humans.

2. HAWK Missile:

The HAWK (Homing All the Way Killer) MIM-23 is an all-weather low-to medium-altitude ground-to-air missile system. It was **developed and designed by the American Defence Company, Raytheon**. It was initially designed to destroy aircraft and was later adapted to destroy other missiles in flight. **The missile entered service in 1960, and was finally phased out of US service in 2002, with the last user, the US Marine Corps,** replacing it with the man-portable IR-guided visual range FIM-92 Stinger. **It employs a Semi-Active-Radar-Homing (SARH) guidance system.** The Hawk missile is transported and launched from the M192 towed triple-missile launcher and is propelled by a dual-thrust motor, with a boost phase and a sustain phase. **The HAWK can engage multiple targets simultaneously and is effective in a variety of weather conditions.** However, it is generally considered outdated compared to more modern systems like the Patriot missile defense system.

3. Voyager 2 Spacecraft:



It is an **unmanned space probe launched by NASA on August 20, 1977**, just a few weeks before its sister craft, Voyager **Primary mission:** Its mission was to study the outer planets of our solar system, including **Jupiter, Saturn, Uranus, and Neptune and their moons, and then continue on an interstellar mission.** It is the **only spacecraft to have ever visited Uranus and Neptune**. It is the only spacecraft to study all four of the solar system's giant planets at close range. It discovered a 14th moon of Jupiter. **It was the first human-made object to fly past Uranus**. At Uranus, Voyager 2 discovered 10 new moons and two new **rings At Neptune, Voyager 2 discovered five moons, four rings, and a "Great Dark Spot." It is the second spacecraft to enter interstellar space**. On Dec. 10, 2018, the spacecraft joined its twin—Voyager 1—as the only human-made objects to enter the space between the stars. It is currently the second most distant human-made object from Earth, after Voyager 1.

4. Sahyadri Tiger Reserve:

Location: It is located in the **Sahyadri Ranges of the Western Ghats in Maharashtra.** It is the northernmost tiger habitat in the western ghats, with an area of almost 741.22 sq. km. The reserve spreads over Koyna Wildlife Sanctuary, forming the northern portion, and Chandoli National Park, forming the southern part of the reserve. **STR was created by merging the areas of these two forests in 2007**. The central portion of Sahyadri Tiger Reserve is occupied by the "Shivsagar" reservoir of the Koyana River and the "Vasant Sagar" reservoir of the Warana River. **The most distinct feature is the presence of numerous barren rocky and lateritic plateaus, locally called "Sadas"**, with less perennial vegetation and overhanging cliffs on the edges, along with numerous fallen boulders with dense thorny bushes. **STR is the only place where climax and near-climax vegetation are plentiful and prospects of adverse anthropogenic influence in the future are minimal.**

5. Long Range Land Attack Cruise Missile:

It is **designed to be launched from both mobile ground-based systems and frontline ships, using a universal vertical launch module, further enhancing its operational flexibility.** It is also able to execute complex manoeuvres while flying at different speeds and altitudes, showcasing the missile's versatility and precision. **These missiles are typically subsonic and can follow terrain-hugging flight paths, making them harder to detect and intercept, thus allowing for a strategic advantage in penetrating enemy defenses.**

Developed by: It is developed by DRDO's Aeronautical Development Establishment in Bengaluru, the LRLACM is the result of collaboration between various DRDO laboratories and Indian industries.

Significance: The missile's successful test is seen as a key milestone in advancing India's defence capabilities, particularly in the area of long-range precision strikes.

6. Bio-Derived Foam:

Developed by :- Researchers from IISc.

Bio-derived foam offers a sustainable alternative to plastic materials used in traditional Fast-Moving Consumer Goods (FMCG) packaging. The foam is made from bio-based epoxy resins, non-edible oils approved by the US Food and Drug Administration (FDA) and hardeners derived from tea leaves. **It offers industries an environmentally responsible alternative to conventional expanded polystyrene (EPS) and polyurethane foam**. The new foam's unique chemical structure features dynamic covalent bonds that can break and reform under external stimuli. **Unlike conventional packaging materials that persist in landfills for centuries, these bio-foams can disintegrate within three hours when exposed to eco-friendly solvents at 80°C. It disintegrates safely in landfills without contaminating groundwater, offering a sustainable alternative to traditional plastic foams.**

7. What is Retail Inflation?

Retail inflation refers to the rate at which the general price level of goods and services bought by households increases over a specific period. **In India, retail inflation is measured by the Consumer Price Index (CPI), which tracks the changes in the prices of a basket of goods and services typically consumed by urban and rural households**. Inflation can be caused by an imbalance in supply and demand, disruption in supplies, or expectations of inflation.

Steps Taken

Monetary Policy Adjustments: The RBI may consider tightening monetary policy by raising the repo rate to curb inflationary pressures.

Supply Chain Measures: The government intervenes to streamline supply chains and reduce disruptions.

8. Consumer Price Index (CPI)

– CPI is an **economic measure that tracks the average change in the prices paid by consumers for a basket of goods and services over time.**

– The CPI in India is compiled by the **National Statistical Office (NSO)** and is categorized into CPI for urban and rural areas.

1. These indices are then combined to calculate the CPI (Combined), which gives a comprehensive overview of inflation for the entire country.

9. Cell-Based Biocomputer

Living cells can **naturally perform computations to carry out biological functions**. For examples; Neurons in the brain communicate to make decisions. Immune cells collaborating to respond to threats. Synthetic biology allows for engineering cells to perform human-designed computations. **This fusion of biology and computer science has led to living cell-based biocomputers.**

Role of Genetic Circuits

Researchers introduced genetic circuits in bacteria activated by specific chemical inducers. **Escherichia coli (E. coli) was used as the model organism.** These engineered bacteria were combined to create a bacterial computer mimicking artificial neural networks. **Each type of engineered bacteria acted as a "bactoneuron" collectively performing complex computations.**

Potential Applications

Pharmaceutical industry: Enhances drug design and development.

Medical sciences: Supports personalized medicine for diagnostics and therapies.

Biomanufacturing: Optimizes production processes and develops innovative bio-products.

10. NISAR

Context

The NISAR mission is set to be launched early next year **from Satish Dhawan Space Centre in Andhra Pradesh, India.**

About

It is **jointly developed by NASA and ISRO named'NASA-ISRO Synthetic Aperture Radar' (NISAR).** It will use radar imaging to produce a high-resolution map of the earth's landmasses. It aims to deepen understanding of dynamic Earth processes, measuring the motion of nearly all of the planet's land and ice-covered surfaces every 12 days.

Functions: The satellite will observe movements from earthquakes, ice sheet movements, landslides and volcanic activity, track changes in forests, wetlands and farmland and even check infrastructure stability. It is **currently expected to be launched onboard an ISRO GSLV Mk II rocket in 2025.**

11. Article 6.4 of the Carbon Market

Context

Experts have raised concerns over the new rules adopted for Article 6.4 of the carbon market during the COP29 held in Baku, Azerbaijan.

About

Article 6.4: Refers to a provision under the **Paris Agreement that establishes a UN-regulated system for trading carbon credits, which countries and private companies can use to offset their emissions.**

Carbon credits: Countries can transfer carbon credits earned from reducing greenhouse gas emissions to help other countries achieve their targets.

Significance

Financial Support: Provides funding for developing countries.

Monitoring and Reliability: Establishes long-term market standards and transparency in credit use.

Types of Carbon Credit Projects

Emission Avoidance Projects: These involve activities that prevent the release of greenhouse gasses. Examples; Implementing energy-efficient technologies like improved cookstoves. Using renewable energy systems for lighting and other applications.

Emission Removal Projects: These focus on taking CO_2 out of the atmosphere. Examples;Planting trees or restoring forests. Developing carbon capture and storage solutions.

12. Corpse Flower (Amorphophallus titanum)

About: It has the largest unbranched inflorescence in the plant kingdom, growing up to 8 feet tall in cultivation and up to 12 feet in the wild.

Bloom Cycle: It **blooms for just 2-3 days every two to three years or more**, depending on energy accumulation in its underground corm.

Odor and Pollination: It emits a putrid odor, resembling rotting flesh, especially at night. The smell has been compared to dead bodies, sweaty socks, or dead animals. The flower generates heat to spread the smell further, attracting carrion beetles and flies for pollination.

Fruiting: Post-pollination, it produces around 400 reddish-orange fruits, each containing two seeds.

Native Habitat: The plant is native to the tropical rainforests of Sumatra, Indonesia, and was first documented in 1878.

Discovery: First documented by Italian botanist Odoardo Beccari in 1878.

Conservation Status: Listed as "Endangered" by the IUCN, with fewer than 1,000 individuals in the wild.

13. First all-women Battalion of CISF

Context

The Home Ministry has approved the establishment of the first all-women battalion of The Central Industrial Security Force (CISF).

About

Presently, there **are 7% women personnel in the CISF, which has a total strength of 1.77 lakh personnel.** The training program is being tailored to develop an elite force, capable of handling high-level security tasks such as VIP protection and safeguarding major facilities.

About CISF

It is an **armed force established under the Central Industrial Security Force Act, 1968.** The force is led by a Director General (DG) and operates under the Ministry of Home Affairs of India. CISF is providing **security to the strategic establishment, including the Department of Space, the Department of Atomic Energy, the Airports, the Delhi Metro, the ports, the historical monuments** and the basic areas of Indian economy such as petroleum and natural gas, electricity, coal, steel and mining. It **also provides counter-terrorism security to various sensitive facilities, as well as private sector operations.** Presently, CISF is also providing security to the protected persons classified as Z Plus, Z, X, Y.

14. India's fossil fuel CO2 Emissions set to Rise

Context

According to a Global Carbon Project study**, India's carbon dioxide (CO2) emissions from burning fossil fuels are expected to rise 4.6% in 2024, the highest among major economies.**

Major Findings

Globally, fossil-based CO2 emissions are set to see a rise of 0.8% from 2023. At this rate there was a 50% chance that global warming will exceed 1.5ºC consistently in about six years. India's carbon emissions are projected to rise with an increase in emissions from coal (4.5%), oil (3.6%), natural gas (11.8%) and cement (4%). China's emissions are projected to rise by 0.2% while that of the United States and the European Union by 0.6% and 3.8%, respectively. **India's contribution to global CO2 emissions stands at 8% while China, the US and EU contribute 32%, 13% and 7%, respectively.** Land and ocean carbon sinks continued to absorb around half of the total carbon emissions, despite being negatively affected by climate change.

15th November

1. Walking Pneumonia:

It is a type of atypical pneumonia most commonly caused by the bacteria **Mycoplasma pneumoniae,** but other bacteria or viruses can also cause it. It **often presents symptoms similar to those of a common cold or mild respiratory infection, including cough, sore throat, low-grade fever, and fatigue**. While it may not cause severe illness, it can still be disruptive, with symptoms lingering for weeks if left untreated. Unlike typical pneumonia, which can lead to severe lung inflammation and difficulty breathing, walking pneumonia is often less intense, allowing people to carry on with their daily activities, which is how it earned its name in the 1930s. **It is also called 'silent' pneumonia because sometimes people don't experience symptoms despite X-rays showing fluid-filled air sacs in the lungs.**

Transmission: It is contagious. It's spread through airborne droplets from close contact, such as coughing, sneezing, or speaking.

2. Crinum andhricum:

It is a **new species of flowering plant**. It was recorded from the **Eastern Ghats of Andhra Pradesh**. The species was named after Andhra Pradesh in recognition of the State where it was first found. It is **part of the Amaryllidaceae family.** It is the latest addition to India's Crinum species, bringing the total to 16, with several being endemic to India.

Features:

It has **distinct features, including wider, oblanceolate perianth lobes (the outer part of the flower) and a greater number of flowers per cluster, producing between 12 and 38 flowers in each**. The plant's pedicelled flowers (with a stalk-like structure) make it unique among species in the region. **The flowers of Crinum andhricum are waxy white, blooming between April and June**. Standing on a tall stem that reaches up to 100 cm, the plant is well-suited to dry, rocky crevices in the Eastern Ghats. The leaves are large, elliptic, and have smooth, entire margins. 'Data Deficient' under the IUCN guidelines.

3. Sukhna Lake:

The **Union Ministry of Environment, Forest and Climate Change, has finally issued a notification demarcating an area from 1 km to 2.035 km around the Sukhna Wildlife Sanctuary as an Eco-Sensitive Zone (ESZ)** on the Haryana side. It is an artificial lake located in Chandigarh, India. It lies at the foothills (Shivalik hills) of the Himalayas. It was created in 1958 by damming the Sukhna Choe, a seasonal stream coming down from the Shivalik Hills. It is declared **a**

National Wetland by the Government of India. The water flowing into the lake is heavily loaded with silt.

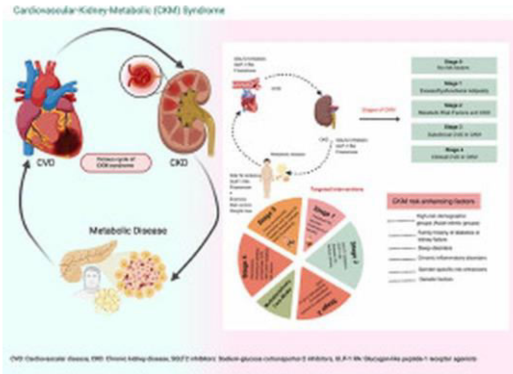
Sukhna Wildlife Sanctuary:

Adjacent to Sukhna Lake is the Sukhna Wildlife Sanctuary. **Spread over an area of about 26 square kilometers**, the sanctuary is home to various species of birds, mammals, and reptiles. It is a sanctuary for many exotic migratory birds like the **Siberian duck, Storks, and Cranes, during the winter months**

4. Exercise Sea Vigil:

It is the **National Level Coastal Defence Exercise conceptualized in 2018 to validate various measures that have been instituted towards enhancing maritime security since '26/11'**. The concept of 'Sea Vigil' is to activate the Coastal Security apparatus across India and assess the overarching Coastal Defence mechanism. T**his fourth edition of Ex Sea Vigil involves 06 Ministries and 21 Organisations/ agencies.** The exercise will focus on strengthening the security of coastal assets like ports, oil rigs, Single Point Moorings, Cable Landing Points and critical coastal infrastructure including the coastal population. This year participation by other Services (Indian Army and Air Force) and the planned deployment of a large number of ships and aircraft have enhanced the tempo of the exercise. **One of the aims of the exercise is to raise awareness amongst coastal communities about maritime security**, and thus, the involvement of fishing communities, coastal populace, and students from NCC and Bharat Scouts and Guides will add to the fervour of the endeavour. It is **serving as a precursor to the Theatre Level Readiness Operational Exercise (TROPEX), conducted biennially by the Indian Navy.**

5. Cardiovascular Kidney Metabolic Syndrome



An unhealthy lifestyle and the influence of globalisation are silently shaping a major global health issue called Cardiovascular Kidney Metabolic (CKM) syndrome. It **is defined as a health disorder attributable to connections among obesity, diabetes, Chronic Kidney Disease (CKD) and Cardiovascular Disease (CVD), including heart failure, atrial fibrillation, coronary heart disease, stroke, and peripheral artery disease**. Metabolic means getting energy from food. Obesity and Type 2 diabetes are metabolic conditions. Each of the four conditions in CKM syndrome can lead to or worsen one another.

Cause: Extra adipose tissue(body fat) or body fat that's abnormal causes CKM syndrome. This type of tissue releases substances that inflame and damage tissues in your heart, kidneys and arteries. Inflammation makes insulin less effective. It also encourages plaque and kidney damage to develop.

6. Booker Prize

British writer Samantha Harvey won the Booker Prize 2024 for fiction with Orbital, a short, wonder-filled novel set aboard the International Space Station. It is the world's leading literary award for a single work of fiction. **Founded in the UK in 1969, the Booker Prize initially rewarded Commonwealth writers and now spans the globe**: it is open to anyone regardless of origin. It aims to promote the finest in fiction by rewarding the best novel of the year written in English

Eligibility:

The **Booker Prize awards any novel originally written in English and published in the UK and Ireland in the year of the prize, regardless of the nationality of their**

author. The novel must be an original work in English (not a translation). It must be published by a registered UK or Irish imprint; self-published novels are not eligible. The winner receives £50,000, and each shortlisted author will be given £2,500.

7. Kutumb Prabodhan

The Vice President of India emphasized the importance of focusing on '**Kutumb Prabodhan' in society.**

About

Kutumb means family and Prabodhan means to get enlightened. It means strengthening of families and family values. **The primary purpose is to instill sanskaras (values) in the younger generation through family bonds**. The ultimate vision is to create a community / society with common moral conduct and human values.

8. SVASTIK Initiative

In the recent conference, jointly organized by **CSIR-NIScPR and Gurugram University highlighted the significance of SVASTIK initiative.**

About SVASTIK (Scientifically Validated Societal Traditional Knowledge)

Launched by: CSIR-NIScPR (National Institute of Science Communication and Policy Research).

Aim: To bridge the gap between traditional knowledge and modern science, highlighting the scientific underpinnings of various traditional practices.

Working: SVASTIK identifies traditional knowledge practices from various fields, including agriculture, medicine, environment, and more.

Researchers and experts collaborate to scientifically validate these practices through rigorous research and analysis. The validated knowledge is then communicated to the public through various channels.

9. U.S.-India Indian Ocean Dialogue

Context

India and the U.S. are set to hold the inaugural U.S.-India Indian Ocean Dialogue, focused on Indo-Pacific region security.

Background

In 2015 the India-U.S. issued their Joint Strategic Vision for the Asia-Pacific and Indian Ocean Region. **The dialogue focuses on addressing regional security challenges and promoting stability and prosperity in the Indo-Pacific**. Both the nations will participate in the Critical and Emerging Technologies (iCET) Intersessional to further expand cooperation on technological innovation and production.

Significance of the India-U.S. relationship

Both India and the U.S. are members of the Quadrilateral Security Dialogue (Quad) along with Japan and Australia. This partnership strengthens cooperation in areas like **maritime security, counterterrorism, and technology sharing. Both nations share a common vision of a free and open Indo-Pacific, which is crucial for maintaining regional stability**. The India-U.S. partnership helps counterbalance the growing influence of other powers in the region, particularly China. The partnership fosters collaboration in emerging technologies like **artificial intelligence, quantum computing, and biotechnology**. Both nations collaborate on climate change mitigation and adaptation strategies, sharing expertise and technology to build resilience against natural disasters.

10. Critical and Emerging Technologies (iCET) Initiative

– It focuses on deepening cooperation between India and the U.S. in emerging technologies like **AI, quantum computing, space exploration, and cybersecurity.**

– It promotes **technological innovation and production**, ensuring both nations remain at the forefront of cutting-edge research.

11. Concerns Over Compounded Semaglutide

Novo Nordisk, the maker of popular diabetes and weight-loss drugs Wegovy and Ozempic, is pushing for tighter regulations on compounded versions of these drugs, citing safety concerns.

About

Wegovy and Ozempic are medications produced by Novo Nordisk, primarily used for managing obesity and type 2 diabetes. Both drugs contain semaglutide which helps **regulate blood sugar, reduce appetite, and promote weight loss.** Both drugs are in high demand due to their effectiveness in managing weight and diabetes, leading some pharmacies to produce compounded versions to meet shortages.

12. Pradhan Mantri Ujjwala Yojana (PMUY)

The government has distributed 10.3 crore LPG connections through PMUY.

About Pradhan Mantri Ujjwala Yojana (PMUY)

It was **launched in 2016 to release deposit free LPG connections in the name of adult women members of poor households across the country**. It aims to ensure access to clean cooking fuel and protect health by reducing indoor air pollution from traditional fuels.

Features: The scheme provides a completely free LPG connection, including the first refill and a stove. The scheme also offers a targeted subsidy of ₹300 per 14.2 kg cylinder for up to 12 refills per year (pro-rated for 5 kg connections) to all PMUY consumers, further easing the financial burden and promoting clean cooking fuel adoption

Benefits of LPG: Reduces indoor pollution, improving respiratory health, especially for women and children. Alleviates the burden of gathering firewood, freeing up time for women. **Reduces deforestation and environmental degradation by cutting dependency on wood and biomass.**

Progress: As of July 1, 2024, 10.33 crore PMUY connections have been released, with LPG coverage improving from 62% in April 2016 to near saturation.

Positive Impacts on Rural Life: Shift from solid fuels reduces respiratory issues. Saves time and labor for women, allowing greater economic productivity. Reduces fire hazards, enhancing household safety, especially for women and children.

13. National Financial Reporting Authority (NFRA)

The National Financial Reporting Authority (NFRA) approved 40 audit standards, aligning several with global norms despite objections from the Institute of Chartered Accountants of India.

National Financial Reporting Authority

It is a **statutory body constituted in 2018 under the Companies Act, 2013.**

Functions and Duties:

Recommend accounting and auditing policies and standards to be adopted by companies for approval by the Central Government;

Monitor and enforce compliance with accounting standards and auditing standards;

Oversee the quality of service of the professions associated with ensuring compliance with such standards and suggest measures for improvement in the quality of service;

Perform such other functions and duties as may be necessary or incidental to the aforesaid functions and duties.

14. Uranus

According to a recent study, the **Voyager 2 spacecraft, the first and only mission to fly by Uranus in 1986, passed through it when its magnetosphere was unusually compressed by the solar wind**. A magnetosphere is a region of space surrounding a planet where the planet's magnetic field dominates, creating a protective zone against solar and cosmic particle radiation.

About Planet Uranus

Uranus is the seventh planet from the Sun, and it is the third largest planet in our solar system – about four times wider than Earth. It is **surrounded by faint rings, and more than two dozen small moons as it rotates at a nearly 90-degree angle from the plane of its orbit**. This unique tilt makes Uranus appear to spin on its side. It is a very cold and windy planet that appears blue-green in color due to large amounts of methane, which absorbs red light but allows blues to be reflected back into space.

15. Sea Ranching Launched off Vizhinjam Coast

Twenty-thousand pompano (Trachinotus blochii) fingerlings were deposited in the sea off Vizhinjam as a follow-up to the artificial reef project.

Artificial Reef Project

The artificial reef project is designed to replenish marine fishery resources and promote sustainable fishing practices under Pradhan Mantri Matsya Sampada Yojana (PMMSY). **Artificial reefs, constructed using eco-friendly materials, create complex habitats that attract diverse marine species.** The reefs also act as a protective barrier, preventing seabed erosion and mitigating the adverse impacts of natural currents. Sea Ranching Initiative: It **involves releasing juvenile fish, known as fingerlings, into the ocean to restock and rejuvenate fish populations.**

18th November

1. Red-Headed Vulture:

This is one of the **9 species of Vulture which are found in India**. It is also called the **Asian King vulture or Pondicherry Vulture.**

Appearance: It is a dark, medium-sized vulture with a bare reddish head and loose flaps on the side of the neck. It weighs around 5 kg and averaging over 80 cm in length, the vulture is primarily solitary, often seen alone or with a mate. Its black plumage is marked by a distinctive white patch on the abdomen, which becomes more prominent during flight.

Distribution: The Red-Headed Vulture is typically found in **Central India, Nepal, Myanmar, Thailand, Vietnam, and parts of Kerala, Karnataka, and Tamil Nadu.**

Breeding: Breeding typically takes place between November and January.

Conservation status

IUCN Red List: Critically Endangered

Wildlife Protection Act, 1972: Schedule 1

Issue: It was extensively found in India but its numbers drastically reduced after diclofenac poisoning

2. Leucism:

It is an **abnormal condition of reduced pigmentation affecting various animals (such as birds, mammals, and reptiles) that is marked by overall pale color or patches of reduced coloring** It is caused by a genetic mutation which inhibits melanin and other pigments from being deposited in feathers, hair, or skin. **In birds, leucism affects only the bird's feathers, this means they do not have the normal, classic plumage colors**. They may have white patches where the bird should not have any, or their overall plumage may look pale or bleached out.

Albinism vs. Leucism:

Albinism is a rare genetic mutation with a complete absence of (or very little) melanin production. **Melanin is a natural pigment in the skin, hair, eyes, and even brain tissue**. The type and amount of melanin in animals determine the colour of the skin, hair, and eyes. With the lack of melanin production, albinos have white or pinkish coloured skin and red eyes due to the underlying blood vessels showing through from behind the eyes. **With leucism, there is only a partial loss of melanin production and/or distribution**. The animal can have white or patchy coloured skin, hair, and/or feathers. The pigment cells in the eyes, legs, and bills of birds, however, are not affected.

3. Lake Kariba:

It is a **lake in central Africa, along the border between Zambia and Zimbabwe**. It is positioned 810 miles upstream from the Indian Ocean. It is the world's largest man-made lake. **It covers an area of 2,000 square miles (5,200 square km). It was formed by damming the Zambezi Riverin the Kariba Gorge**, where the river narrows between hills of hard rock 250 miles (400 km) below Victoria Falls. **The Kariba Dam consists of adouble-arch wall**. It is 128 meters in height, 617 meters in length, 13 meters wide at its top, and 24 meters wide at the base. **It provides considerable electric power to both Zambia and Zimbabwe and supports a thriving commercial fishing industry**. The lake encompasses a total of 102 islands, including well-known ones like Chete Island and Spurwing Island. Chete Island boasts the world's largest expanse of protected, undeveloped wetlands and hosts the largest single population of African elephants.

4. Unified Complex Radio Antenna (UNICORN):

It is a state-of-the-art integrated antenna system. It is a mast with integrated communication systems that help improve the stealth characteristics of ships. **Developed jointly by three Japanese companies (NEC Corporation, Sampa Kogyo K.K., and The Yokohama Rubber Co., Ltd.), these antennas are currently fitted on Mogami-class frigates of the Japan Maritime Self-Defence force.** Unlike the conventional masts, UNICORN consolidates various antennas that are attached to multiple points on a mast into a single radar dome, known as a radome. This innovation significantly reduces the cross-section of naval platforms, thereby enhancing their stealth characteristics and enabling them to operate with reduced electronic signatures. In addition, the optimal placement of the antennas improves the maximum detection distance of radio waves emitted from outside and simplifies maintenance and installation processes.

5. Panna Tiger Reserve:

Location: It is a critical tiger habitat located in the Vindhya mountain range in the northern part of Madhya Pradesh. Standing over an area of 542 sq.km., it is the only Tiger Reserve in the entire Bundelkhand region. It was declared a **Project Tiger Reserve by the Government of India in 1994.**

Landscape:

It is **characterized with a 'Table Top' topography**. It consists of extensive plateaus and gorges.

River: Ken River flows from south to north through the reserve. The reserve is also dotted with two-thousand-year-old rock paintings.

19th November

1. Guru Ghasidas-Tamor Pingla Tiger Reserve

Union Minister for Environment, Forest and Climate Change informed the Nation about the notification of the **Guru Ghasidas-Tamor Pingla Tiger Reserve, Chhattisgarh, as the 56th Tiger Reserve of the country**. It is located in the **northern part of the state Chhattisgarh, bordering Madhya Pradesh and Jharkhand**. It is the third largest tiger reserve in the country after Nagarjunasagar-Srisailam Tiger Reserve in Andhra Pradesh and Manas Tiger Reserve in Assam. This tiger reserve is connected to the Bandhavgarh Tiger Reserve in Madhya Pradesh to the West and Palamau Tiger Reserve in Jharkhand to the East. It is **nestled in the Chota Nagpur plateau and partly in Baghelkhand plateau**. It is contiguous with the Sanjay Dubri Tiger Reserve in Madhya Pradesh.

Rivers: It serves as the origin of significant rivers such as Hasdeo Gopad and Baranga and a catchment area for rivers like Neur, Bijadhur, Banas, Rehand, and numerous smaller rivers and rivulets.

Terrain: It is blessed with varied terrains, dense forests, streams and rivers favourable for harbouring a rich faunal diversity and contains critical habitats for the tiger.

Fauna: A total of 753 species, including 365 invertebrates and 388 vertebrates, have been documented here by the Zoological Survey of India.

Other Tigers reserves in Chhattisgarh: Udanti-Sitanadi, Achanakmar, and Indravati Reserves.

2. One Day One Genome Initiative

The **Department of Biotechnology (DBT) and Biotechnology Research and Innovation Council (BRIC) introduced the 'One Day One Genome' initiative to showcase the enormous microbial potential of India.** It will highlight the unique bacterial species found in our country and emphasize their critical roles in environment, agriculture and human health. **This initiative is coordinated by Biotechnology Research and Innovation Council-National Institute of Biomedical Genomics (BRIC-NIBMG)** an institute of the Department of Biotechnology. This initiative aims to release a fully annotated bacteriological genome isolated in the country freely available to the public. **This will be complemented with a detailed graphical summary, infographics and genome assembly/annotation detail**s. These documents will thus give an idea about the scientific and industrial use of these microbes. Consequently, microbial genomics data will become more accessible to the general public, scientific researchers and thereby stimulate discussions; innovations directly benefit the entire community and ecosystem.

Role of microorganisms

Microorganisms are crucial for our ecosystem. **They play an important role in all biogeochemical cycles, soil formation, mineral purification, degradation of organic wastes and toxic pollutants along with methane production.** Cumulatively they help to maintain the homeostasis in our planet**. In agriculture, they help in nutrient cycling, nitrogen fixation, maintaining soil fertility, controlling pests and weeds and stress responses**. Microorganisms are symbiotically associated with plants and help them in nutrient and water uptake. There are many more microbial cells than the number of human cells in a human body. **They are essential for our digestion, immunity and even mental health. All infectious diseases are mainly caused by pathogenic microorganisms**. On the other hand, non-pathogenic microorganisms are indispensable for our defense against infectious diseases.

3. Cluster Munitions

A Russian ballistic missile with cluster munitions struck a residential area in northern Ukraine's Sumy, killing 11 persons including two children, and injuring 84 others recently**. Cluster munitions, or cluster bombs, are weapons which, as the name suggests, deliver clusters of smaller explosive submunitions onto a target**. Depending on the model, the number of submunitions can vary from several to more than 600. **Cluster munitions can be delivered by aircraft, artillery, and missiles. Most submunitions are intended to explode on impact**. The vast majority are free-falling, meaning that they are not individually guided towards a target. However, many submunitions fail to explode on initial impact, leaving duds that act like landmines, posing a threat to civilians for years and even decades. **They were developed in World War II and are part of many governments' weapons stockpiles. Their main purpose was to destroy multiple military targets dispersed over a wide area, such as tank or infantry formations, and to kill or injure combatants.** The Convention on Cluster Munitions (CCM) prohibits under any circumstances the use, development, production, acquisition, stockpiling, and transfer of cluster munitions, as well as the assistance or encouragement of anyone to engage in prohibited activities. More than 120 states have joined the Convention. **Notable exceptions include the United States, Russia, Ukraine, Israel, India, and China.**

4. GSAT-N2 (GSAT-20)

India's GSAT-N2 (GSAT-20) communication satellite was successfully launched **by SpaceX's Falcon-9 rocket recently**. It is **India's advanced communication satellite**. It was developed by New Space India Limited (NSIL), the commercial arm of ISRO under the Department of Space. It was **launched onboard SpaceX's Falcon-9 rocket into a geosynchronous transfer orbit.** It is designed to provide data and internet services to remote regions and enable in-flight Internet connectivity across the Indian subcontinent**. It will provide significant data transmission capacity, particularly for India's Smart Cities Mission.**

Features:

It is a **high-throughput communication satellite operating in the Ka-band**. The satellite is equipped with multiple spot beams and is designed to support a large user base, utilizing small user terminals.

GSAT-N2 features 32 user beams—8 narrow spot beams over the Northeast region and 24 wide spot beams covering the rest of India. These beams will be supported by hub stations across mainland India. **The satellite's Ka-band high-throughput communication payload provides a throughput of around 48 Gbps.** The GSAT-N2 satellite, with a lift-off mass of 4,700 kg, has a mission life of 14 years. This is **India's highest throughput satellite and the only one exclusively operating in the highly sought-after Ka-band.**

Why was the Falcon-9 rocket chosen?

While ISRO's Mark-3 launch vehicle can place up to 4,000 kg into a geostationary transfer orbit, the GSAT-N2's weight of 4,700 kg required a different solution. **As a result, ISRO turned to SpaceX's launch vehicle for the mission, marking ISRO's first commercial collaboration with SpaceX.**

5. Genus Koima

A team of researchers have discovered Koima, a new genus of freshwater fish endemic to the Western Ghats. The generic name, Koima is derived from Malayalam and is the vernacular word used for loaches**. It encompasses two known species that were previously assigned under the genus Nemacheilus.**

Features of genus Koima

It has a **unique colour pattern** comprising a yellowish-brown ground colour, single row of black spots on lateral line, all fins hyaline, and absence of a uniform banding pattern on dorsal side.

Habitat: Kunthi, Bhavani, Moyar, Kabini, and Pambar rivers in the Western Ghats.

Species belonging to Genus koima

Koima remadevii: It typically inhabits swift-flowing riparian streams with substrates comprising rocks, boulders, and gravel, with sand and silt patches scattered throughout. Koima remadevii thrives in fast-flowing streams with rocky substrates. These fish seek shelter in the gaps between rocks and beneath boulders, finding protection from strong currents. **Currently it is only known from its type locality in the Kunthi river inside Silent Valley National Park.**

Koima monilis: It inhabits various tributaries of the Cauvery river, occupying microhabitats ranging from large rivers to small, fast-flowing streams at elevations between 350 and 800 m.

20th November

1. Nugu Wildlife Sanctuary:

It is situated in **H.D. Kote taluk of Mysuru district, Karnataka**. It lies north of Bandipur National Park. The sanctuary includes the backwaters of Nugu Dam on its western side and shares borders with Alaganchi State Forest, a part of Bandipur Tiger Reserve on the southwest side. **Nugu Dam is built across the Nugu River, a tributary of the Cauvery. It is also an integral part of the Nilgiri Biosphere Reserve**.

Rainfall: The area receives rainfall from both southwest and northeast monsoons. The average amount of rainfall received in this area is 1000 mm.

Vegetation: The forests comprise of southern mixed deciduous treesand dry deciduous scrubs.

Flora: Some of the tree species found in this region include Dipterocarpus indicus, Calophyllum tomentosum, and Hopea parviflora.

Fauna: The sanctuary supports a diverse range of fauna, including elephants, tigers, leopards, wild dogs, striped hyenas, sloth bears, gaurs, sambhars, chitals, and four-horned antelopes. It is also home to two important riverine wildlife species: the smooth-coated otter and the marsh crocodile, emphasizing its rich biodiversity.

2. Dead Sea:

The Dead Sea, also known as **the Salt Sea, is a saline lake in southwestern Asia located between Jordan and Israel.** Its eastern shore is in Jordan, and the western shore is in Israel. However, the western shore's southern half belongs to Israel, while the shore's northern half is in the West Bank, an area claimed by both Israel and Palestine. **It lies to the east of the Mediterranean Sea and south of the Sea of**

Galilee. It is located at an elevation of 5 meters below sea level, making it the Earth's lowest land-based feature. It covers approximately 605 sq. km. It is 50 kilometres long and 15 kilometres wide at its widest point.

Salinity: The Dead Sea is one of the Earth's saltiest water bodies, almost ten times saltier than ordinary seawaters. It has a salinity of 34.2%. It is the fourth saltiest body of water in the world, ranking behind Antarctica's Don Juan Pond and Lake Vanda, and Djibouti's Lake Assal. **The Dead Sea has one main inlet (the Jordan River) but does not have an outlet and so loses its water mainly through evaporation.** The high saline level and the harsh climate make the lake devoid of life, except for algae and other microorganisms. It has a **density of 1.240 kg/L, which makes swimming in its waters similar to floating.**

3. Willingdon Island:

It is among the most beautiful locations in the Kochi area of Kerala. This is a **man-made island, named after Lord Willingdon who was a British Viceroy of India.** It is among the biggest of its kind in India. It is also home to the Kochi Naval Base of the Indian Navy, the Central Institute of Fisheries Technology and the Port of Kochi. The island is connected to the mainland by the **Venduruthy Bridge.**

Who was Lord Willingdon (1931 - 1936)?

He was the **22nd Viceroy and Governor-General of India.**

Major events during his tenure

Introduction of the **Government of India Act, 1935**. The Second Round Table Conference, held in 1931, saw the participation of Gandhi as a representative of the Congress. **British Prime Minister Ramsay MacDonald introduced the Communal Award in 1932.** The Poona Pact of 1932 was reached between Gandhi and Ambedkar to address provisions related to fair representation of backward classes. **The Third Round Table Conference, held in 1932**, failed as neither Gandhi nor Congress attended.

4. Long-Range Hypersonic Missile:

The missile can carry various payloads for ranges greater than 1,500 km for the Armed Forces. It has been indigenously developed by laboratories of the **Dr APJ Abdul Kalam Missile Complex, Hyderabad, along with various other DRDO labs and industry partners.**

What are Hypersonic missiles?

The term "Hypersonic" refers to a speed at least five times the speed of sound (also called Mach-5). **Another key feature of such missiles is manoeuvrability, setting them apart from a ballistic missile that follows a set course or trajectory**. Hypersonic Cruise Missiles use scramjet engines to sustain hypersonic speeds throughout their flight, flying at lower altitudes and also possessing manoeuvrability. **The two types of hypersonic weapons systems are Hypersonic Glide Vehicles (HGV) and Hypersonic Cruise Missiles.** The HGVs are launched from a rocket before gliding to the intended target while HCMs are powered by air-breathing high-speed engines or 'scramjets' after acquiring their target.

Advantages of hypersonic missiles

Hypersonic weapons can **enable responsive, long-range strike options against distant, defended or time-critical threats (such as road-mobile missiles) when other forces are unavailable, denied access or not preferred**. Conventional hypersonic weapons use only kinetic energy, i.e. energy derived from motion, to destroy unhardened targets or even underground facilities. They fly at lower altitudes than ballistic missiles, which means that they may be harder to track at long distances with some surface-based sensors, such as certain radar Russia and China are believed to be ahead in developing hypersonic missiles while the US is developing a range of such weapons under an ambitious programme.

5. Tsunami Ready Recognition Programme:

It is an international community-based recognition programme developed by **Intergovermental Oceanographic Commission (IOC) of UNESCO.**

Aim: It aims to build resilient communities through awareness and preparedness strategies that will protect life, livelihoods and property from tsunamis in different regions.

The main goal of the Programme is to improve coastal community preparedness for tsunamis and to minimize the loss of life, livelihoods and property. This is achieved through a collaborative effort to meet a standard level of tsunami preparedness through the fulfilment of a set of established indicators. **To get this recognition communities must meet all 12 indicators,which cover Assessment, Preparedness, and Response, will be recognized as 'Tsunami Ready' by the UNESCO/IOC.** The recognition is renewable every four years. It is implemented as a voluntary, performance-based community recognition programme that promotes an understanding of the concept of readiness as an active collaboration among national and local warning and emergency

management agencies, and government authorities, scientists, community leaders and the public.

What is A Tsunami?

Tsunamis are large waves generated by sudden movements of the ocean floor that displace a large volume of water. These are usually associated with earthquakes A tsunami is a series of extremely long waves caused by a large and sudden displacement of the ocean, usually the result of an earthquake below or near the ocean floor. This force creates waves that radiate outward in all directions away from their source, sometimes crossing entire ocean basins.

6. Willingdon Island

The rejuvenation of Willingdon Island is a key topic of discussion, with trade unions and stakeholders calling for its commercial revival.

About Willingdon Island

It is a **man-made island in Kochi built in the 1920s by Sir Robert Bristow, named after viceroy Lord Willingdon**. After container operations moved to Vallarpadam Island in 2011 under a build-operate-transfer agreement, the island's commercial activities declined. The island is ideal for hospitality, tourism, and entertainment activities.

Proposals by CPEO (Cochin Port Employees Organisation): Reintroduce coastal and defence cargo handling at the Rajiv Gandhi Container Terminal. Develop cold storage facilities and a godown network for profitability.

7. Lake Kariba

A severe drought has dried Lake Kariba, threatening to shut down the dam that powers much of Zambia and Zimbabwe's electricity.

About

Kariba is the largest man-made lake in the world by volume built in the 1950s. Lake Volta is the world's largest man-made lake by surface area located in Ghana.

Location: On the border of Zimbabwe and Zambia, in Southern Africa It was created by the construction of the Kariba Dam on the Zambezi River. Zambia relies on Kariba for more than 80% of its national electricity supply

8. Prime Minister Internship Scheme 2024

Around 6.5 lakh youth had applied for internships under the PM Internship Scheme in Top Companies (Scheme) pilot project.

About

Announced in: Union Budget 2024-25.

Aim: To provide 12-month internships for one crore candidates in the age group of 21 to 24 years, for five years.

To provide real-life work experience to job seekers in top companies.

Implementing Agency: Ministry of Corporate Affairs.

Vacancies: 1,25,000 positions in 500 top companies for FY – 2024-25. The top companies have been identified based on the average Corporate Social Responsibility expenditure of the last three years.

Participation of the companies in the scheme is voluntary.

Eligibility:

Do not have a family member earning over ₹8 lakh per annum.

18 to 24 years (relaxation for OBC/SC/ST)

ITI: Matriculation + ITI in relevant trade

Diploma: Intermediate + AICTE-recognized diploma

Degree: Bachelor's degree from UGC/AICTE-recognized university

Stipened: ₹5,000 monthly stipend One-time payment of ₹6,000

9. Chikungunya

Telangana's Health Department has reported a spike in chikungunya cases surpassing figures from previous years.

About

It is a **viral disease transmitted by Aedes mosquitoes**. It is a **non communicable disease** i.e. not contagious between humans.

Common symptoms include fever, joint pain, headache, muscle pain, joint swelling, and rash. **Chikungunya is found in tropical and subtropical regions of Africa, Asia, and the Americas.**

Prevention: Preventing mosquito bites is the key to avoiding chikungunya infection.

Treatment: There is no specific antiviral treatment for chikungunya. Treatment generally focuses on relieving symptoms.

10. Uniform Protection Protocol

Central Electricity Authority has approved the Uniform Protection Protocol for users of the Indian Grid for implementation on Pan India basis.

About.

It **aims to ensure Grid stability, reliability, security and also supports India's vision for integration of 450 GW Renewable Energy into the National Grid by 2030** and ambitious target of 2100 GW of Renewable energy by 2047. It addresses protection requirements for various power system components, such as: thermal and hydro power plants, renewable energy sources, etc. It mandates periodic audits to ensure compliance with standards and best practices.

21st November

1. High-Altitude Sickness:

High-altitude sickness, or Acute Mountain Sickness (AMS), occurs when the body cannot acclimatise to high elevations, typically over 8,000 feet (2,400 metres). As altitude increases, the air pressure and oxygen levels decrease, leading to hypoxia — a shortage of oxygen in the body's tissues.

Symptoms:

Early symptoms of AMS include headache, nausea, fatigue, and shortness of breath. If left untreated, it can escalate into **high-altitude pulmonary edema (HAPE), a life-threatening condition where fluid accumulates in the lungs, or high-altitude cerebral edema (HACE),** where fluid collects in the brain. Both conditions require immediate medical intervention, and descent to lower altitudes is often the only way to prevent fatal outcomes. At higher altitudes, the body tries to adjust by increasing the breathing rate, which can cause hyperventilation, and produce more red blood cells to carry oxygen, which thickens the blood and strains the heart. In cases of HAPE, fluid accumulation in the lungs exacerbates breathing difficulties, while HACE causes symptoms like confusion, hallucinations, and even coma. The primary cause of high-altitude sickness is rapid ascent without allowing the body time to acclimatise. Gradual ascent, which allows the body to adapt to lower oxygen levels, is the best way to prevent high-altitude illnesses.

Treatment: The most effective treatment is immediate descent to lower altitudes. Symptoms usually improve significantly with a descent of 300-1,000 metres. Supplemental oxygen or a portable hyperbaric chamber can also help alleviate symptoms of AMS and HACE in emergencies.

2. Cloud seeding:

Cloud seeding, also known as artificial rain, is a weather modification technique that aims to enhance precipitation by introducing substances into clouds to stimulate rainfall.

How is it done?

The science behind cloud seeding involves dispersing materials such as silver iodide, potassium iodide, or dry ice into clouds to encourage the formation of rain or snow. These particles serve as nuclei for water droplets to form around, potentially leading to increased precipitation. **The process can be carried out using aircraft, ground-based generators, or even rockets in some cases.** Cloud seeding is done to increase the radius of the cloud droplets so that they will grow bigger and because of gravity, they will come down as rainfall. In the context of air pollution**, cloud seeding is seen as a potential method to "wash away" particulate matter and other pollutants from the air.** The theory is that increased rainfall could help settle dust and other airborne particles, temporarily improving air quality.

Challenges: Suitable atmospheric conditions are necessary for the technique to be effective, including the presence of clouds with sufficient moisture.

3. Army Tactical Missile System:

It is a conventional surface-to-surface artillery weapon system capable of striking targets well beyond the range of existing Army cannons, rockets, and other missiles. It is **manufactured by the US defense company Lockheed Martin. It is also designated M39 by the US Army, and its Department of Defence (DoD) designation is MGM-140**. The missile first saw use during the 1991 Persian Gulf War. This weapon's known operators other than the US are Bahrain, Greece, South Korea, Taiwan, and the United Arab Emirates.

Features:

ATACMS are **24/7, all-weather, surface-to-surface, inertially guided ballistic missiles**.

Range: It has a range of about 190 miles (305 km).

Propulsion: Single-stage, solid propellant.

These missiles are fired from the **High Mobility Artillery Rocket System(HIMARS) and the M270 Multiple Launch Rocket System (MLRS) platforms**. It has the ability to carry cluster munitions,which destroy a targeted area by releasing hundreds of bomblets instead of a single warhead.

4. Bharat National Cyber Security Exercise (Bharat NCX 2024)

It is a **landmark initiative to fortify India's cybersecurity resilience**. It is being conducted by the **National Security Council Secretariat (NSCS) Government of India in strategic partnership with Rashtriya Raksha University (RRU).** This flagship event serves as a unifying platform for over 300 participants, representing a diverse spectrum of government agencies, public organizations, and the private sector, all resolutely committed to the safeguarding of critical information infrastructure through training sessions, Live Fire, and Strategic exercises.

Key Features:

The **exercise includes immersive training on cyber defense and incident response, live-fire simulations of cyberattacks on IT and OT systems, and collaborative platforms for government and industry stakeholders**. A Strategic Decision-Making Exercise will bring together senior management from across sectors to simulate decision-making in a national-level cyber crisis, enhancing their ability to respond to high-pressure situations with strategic acumen. The CISO's Conclave will feature Chief Information Security Officers from the government, public, and private sectors sharing insights, participating in panel discussions, and exploring the latest trends and government initiatives in cybersecurity. On the sidelines, the **Bharat Cybersecurity Startup Exhibition will showcase innovative solutions from Indian startups, emphasizing their role in enhancing the nation's cybersecurity infrastructure**. The exercise also highlights leadership engagement and capacity building, fostering a unified approach to emerging cyber challenges.

5. Sabarmati River:

It is a **monsoon-fed river that originates in the Aravalli Hills of Rajasthan near Udaipur and meets in the Bay of Khambhat in Arabian sea**. The Sabarmati basin extends over the states of Rajasthan and Gujarat, having an area of 21,674 sq.km with a maximum length and width of 300 km and 150 km. It flows north-south through Ahmedabad, bisecting the city into its western and eastern halves. It covers a total distance of 371 km, out of which 48 km is traversed in Rajasthan and the remaining 323 km in Gujarat. Its total catchment area is 21,674 sq. km**. It is bounded by the Aravalli Hills in the north and north-east, the Rann of Kutch in the west, and the Gulf of Khambhat in the south.** The major part of the basin is covered with agriculture, accounting for 74.68% of the total area.

Tributaries: Its principal tributaries joining from left are the Wakal, the Hathmati, and the Vatrak, whereas the Sei joins the river from right.

6. Lipids:

They are **fatty, waxy, or oily compounds that are essential to many body functions and serve as the building blocks for all living cells.** They help regulate hormones, transmit nerve impulses, cushion organs, and store energy in the form of body fat. They're part of the cell membranes and help control what goes in and out of the cell. **They are mainly composed of hydrocarbons in their most reduced form, making them an excellent form of energy storage**, as when metabolized, the hydrocarbons oxidize to release large amounts of energy. **They are not soluble in water as they are non-polar, but are thus soluble in non-polar solvents such as chloroform**. The three main types of lipids are **phospholipids, sterols (including the different types of cholesterol), and triglycerides**(which account for over 95% of lipids in food). They are found in higher quantities in fried foods, animal fats, and dairy products like cream, butter, and cheese. Though lipids are important for the health, consuming excessive amounts in food can lead to diseases like atherosclerosis("hardening of the arteries"), hypertension (high blood pressure), and coronary artery disease.

22nd November

1. AroTrack:

It **accurately detects harmful aromatic xenobiotic pollutants such as phenol or benzene, xylenols.** It uses proteins typically found in bacteria living in heavily polluted environments to effectively identify multiple aromatic pollutants in water. This protein undergoes a highly selective ATP hydrolysis chemical reaction if an aromatic compound is present in the sample. This reaction is expressed with a change in the colour of the protein solution, which AroTrack can then detect. **AroTrack contains a light emitting diode [LED]-phototransistor assembly that shines a light of appropriate wavelength through the sample and detects how much is absorbed**. The key component of the device is a biosensing module called MopR - a sensitive sensor for detecting phenol. The device also reliably worked in water temperatures up to 50 degrees Celsius and completed the tests in less than 30 minutes.

Significance: It's low cost, battery-operated nature, and portability can be ideal for rural and low-income

settings that often lack resources and have difficulty accessing expensive laboratory tests.

2. Global Energy Efficiency Alliance

The UAE has unveiled an ambitious initiative to establish the 'Global Energy Efficiency Alliance' during COP29, hosted in Azerbaijan**. It aims to double global energy efficiency rates by 2030 and contribute to significant emission reductions. It also encourages strategic public-private partnerships and bolster investments in energy efficiency initiatives**. This initiative aligns with the 'UAE Consensus' from COP28, where all 198 participating countries in COP28, organisations, and companies committed to reducing carbon emissions and minimising natural resource consumption. The UAE plans to lead the alliance by sharing its expertise in energy efficiency, fostering knowledge transfer, and building effective partnership models with the private sector.

Significance

The alliance is designed to **support the reduction of carbon emissions and the sustainable use of natural resources through knowledge sharing, capacity building, and standardization efforts**. The alliance will focus on compiling and disseminating best practices, with a particular emphasis on assisting African nations. This support will extend to developing financing options and technological solutions vital for the continent's progress in energy sustainability.

3. Bhu-Neer Portal:

It is an advanced portal developed by **Central Ground Water Authority (CGWA), under the Ministry of Jal Shakti**, in collaboration with the National Informatics Centre (NIC). It is for improved groundwater regulation across the country.

Features

The **portal will serve as a one-stop platform for managing and regulating groundwater resources, aimed at ensuring transparency, efficiency, and sustainability in groundwater usage**. It is designed to provide comprehensive details regarding the legal framework governing groundwater extraction, regulations at the state and national levels. **Its centralized database will allow users to access critical information on groundwater compliance, policies, and sustainable practices.** The portal is developed with several user-friendly features to offer streamlined process flow to the project proponents seeking groundwater withdrawal permits. Having a simplified yet informative interface, and features like PAN based single Id system, NOC with QR code etc., "Bhu-Neer" marks a significant improvement over its previous version NOCAP. **The portal is another step towards promoting Ease of Doing Business by making ground water regulation a seamless and faceless exercise**. The portal is now live for public use and all project proponents can visit the portal for ground water withdrawal related queries, clarifications, tracking application status, payment of statutory charges.

4. State of the World's Children (SOWC) Report:

It is the **annual flagship publication of the United Nations Children's Fund (UNICEF).** The report closely examines a key issue affecting children. These have ranged from children with **disabilities, conflict and war, child labour, urbanization, early childhood development**, and much more, making it the most comprehensive analysis of global trends that impact children. **The report includes supporting data and statistics.**

Highlights of SOWC-2024:

This year, the SOWC was launched on **20 November, celebrated globally as World Children's Day–**UNICEF's annual day of action for and by children, with focus on **'Listen to the Future,'** voices of children and young people on the world they want. **The report explores three megatrends that will profoundly impact children's lives between now and 2050: demographics shifts, the climate and environmental crises and frontier technologies**. The report projects that by 2050, the global child population will stabilize around 2.3 billion, with a significant shift in regional distributions. **India, China, Nigeria and Pakistan are expected to account for more than a third of the world's child population by 2050.** India is estimated to have the largest share at 350 million, despite a decline of 106 million compared to today. Nearly one billion children worldwide face extreme vulnerability to climate and environmental hazards, with Indian children disproportionately affected. **According to the Children's Climate Risk Index (CCRI), in 2021, India ranked 26th out of 163 ranked countries globally, with children particularly exposed to risks such as extreme heat, floods, droughts, and air pollution.** By 2050, as the report has cautioned, children, not only in India, but also worldwide, will face dramatically increased exposure to extreme climate and environmental hazards. It predicts that nearly eight times more children will be exposed to extreme heat waves compared to the 2000s. The digital divide remains stark. **In 2024, over 95 percent of people in high-income countries are connected to the internet,**

compared to nearly 26 percent in low-income countries.

5. Cloud seeding

In News

The Delhi government has proposed cloud-seeding or artificial rainfall as an emergency measure to combat record pollution levels.

About Cloud-seeding

It is a **weather modification technique used to induce artificial rainfall by introducing chemical "nuclei" like silver iodide, potassium iodide, dry ice, or liquid propane into pre-existing clouds**. These chemicals help moisture in the air condense, accelerating rainfall.

Types of Cloud-Seeding:

Hygroscopic: Uses salt particles to accelerate droplet formation in liquid clouds.

Glaciogenic: Uses silver iodide or dry ice to induce ice formation in supercooled clouds.

Implementation: India: Attempted in Karnataka, Andhra Pradesh, and Maharashtra for drought relief.

Global: Used in Australia, America, Spain, France, UAE, and Russia.

Effectiveness: Effectiveness and environmental impact are debated, with experts citing the need for more research.

Pune-based Indian Institute of Tropical Meteorology reported a 60-70% success rate in inducing rain. But there are concerns about the environmental impact of silver iodide. Therefore cloud seeding has seen varying degrees of success and requires specific atmospheric conditions to be effective

6. Measles

According to a newly released report by the World Health Organization, 10.3 million cases of measles were reported globally in 2023, an increase of 20 percent from 2022.

About: Measles

Characteristics: It is a highly infectious virus, often characterized by a distinctive red, spotty rash that starts on the face and spreads downward, sometimes merging into larger patches.

Transmission: It infects the respiratory tract and spreads easily when an infected person breathes, coughs or sneezes.

Symptoms: It includes a high fever, cough, runny nose and a rash all over the body.

Vulnerability: It can affect anyone but is most common in children. Also, no country is exempt from measles, and areas with low immunization encourage the virus to circulate.

Prevention: It can be prevented with the MMR vaccine. The vaccine protects against three diseases — measles, mumps and rubella.

India's Efforts: The Universal Immunization Programme (UIP) is one of India's most comprehensive public health initiatives, aiming to provide life-saving vaccines to millions of newborns and pregnant women each year. Currently, the program provides free immunization against 12 diseases, including nine nationwide, such as Diphtheria, Tetanus, Polio, Measles, and Hepatitis B.

7. New microbe causing disease in sesame

Context

A new microbe causing disease in sesame fields of **Midnapore, West Bengal** was identified by researchers.

About: Sesame

Sesame, the Queen of Oil, is an ancient oilseed crop since the remnants of sesame seeds were discovered at **Harappa and Mohenjodaro**. Sesame oil is excellent from a medicinal point of view as it **contains antioxidants, and it is perfect for heart patients.** However, despite its advantages, sesame is not commonly used as the primary edible oil in India and to harness the benefits of Indian sesame varieties, improvements are needed.

What does the new study say?

In recent years, sesame plants were observed to revert from their flowering/fruiting stage to a vegetative state, with white flowers turning green.

Causes: The disease is caused by a bacterium, Candidatus Phytoplasma, found in the gut of pests like leafhoppers and plant-hoppers.

Transmission Mechanism: The bacteria are transmitted by phloem-feeding insects (e.g., leafhoppers, plant-hoppers), which also infect other crops like tobacco, maize, and grapevine.

Disease Manifestations: The infection leads to disfigurement and virescence (greening) of the floral parts, giving them a leafy appearance.

Focus: The research explores the impact of Phytoplasma on sesame's metabolic pathways and the development of disease symptoms.

Research Significance: This multi-target approach is valuable for studying complex biological systems and may aid in understanding and managing diseases in crops.

8. D'Cunha Committee

The D'Cunha Committee investigated alleged irregularities in COVID-19 management and procurement in Karnataka.

About D'Cunha Committee

It was established to investigate the alleged multi-crore irregularities in COVID-19 procurements. It **highlighted issues in ventilator purchases under PM Cares and by the Karnataka Medical Supplies Corporation Ltd. (KSMSCL).** Overpricing and rate variations (₹5–₹16.25 lakh) in ventilator procurements and discrepancies in supply orders were also noted.

Recommendation

The committee recommended a detailed investigation through the Lokayukta or other agencies.

It **emphasizes the need for transparency and accountability in public health** procurements during emergencies.

23rd November

1. Solar Energy Corporation of India (SECI) Ltd:

It is the **leading Central Public Sector Undertaking (CPSU) dedicated to the development and expansion of Renewable Energy (RE) capacity in India.** It was established to facilitate the implementation of the National Solar Mission. It is under the administrative control of the Ministry of New and Renewable Energy (MNRE). **It was incorporated in 2011 as a not-for-profit company (Sec. 25 of Companies Act, 1956) and converted to a commercial company in 2015 (Sec. 3 of the Companies Act, 2013).**

Vision: To build 'Green India' through harnessing abundant solar radiation and to achieve energy security for the country.

It is the **only CPSU dedicated to the renewable energy sector**. SECI serves as an implementing agency for the development of Solar, Wind and Hybrid Projects as part of fulfilling the country's Nationally Determined Contributions (NDCs). In **addition, SECI has ventured into solar project development on a turnkey basis for several PSUs/Government departments.** The company also has a power trading license and is active in this domain through trading of solar power from projects set up under the schemes being implemented by it. Its model involves procuring energy from developers selected through competitive bidding and selling it to electricity distribution companies (DISCOMs) under long-term Power Purchase Agreements (PPAs) and Power Sale Agreements (PSAs). **It has been accorded the status of Miniratna Category-I CPSU.** It now oversees a massive 65.3 GW of awarded generation capacity. Out of this, more than 60%—over 40 GW—is solar energy. The remaining capacity includes 16.3 GW of wind energy and about 9 GW of hybrid energy projects.

2. Nano Urea:

It is **developed and patented by the Indian Farmers Fertiliser Cooperative Limited (IFFCO).** IFFCO Nano Urea is the only nano fertilizer approved by the Government of India and included in the Fertilizer Control Order (FCO).

Features:

Compared to conventional urea prill, Nano Urea has a desirable particle size of about 20-50 nm, and more surface area (10,000 times over 1 mm urea prill), and number of particles (55,000 nitrogen particles over 1 mm urea prill). It contains 4.0 % total nitrogen (w/v).

Benefits:

It is produced by an energy- efficient, environment-friendly production process with less carbon footprints. It is more efficient in terms of nutrient uptake and releases nitrogen more slowly. It reduces the amount of nitrogen lost to the atmosphere as greenhouse gases. It is **expected to improve crop productivity, soil health, and nutritional quality of produce and address the "imbalanced and excessive use" of conventional fertilizer.**

3. Arkavathi River:

It is an important mountain river in Karnataka. It is a **significant tributary of the Kaveri River.**

Origin: It originates at Nandi Hills of Karnataka

One-third of Bengaluru city falls within its 4,150 sq. km. river basin. Historically, the river was a major source of drinking water for Bangalore and surrounding areas. It has three tributaries; the **Kumudavathi, Suvarnamukhi, and Vrishabhavathi.**

Reservoirs: The Arkavathi feeds two important reservoirs:

Hesaraghatta Reservoir: Built in 1894 to supply drinking water to Bangalore.

Thippagondanahalli Reservoir (T.G. Halli): Also supplies drinking water to Bangalore.

4. Reykjanes Peninsula

A volcano erupted with lava spewing from a fissure on the **Reykjanes Peninsula in southwestern Iceland**, becoming the tenth such event in the area in three years.

5. WAVES OTT Platform:

Waves is a **digital platform developed by Prasar Bharati**. It **aims to cater to India's growing demand for streaming services, as stated by the broadcaster in its official release.** It offers a wide range of content, including live TV, video on demand, games, radio streaming, and e-commerce options via the ONDC network.

Its offerings include:
On-demand content: Movies, shows, ebooks, and historical visuals
Live events: Religious programmes, cricket tournaments, and other big events
Games: Suitable for all age groups
Online Shopping options
Currently, the **app provides access to around 65 live channels**, including private broadcasters.

6. What is an over-the-top (OTT) platform?

It **refers to any streaming service that delivers content through wireless internet**. OTT bypasses traditional forms of media consumption, such as cable or set-top boxes. **Key features of OTT platforms include on-demand access, flexible subscription models, cross-device availability, and personalized content recommendations**.

7. Ashtamudi Lake:

It is a **Ramsar wetland located in Kollam district of Kerala**. The word Ashtamudi means Eight braids in Malayalam which can be explained by the palm-shaped topography of the lake with multiple branches. **It is because of its eight 'arms' or channels, that the lake is named Ashtamudi.** It is the second largest lake in Kerala, which has found its way into the sea through the Neendakara estuary. **Kallada river is the major source of water for Ashtamudi lake**. The historical significance of Ashtamudi lake dates back to the 14th century when the lake surroundings were the important port connecting the ancient city of Quilon to the rest of the world.
Historical records of the Moroccan explorer Ibn Battuta highlights Quilon city, in the banks of Ashtamudi lake as one of the major trading centers in the ancient period.
Different species of marshy mangroves was reported in the region, including two endangered species called **Syzygium travancoricum and Calamus rotang.**

26th November

1. Antlions:

Antlions are insects belonging to the order Neuroptera. They are classified in the family Myrmeliontidae. They are named for the predatory nature of the larvae, which commonly trap ants and other small insects in pits dug into the ground. **Antlions are found throughout the world, primarily in dry, sandy regions**. It is very difficult to spot them during the day and can be spotted at night near illuminated spots.

Features:
Adult antlions resemble damselflies, but they have softer bodies, a lacy wing pattern, and long clubbed antennae. The **bodies of antlions are long and slender and grayish in color.** The wings are generally clear, but some species have spots on their wings. **Antlions are weak fliers and can be found at night near lights**. They come in various shapes and sizes, with larvae typically measuring from a few millimeters to several centimeters, depending on the species. Antlion larvae have rounded bodies with long sickle-shaped jaws. The larvae are found at the base of cone-shaped pits in sandy areas. They usually remain in the larval stage for one to two years, depending on the species. Once they pupate, they require up to one month to complete their development. Adult antlions survive for one to two months. Antlions are harmless and cause no damage to flowers, people, or structures. They are **highly beneficial and feed on ants and other insects that fall into their traps.**

What is Palpares contrarius?
It is a **large-sized adult antlion**. Though it looks like a dragonfly, it has an antenna and a distinct fluttering flight, which separates it from them.

2. Reang Tribe:

The **Reang tribe, who locally call themselves "Bru", is the second largest tribal community of Tripura after the old Tripuri clan**. They are the only Particularly Vulnerable Tribal Group (PVTGs) residing in the state of Tripura. **Apart from Tripura, they are also found in the neighbouring state of Mizoram and a few in Assam.** According to the 2011 census of India report, the total population of the Reang tribe is about 1,88,080. Reangs belong to the Indo-Mongoloid racial stock. **Their language is known as "Kaubru," which has a tonal effect on the Kuki language**, though broadly it is the Kok-Borok dialect. The language belongs to the Tibeto-Burmese linguistic family. **Ethnically, Reangs are divided into two major clans: Meska and Molsoi.** They are a well-knit ethnic group having a rigid, well-ordained and well-structured self-governing system.

Economy: They are primarily an agriculturist tribe. In the past, they mostly used to practise the 'Huk' or Jhum cultivation, like most other Tripuri tribes. But now shifted to modern agriculture practice.

Religious Belief: At present, most of the Reangs in Tripura follow Hinduism, and most of their deities are akin to gods and goddesses of Hindu faith. They have faith in different deities like Buraha, Bonirao, Songragma, Jampira, Lampra, etc. Hojagiri folk dance of the Reang clan had achieved an unprecedented acclaim all over the world.

3. Phytoplankton Bloom:

Phytoplanktons are **microscopic plants, but they play a huge role in the marine food web**. Like plants on land, phytoplankton perform photosynthesis to convert the sun's rays into energy to support them.

Phytoplankton bloom

Phytoplankton population explosion-blooms occur when sunlight and nutrients are abundantly available to the plants. When light, nutrients and other conditions, such as temperature, are at the best level for phytoplankton, they can rapidly multiply and flourish. This leads to the **development of phytoplankton bloom**. They grow and reproduce to a point where they are so dense that their presence changes the color of the water in which they live. Blooms can be quick events that begin and end within a few days or they may last several weeks.

Ecological significance

Phytoplankton is estimated to produce about 50 percent of Earth's oxygen. They have a crucial role in the global carbon cycle. They provide an essential food source for organisms like zooplanktons. Just like terrestrial plants, they grow more in certain seasons.

4. Narsapur lace Craft:

Narsapur is situated on the bank of Godavari River in the state of Andhra Pradesh. It is believed that the women of the farming community of this region started creating highly attractive artefacts from colourful lace, about 150 years ago. **The craft has survived the Indian famine (1899) and the Great Depression (1929**). By the early 1900s, above 2,000 women were involved in the craft in the Godavari region. The lace work is done using thin threads and these are again woven with thin crochet needles of varying sizes. **Narsapur's famed hand-made crochet industry produces doilies, pillow covers, cushion covers, bed spreads, table-runners and tablecloths etc**. Many of these products are exported to markets in the USA, UK and France.

5. GI tag

Geographical Indications (GI tags) are signs used on products that have a specific geographical origin and possess distinctive qualities, reputation or characteristics attributable to that place of origin**. GI tags serve as intellectual property rights that identify a product's unique geographical source, providing legal protection and preventing unauthorised use**. In India, the Geographical Indications of Goods (Registration and Protection) Act, of 1999 governs the registration and protection of GIs. These tags play a crucial role in promoting and safeguarding the unique products and traditional knowledge of various regions

6. Guru Tegh Bahadur:

Guru Teg Bahadur's name earlier was **Teyag Mal and he was the ninth of ten Gurus of the Sikh religion.** His father and the sixth Guru of Sikhs, Guru Hargobind Sahib (1595-1644) changed the name to Teg Bahadur. He got his name from his fighting and sword skills on the battlefield. He was **known as Hind ki Chadar, or the 'Shield of India.**

Works

He built the city of Anandpur Sahib (in Rupnagar/Ropar district, on the edge of Shivalik Hills, near the Sutlej River, in Punjab). Here the last two Sikh Gurus lived and where Guru Gobind Singh founded the Khalsa Panth in 1699.

Religious work: He contributed more than 100 poetic hymns to Granth Sahib which cover various topics, such as the nature of God, human attachments, body, mind, dignity, service etc.

Diplomat: He was instrumental in the conciliation between Raja Bishan Singh and Raja Paranpal, thus avoiding a war.

Martyrdom: He was first arrested by the Mughals on the orders of Aurangzeb in 1665. He was publicly beheaded in 1675 on the orders of Mughal emperor Aurangzeb in Delhi. His martyrdom is remembered as the **Shaheedi Divas every year on 24 November, according to the Nanakshahi calendar** released by the Shiromani Gurdwara Parbandhak Committee in 2003.

27th November

1. Atal Innovation Mission (AIM):

AIM is a flagship initiative set up by the NITI Aayog in 2016 with an objective to **create and encourage an environment of innovation and entrepreneurship**

across schools, educational organisations, research institutes, and industries, including MSMEs.

AIM has two functions:
Promote entrepreneurship by encouraging innovators to become entrepreneurs through financial support as well as mentorship.
Promote innovation by creating a platform where ideas are generated through like-minded individuals.

AIM has created four programs to support these functions:
Atal Tinkering Labs
Atal Incubation Centres
Atal New India Challenges and Atal Grand Challenges
Mentor India
Apart from these programs, AIM also seeks and collaborates with academia, industries, NGOs, and individuals to enable an atmosphere of innovation. All the initiatives of AIM are currently monitored and managed systematically using real-time MIS systems and dynamic dashboards.

2. Samos Island:

It is a Greek island located in the eastern Aegean Sea. It is **one of the largest and most easterly Greek islands**. It lies close to the Turkish coasts. It is located just 1700 m from the Asia Minor Turkish Coast. The area of the **island is 478 sq.km**. It is characterized by steep mountain ranges, sandy beaches, azure sea water, olive groves, and green pine forests. **Mount Kerketeus, the highest peak (1,433 metres), forms the western tip of the island.**
Climate: It has a Mediterranean climate with long, hot summers and relatively short, mild winters. It **is home to the Pythagoreion and the Heraion of Samos, a UNESCO World Heritage Site,** which includes the Eupalin Aqueduct, a marvel of ancient engineering. It is the **birthplace of the Greek philosopher and mathematician Pythagoras, for whom the Pythagorean theorem is named.** It is also the birthplace of the famous astronomer of ancient times, Aristarchus, who first suggested a heliocentric solar system at 500 B.C.

3. Raja Raja Chola I:

He was born as Arulmozhi Varman in 947 CE, he rose to become one of history's most illustrious and visionary rulers. He was **revered as Raja Raja the Great**, he inherited the legacy of his ancestors and crafted an empire that flourished both militarily and culturally.
Reign: His reign, from 985 to 1014 CE, was marked by military prowess and profound administrative vision.

Military Conquest:
During his reign, the Cholas expanded beyond South India with their domains stretching from Sri Lanka in the south to Kalinga in the north. He also launched several naval campaigns that resulted in the capture of the Malabar Coast as well as the Maldives and Sri Lanka.
Titles
After the defeat of the Pandyas by him he took the title Pandya Kulashani meaning a thunderbolt to the race of the Pandyas**. He also adopted the title of Mummudi Chola which means the Chola who wears the three crowns**. In 1010, Raja Raja built the Brihadisvara Temple in Thanjavur dedicated to Lord Shiva. The temple and the capital acted as a center of both religious and economic activity. During his reign, the texts of the Tamil poets **Appar, Sambandar and Sundarar were collected and edited into one compilation called Thirumurai.**

4. PAN 2.0 Project:

It is an e-**Governance project for re-engineering the business processes of taxpayer registration services through technology driven transformation of PAN/TAN services for enhanced digital experience of the taxpayers**. This will be an upgrade of the current PAN/TAN 1.0 eco-system consolidating the core and non-core PAN/TAN activities as well as PAN validation service. **It is a project of the Income Tax Department.**
The PAN 2.0 Project enables technology driven transformation of Taxpayer registration services and has significant benefits including:
Ease of **access and speedy service delivery** with improved quality;
Single Source of Truth and data consistency
Eco-friendly processes and cost optimization; and
Security and optimization of infrastructure for greater agility.
The PAN 2.0 Project resonates with the vision of the Government enshrined in Digital India by enabling the use of PAN as Common Identifier for all digital systems of specified government agencies.

What is a Permanent Account Number (PAN)?
A PAN is an **alphanumeric identifier consisting of ten characters, issued by the Income Tax Department**. It is provided to any "person" upon application or allocated directly by the department without a formal request**. The Income Tax Department utilises PAN to monitor and connect all transactions associated with an individual.** This includes various activities such as tax payments, TDS/TCS credits, income returns, specific transactions, and official communications.

5. National Gopal Ratna Award:

It is **one of the highest honors in the field of livestock and dairy sector**. These awards will be given on the occasion of National Milk Day celebrations.

Objective

The awards are conferred with an objective to recognize and encourage all individuals like Farmers rearing indigenous animals, AI Technicians and Dairy cooperative societies / Milk Producer Company / Dairy farmers Producers Organizations working in the sector of animal husbandry and dairying. **The Award is conferred in three categories, namely,**

Best Dairy Farmer Rearing Indigenous Cattle/buffalo Breeds,

Best Artificial Insemination Technician (AIT) and

Best Dairy Cooperative/ Milk Producer Company/ Dairy Farmer Producer Organization.

From this year onwards, the Department has incorporated a Special award for North Eastern Region (NER) States, in all the three categories under National Gopal Ratna Awards, so as to encourage and boost the dairy development activities in NER.

6. One Nation One Subscription (ONOS) scheme

The Union Cabinet has approved the **Central Sector Scheme, One Nation One Subscription (ONOS).**

One Nation One Subscription (ONOS) scheme

Aim: To consolidate the subscription to academic journals and research publications under a centralized system. It enables access to all journal articles in India through a single centrally negotiated payment model. The scheme will replace individual institutional subscriptions with a national-level subscription, ensuring uniform access to research content.

Funding and Duration: The central government has allocated ₹6,000 crore for the period of 3 years from 2025 to 2027.

Eligibility: The benefits are extended to:

All higher education institutions under central and state governments.

Research and Development (R&D) institutions managed by the central government.

Implementing

Agency: The Information and Library Network (INFLIBNET), an autonomous center under the University Grants Commission (UGC), will coordinate the scheme at the national level.

7. PAN 2.0 Project

The **Cabinet Committee on Economic Affairs (CCEA), chaired by Prime Minister Narendra Modi, approved the PAN 2.0 Project of the Income Tax Department.**

About PAN 2.0 Project

It is an **e-Governance initiative aimed at re-engineering taxpayer registration services through technology, enhancing the digital experience for taxpayers**. It has a budget of Rs. 1435 crore It will upgrade the existing PAN/TAN 1.0 system, consolidating core and non-core activities, including PAN validation services. It **aligns with the Digital India vision, aiming to use PAN as a common identifier across all digital systems of specified government agencies**

Key Benefits:

Improved access and faster service delivery with better quality.

Ensures a single, consistent source of truth.

Promotes **environmentally friendly processes and cost optimization**.

Strengthened infrastructure for greater security and operational flexibility.

8. GI Tag to Narasapur Crochet Lace

Narasapuram lace from the West Godavari district, Andhra Pradesh, received the Geographical Indication (GI) tag.

About

Narasapuram lace: Made using cotton threads in a variety of colors. Crafted with thin crochet needles of varying sizes for intricate designs.

GI Tag: It is a sign used on products that have a specific geographical origin and possess qualities or a reputation**. The registration is valid for 10 years, renewable thereafter. Managed by the Department for Promotion of Industry and Internal Trade (DPIIT), under the Ministry of Commerce and Industry.**

Significance of the GI Tag: Enhances market stability for weavers and artisans.

Boosts visibility of their craftsmanship.

9. Atal Innovation Mission (AIM) 2.0

The Cabinet approved the continuation of Niti Aayog's flagship initiative Atal Innovation Mission (AIM) till March 31, 2028.

About

Atal Innovation Mission (AIM) is an initiative under NITI Aayog launched in 2016.

Aim: To foster innovation at the grassroots level by providing support to students, startups, and entrepreneurs.

Key Components:

Atal Tinkering Labs (ATLs): School-based innovation hubs that encourage students to explore STEM fields and develop creative skills.

Atal Incubation Centers (AICs): Centers that support startups by providing infrastructure, mentorship, and funding.

Atal New India Challenges (ANIC): A platform to support innovation-driven solutions to national challenges.

Atal Community Innovation Centers (ACICs): Innovation hubs that focus on solving community-specific problems in rural and underserved areas.

Mentor of Change (Mentorship and Partnerships – with Public, Private sector, NGOs, Academia, Institutions): To enable all the initiatives to succeed AIM has launched one of the largest mentor engagement and management programs "**Mentor India – The Mentors of Change". AIM 2.0 is a step towards Viksit Bharat that aims to expand, strengthen, and deepen India's already vibrant innovation and entrepreneurship ecosystem**. It aims to break the language barrier through the Language Inclusive Program of Innovation (LIPI) and 30 vernacular innovation centres.

28th November

1. Places of Worship (Special Provisions) Act, 1991:

It is **described as "An Act to prohibit conversion of any place of worship and to provide for the maintenance of the religious character of any place of worship as it existed on the 15th day of August 1947, and for matters connected therewith or incidental thereto**." No person can convert any place of worship of any religious denomination or any section thereof into a place of worship of a different section of the same religious denomination or of a different religious denomination. It also prohibits court intervention in problems concerning the religious nature of such places.

Exemption:

The disputed site at Ayodhya was exempted from the Act. Due to this exemption, the trial in the Ayodhya case proceeded even after the enforcement of this law.

Besides the Ayodhya dispute, the Act also exempted: Any **place of worship which is an ancient and historical monument, or an archaeological site covered by the Ancient Monuments and Archaeological Sites and Remains Act, 1958.** A suit that has been finally settled or disposed of. Any dispute that has been settled by the parties or conversion of any place that took place by acquiescence before the Act commenced.

2. Raimona National Park:

It is **located along the Indo-Bhutan border in Kokrajhar district in the Bodoland Territorial Region (BTR), Assa**m. It was declared a national park on June 5, 2021. It shares contiguous forest patches of Phibsoo Wildlife Sanctuary and Jigme Singye Wangchuck National Park in Bhutan, creating a trans-boundary conservation landscape of more than 2,400 sq km.

Rivers: The Sankosh River runs beside the west of the park and the Saralbhanga River on the eastern part.

Vegetation: It includes as many as twelve different types and sub-types of forests ranging from very moist sal forests, sub-Himalayan high alluvial semi-evergreen forests, savannah forests, moist-mixed deciduous forests, riparian fringing forests, to khair-sissoo forests.

Flora: This park flourishes with myriads of orchid species, other tropical rainforest species, and riverine grasslands.

Fauna: The park is famous for its endemic species, golden langur, which has been named the mascot of the Bodoland region. It is also inhabited by various other species, such as elephants, Bengal tiger, wild bison, white-spotted deer, clouded leopard and wild buffalo.

3. Pennaiyar River:

It is a major river in southern India, flowing through Tamil Nadu and Karnataka. It is also **known as the South Pennar River, Dakshina Pinakini in Kannada, and Thenpennai, Ponnaiyar, in Tamil.**

Course:

Origin: It originates in the Nandi Hills in the Chikkaballapura district of Karnataka. It then flows southward for 80 km through Karnataka to northwestern Tamil Nadu, where it turns southeastward and flows 320 km to enter the Bay of Bengal at Cuddalore, Tamil Nadu. The basin is bounded on the northwest and south by various ranges of the Eastern Ghats, like the Velikonda Range, the Nagari Hills, the Javadhu Hills, the Shevaroy Hills, the Chitteri Hills and the Kalrayan Hills, and in the east by the Bay of Bengal. It is the se**cond largest interstate east-flowing river basin among the 12 basins lying between the Pennar and Cauvery basins**. It drains an area of 16,019 sq.km., out of which nearly 77 percent lies in Tamil Nadu.

Major tributaries are the Chinnar, Markanda, Vaniar, and Pamban. The river is extensively dammed for irrigation, especially in Tamil Nadu.

4. Design Law Treaty

After nearly two decades of negotiations, the member states of the World Intellectual Property Organization (WIPO) adopted the landmark Design Law Treaty (DLT). **It seeks to harmonize the procedural frameworks for industrial design protection, improving the efficiency and accessibility of registration processes across multiple jurisdictions.** The treaty requires 15 contracting parties to enter into force.

Key features

It provides for a grace period of 12 months following a first disclosure of the design, during which such disclosure will not affect its validity for registration. It **provides relief measures and offers some flexibility to applicants to prevent them from losing their rights if they miss a deadline**. It simplifies the procedure for requesting the renewal of a design registration. It **promotes the introduction of e-filing systems for designs and the electronic exchange of priority documents.** It ensures the availability of technical assistance to developing and least developed countries for the implementation of the treaty.

Benefits

Its **goal is to ensure that the benefits of streamlined design protection are accessible to all stakeholders, with particular emphasis on Small and Medium-sized Enterprises (SMEs),** startups and independent designers. By standardizing procedural requirements, the DLT reduces administrative burdens, thereby promoting global creativity in design. When combined with initiatives like the Startup India program and the Startups Intellectual Property Protection (SIPP) scheme, these provisions will help empower startups and SMEs to secure design rights globally, boosting their competitiveness and supporting market growth. India recently signed the final act of this treaty.

5. Sjögren's disease:

It is a **chronic disorder in which the immune system mistakenly targets the body's moisture-producing glands**. It is an under-recognised autoimmune condition that often remains undiagnosed for years.

Prevalence: It is roughly 10 times more common in women than in men and usually manifests in the 30s and 40s, although it can appear at any age, even in children.

Symptoms

The **most common complaints are dry eyes and dry mouth, which can severely impact quality of life.** Dry eyes may feel gritty, especially on awakening and during prolonged screen use, while dry mouth can lead to difficulty in swallowing and a significantly increased risk of dental problems. **Sjögren's can present with joint pain, fatigue, and swelling in the salivary glands, making it a complex, multisystem disease.**

Treatment: It involves managing dryness with salivary stimulants and substitutes and lifestyle adjustments. For systemic symptoms, immunosuppressive medications are used. Patients need to avoid triggers like air conditioning and excessive screen time. Sunglasses with UV protection and frequent use of gel-based lubricating drops can make a significant difference.

29th November

1. Surface Hydrokinetic Turbine Technology:

It uses kinetic energy of flowing water with practically zero potential head for generation of electrical energy unlike conventional units, which utilize potential energy of water through construction of suitable civil structures such as dam, diversion weir and barrages for creation of necessary 'Head'.

Advantages

This **technology supports the power sector in meeting the growing demand for base-load, round-the-clock renewable energy, especially in areas with poor grid accessibility.** Surface Hydrokinetic turbines are easy to install and cost-effective. This technology provides a win-win situation both for renewable energy buyers and generators. Adoption of SHKT technology shall mark a significant milestone in **leveraging India's extensive water infrastructure, including canals, hydropower tailrace channels, etc. for sustainable energy generation**. This technology has huge potential in GW scale with a lot of opportunities to harness renewable energy, leading to overall growth of the power

2. SAREX-24:

It is **conducted under the aegis of National Maritime Search and Rescue Board.** The theme of the exercise is 'Enhancing Search and Rescue capabilities through Regional collaboration'. **It signifies ICG's commitment to provide succor during large-scale contingencies regardless of location, nationality or circumstances in the Indian Search & Rescue Region and beyond.** This event will feature various programmes, including table-

top exercise, workshop & seminars involving participation of senior officials from government agencies, Ministries & Armed Forces, various stakeholders and foreign delegates. **The sea exercise involving two large scale contingencies will be carried out off the Kochi coast with participation of ships & aircraft of ICG, Navy, Indian Air Force, Passenger Vessel & Tug from Cochin Port Authority and boats from the Customs.** The response matrix in the sea exercise will involve various methods to evacuate distressed passengers, wherein the advent of new-age technology using satellite-aided distress beacons, drones to deploy a life buoy, air droppable life rafts, operation of remote controlled life buoy will be demonstrated. The exercise is designed not only to evaluate efficiency of operations and coordination with national stakeholders, but also to aptly focus on cooperative engagements with the littorals and friendly countries.

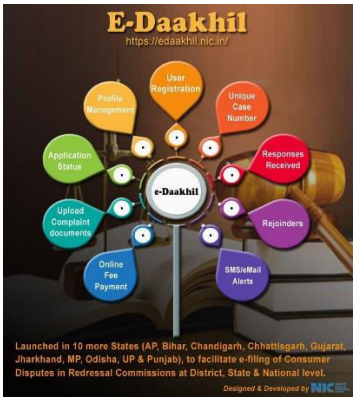
3. Network Readiness Index

India has improved its position by eleven slots and is now placed at 49th rank as per the Network Readiness Index 2024 (NRI 2024) report released on 21st November 2024. It maps the network-based readiness landscape of 133 economies based on their performances in four different pillars: **Technology, People, Governance and Impact, covering a total of 54 variables.** The report has been published by the Portulans Institute, an independent non-profit research and educational institute based in Washington DC.

Highlights of the report

India has not only improved its ranking, but also improved its score from **49.93 in 2023 to 53.63 in 2024**. It is noteworthy that India leads in several indicators. **The report states that India secured 1st rank in 'AI scientific publications', 'AI talent concentration' and 'ICT services exports', 2nd rank in 'FTTH/Building Internet subscriptions', 'Mobile broadband internet traffic within the country' and 'International Internet bandwidth', 3rd rank in 'Domestic market scale' and 4th rank in 'annual investment in telecommunication services'** India has ranked 2nd in the group of lower-middle-income countries after Vietnam. As per the report, India has demonstrated significant digital progress, with notable strengths in technological innovation and digital transformation.

4. E-Daakhil



It was introduced as an inexpensive, speedy and hassle-free mechanism for filing consumer complaints. It was **first launched in 2020 by the National Consumer Dispute Redressal Commission.**

Features

It is **an innovative online platform designed to streamline the consumer grievance redressal process, providing an efficient and convenient way for consumers to approach the relevant consumer forum, dispensing the need to travel and be physically present to file their grievances.** Any consumer or Advocate can sign up on the e-Daakhil platforms with the required authentication by receiving an OTP on their registered cell phone or an activation link on their registered email address. The portal has facilitated all aggrieved consumers to submit complaints to consumer commissions online in the comfort of their own homes, to pay the appropriate fees, and track the progress of the case online. It is accessible to **consumers across all regions of India, from metropolitan cities to remote areas.**

5. Baltic Sea:

It is a semi-enclosed inland sea located in Northern Europe. It is an **arm of the North Atlantic Ocean. It connects to the Atlantic Ocean through the Danish Straits.**

Surrounding Countries: Denmark, Germany, Poland, Lithuania, Latvia, Estonia, Russia, Finland and Sweden. It is connected to the White Sea via the White Sea Canal and to the North Sea's German Bight via the Kiel Canal. The Baltic **Sea contains three major gulfs:** the Gulf of

Bothniato the north, the Gulf of Finland to the east, and the Gulf of Riga slightly to the south. It is often cited as the world's largest brackish inland water body. Its water salinity levels are lower than that of the world oceans due to the inflow of fresh water from the surrounding land and the sea's shallowness. **More than 250 rivers and streams empty their waters into the Baltic Sea. Neva is the largest river that drains into the Baltic Sea.**

6. UN Resolution 1701

It was passed by the **UN Security Council in 2006, calling for a permanent ceasefire between Israel and Hezbollah, and the creation of a buffer zone**. It sought the full withdrawal of Israeli forces from southern Lebanon and the disarmament of Hezbollah. UN Interim Force in Lebanon (UNIFIL) peacekeepers were authorized to monitor the situation, and the resolution aimed for a long-term solution to avoid resumption of hostilities.

7. Chemical Weapons Convention (CWC)

It came into **force in 1997, and presently has 193 States Parties**. Its Secretariat in **The Hague, is the implementing body.** The CWC promotes international cooperation in the field of chemical weapons, including research and development of peaceful uses of chemistry.

India is an original signatory to the Convention. **National Authority Chemical Weapons Convention (NACWC) is the national authority responsible for implementing the Convention in India**.

8. Indian Chemical Council (ICC)

It was **established in 1938, is dedicated to the growth and promotion of the Chemical Industry in India**. ICC represents more than 80% of the Indian chemical Industry which is valued at $220 billion. This **Award acknowledges the role played by ICC in promoting chemical safety, compliance with the Convention, and enhancing industry-wide security practices in India.**

9. National Consumer Disputes Redressal Commission.

It is a **quasi-judicial commission which was set up in 1988 under the Consumer Protection Act of 1986.**
The Commission is headed by a sitting or a retired Judge of the Supreme Court or a sitting or a retired Chief Justice of a High Court.
It provides **inexpensive, speedy and summary redressal of consumer disputes.**

10. Key Factors Affecting Oil Prices

Geopolitical Tensions: Geopolitical events, such as **conflicts in the Middle East or Eastern Europe, can disrupt oil supplies and lead to price volatility.** The recent ceasefire between Israel and Hezbollah has temporarily eased geopolitical tensions, potentially leading to a slight decrease in oil prices.
Global Economic Outlook: The global economic outlook, including factors like **economic growth, inflation, and interest rates, can influence oil demand.**
Inventory Levels: If inventories are low, prices may rise due to concerns about supply shortages. Conversely, high inventory levels can put downward pressure on prices.

11. Open Market Operations (OMOs)

As the liquidity deficit in banking widens, the Reserve Bank of India (RBI) may have to resort to open market operations (OMOs). A liquidity deficit in the banking system implies a shortage of funds available for lending and investment. This can hinder **economic growth and financial stability.**

About OMOs
OMOs involve the **buying and selling of government securities by the central bank to influence the money supply and interest rates**. When the central bank buys government securities from commercial banks, it injects money into the banking system. Increased liquidity can lead to lower interest rates, encouraging borrowing and investment. **OMOs are often used in conjunction with other monetary policy tools, such as the repo rate and the cash reserve ratio, to achieve a balanced monetary policy stance.** OMOs directly affect the money supply, influencing factors like inflation, economic growth, and exchange rates.

12. Role of Variable Rate Repos (VRRs)

VRRs are a **short-term liquidity tool used by the RBI to inject liquidity into the banking system**. While they can provide temporary relief, they may not be sufficient to address a persistent liquidity deficit.