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Current Affairs
Monthly Magazine

MAY 2024

NEWS

By CivilsTap Himachal

For HPAS & Other Competitive Exam in Himachal Pradesh
Mains

Contents

GENERAL STUDIES 1.

GEOGRAPHY

RISK FROM GLACIAL LAKE FLOODS

Context: The Uttarakhand government has constituted two teams of experts to evaluate the risk posed by five potentially hazardous glacial lakes in the region.

❖ These lakes are prone to **Glacial Lake Outburst Floods (GLOFs).**

What are GLOFs?

❖ GLOFs are disaster events caused by the abrupt discharge of water from glacial lakes — large bodies of water that sit in front of, on top of, or beneath a melting glacier.

❖ As a glacier withdraws, it leaves behind a depression that gets filled with meltwater, thereby forming a lake.

   ✓ The more the glacier recedes, the bigger and more dangerous the lake becomes.

Reasons

❖ GLOFs can be triggered by various reasons, including

   ✓ **Glacial calving**, where sizable ice chunks detach from the glacier into the lake,

   ✓ **Inducing sudden water displacement**

   ✓ **Incidents** such as avalanches or landslides can also impact the stability of the boundary around a glacial lake, leading to its failure, and the rapid discharge of water.

❖ In recent years, there has been a rise in GLOF events in the Himalayan region as **soaring global temperatures** have increased glacier melting.

   ✓ Rising surface temperatures across the globe, including India, have increased the risk of GLOFs

❖ **Rapid infrastructure development** in vulnerable areas has also contributed to the spike in such incidents.

Impacts

❖ GLOFs can unleash large volumes of water, sediment, and debris downstream with formidable force and velocity.

❖ The floodwaters can submerge valleys, obliterate infrastructure such as roads, bridges, and buildings, and result in significant loss of life and livelihoods.

❖ It has resulted in several disasters in the Himalayan states in recent years.

Geographical Distribution:

❖ Commonly associated with glacial regions, especially in mountainous areas with significant glacial activity. Examples include the Himalayas, Andes, and Alps.

   ✓ Since 1980, in the Himalayan region, particularly in southeastern Tibet and the China-Nepal border area, GLOFs have become more frequent

❖ The National Disaster Management Authority (NDMA), which operates under the Union Ministry of Home Affairs, has identified 188 glacial lakes in the Himalayan states that can potentially be breached because of heavy rainfall.

   ✓ Thirteen of them are in **Uttarakhand**.

Suggestions

❖ There is a need to know more about the dynamics of glaciers and glacial lakes

❖ Therefore, it is important to learn as much as possible about past events and the dynamics behind them and to assess the overall GLOF risk in the region for better planning and implementation of disaster risk reduction measures and climate change adaptation in the region.

❖ There is a need to Utilise satellite imagery and remote sensing technology to monitor changes in glacial lakes and identify potential threats.

❖ Develop and communicate emergency preparedness plans to communities at risk.

About the BIMSTEC Charter

❖ It was signed and adopted during the **Fifth BIMSTEC Summit** held in Colombo, Sri Lanka in 2022.

❖ It provides a **legal and institutional framework** for BIMSTEC, aiming to create an enabling environment for **rapid economic development** through the identification and implementation of specific cooperation projects in the agreed areas of cooperation and other areas that may be agreed upon by the Member States.

❖ It reaffirms the commitment to the principles and purposes of BIMSTEC as enshrined in the **Bangkok Declaration of 1997**.

Significance of the BIMSTEC Charter

❖ The adoption of the BIMSTEC Charter formalises the grouping into an organisation made up of member states that are littoral to, and dependent upon, the Bay of Bengal.

❖ The Charter allows BIMSTEC to engage in external relations with non-member States, developmental partners, and regional as well as the UN and International Organisations.

❖ It stresses the need for a fair, just, equitable, and transparent international order and reaffirms faith in multilateralism with the United Nations at the centre and the rule-based international trading system.

BIMSTEC and India

❖ **Alignment with Foreign Policy:** BIMSTEC aligns with India's 'Neighbourhood First' and 'Act East' policies.

   ✓ It provides a natural platform for India to foster greater regional cooperation in South and Southeast Asia.

❖ **Economic Integration:** BIMSTEC is an important element in India's strategy for economic cooperation with South East Asian countries.

   ✓ The **BIMSTEC Free Trade Area Framework Agreement**, signed in 2004, aims to increase trade and economic integration among member countries.

❖ **Security Cooperation:** India plays a significant role in BIMSTEC's security cooperation. Under the new changes adopted in the summit, India has become the 'security pillar' of BIMSTEC.

   ✓ It includes cooperation in areas such as counter-terrorism and transnational crime.

❖ **Connectivity and Infrastructure Development:** The **BIMSTEC Master Plan for Transport Connectivity** seeks to connect several major transport projects in India, Bangladesh, Myanmar, and Thailand and establish a shipping network across the Bay of Bengal.

   ✓ It aims to benefit the littoral states as well as the Bay of Bengal dependent states like Nepal and Bhutan.

Challenges Associated with BIMSTEC for India

❖ **Uneven Progress:** Despite being in existence for over 25 years, the pace of cooperation within BIMSTEC has been somewhat uneven.

   ✓ The progress across different sectors has been inconsistent, which has affected the overall effectiveness of the organisation.

❖ **Regional Conflicts among member states:** It can hamper the smooth functioning of BIMSTEC.

   ✓ For instance, the Rohingya refugee crisis created tensions between Myanmar and Bangladesh, which affected the working of BIMSTEC.

❖ **Legal and Institutional Challenges:** Finalising legal instruments for various initiatives, such as coastal shipping and road transport, can be time-consuming and complex.

  ✓ These can slow down the progress towards stronger trade relations among the member countries.

❖ **Security Concerns:** Terrorism remains a significant threat to peace and stability in the region.

  ✓ While BIMSTEC has been working towards strengthening cooperation against terrorism, it continues to be a major challenge.

Conclusion

❖ The BIMSTEC Charter represents a significant step forward in regional cooperation. It provides a robust framework for the organisation to work towards a peaceful, prosperous, and sustainable Bay of Bengal Region.

❖ As BIMSTEC enters a new era with the adoption of its Charter, it is poised to play a crucial role in fostering regional cooperation and integration.

DISASTER MANAGEMENT

INTERNATIONAL CONFERENCE ON DISASTER RESILIENT INFRASTRUCTURE.

Context: The Prime Minister addressed the 6th edition of the International Conference on Disaster Resilient Infrastructure.

About

❖ CDRI is a global partnership of National Governments, UN agencies and programmes, multilateral development banks and financing mechanisms, the private sector, academic and knowledge institutions.

❖ CDRI was launched by the Prime Minister during the United Nations Climate Action Summit in 2019, at New York.

❖ **Members: 31** Countries, 6 International Organizations and 2 private sector organizations.

❖ **Secretariat:** New Delhi

❖ **Theme for 6th ICDRI:** Investing today for a more resilient tomorrow.

What is Disaster Resilient Infrastructure?

❖ Disaster Resilient Infrastructure (DRI) refers to the design and construction of infrastructure systems that can withstand, adapt to, and rapidly recover from disasters.

❖ This resilience ensures uninterrupted essential services even during calamities.

❖ As urbanization and national growth accelerate, infrastructure, such as power, water, and transportation become ever more crucial.

Need for the DRI?

❖ Disasters exacerbated by climate change are diminishing infrastructure investments across the world.
  - ✓ Flash floods in megacities like New York and Seoul claimed many lives and crippled urban infrastructure systems.
  - ✓ Earthquakes in Morocco and Turkey were not only devastating for infrastructure but as well as lives and livelihoods.
  - ✓ A cloudburst led to glacial lake overflow in Sikkim claiming many lives causing a great amount of damage to the critical infrastructure including roads connecting the mountain state with the rest of India.

❖ **Resilience during Disasters:** These consecutive disaster events serve as a stark reminder of the critical importance of designing and investing in infrastructure that is resilient during unpredictable disasters.

❖ **Future Outlook:** It is now estimated that by 2030, without substantial investments in fortifying cities globally against potential threats, natural disasters could inflict an annual financial burden of approximately US$314 billion on cities.
  - ✓ Therefore, transitioning to Disaster Resilient Infrastructure (DRI) and flexible urban strategies is essential for improving the quality of life for people.

❖ With the mounting threats of climate change intensifying natural disasters, the shift towards DRI isn't just strategic—it's vital for economic stability and human well-being.

Pathways to Make Infrastructure Disaster Resilient

❖ At the core of Disaster Resilient Infrastructure (DRI) is an understanding of evolving risks, like shifting cyclonic patterns due to global warming.
  - ✓ This knowledge helps setting up appropriate building codes and design standards, crucial components that pave the way for integrated resilience across diverse sectors.

❖ Tailored infrastructure design, such as those responsive to flood risks or preparatory activities like pre-monsoon drain cleaning, solidifies a system's disaster resilience.

❖ Regular infrastructure risk assessments are pivotal to find vulnerabilities in critical sectors like transport, power, and telecommunications.
  - ✓ These assessments, bolstered by risk mitigation strategies, protect against potential damages.

❖ Localized evaluations in cities and towns further contribute essential data for holistic planning.

India's Pathway to DRI

❖ India's path to resilience encompasses enhancing disaster risk comprehension across diverse landscapes, powered by geographic information systems (GIS) mapping and innovative technologies.
  - ✓ Effective DRI necessitates the confluence of data-driven infrastructure planning, potent risk-informed investments, and propagation of early warning systems.
❖ Further, central to achieving DRI is the collaboration between all governance tiers, academia, private enterprises, infrastructure experts and local communities.
  - ✓ For instance, the successful implementation of the Integrated Flood Risk Management Plan (IFRMP) in Assam's River Basins (Beki, Buridehing, and Jiadhal) focused on a multi-disciplinary approach involving key stakeholders.
  - ✓ The project reduced flood and river erosion risks for approximately 100,000 people along the Beki and Buridehing rivers, and 10,000 will have access to updated flood shelters.

Conclusion

❖ Building a disaster-resilient infrastructure is a complex task, requiring a blend of strategic planning, innovation, finance, and most importantly, a collective approach.
❖ Nations need to champion these components, ensuring they are not only prepared for future calamities but also poised for sustainable growth.

SOCIETY, CULTURE

FEMALE LABOUR FORCE PARTICIPATION RATE (LFPR)

Context: The India Employment Report, 2024, released by the Institute for Human Development and the International Labour Organization, points out that key labor market indicators have improved in recent years.

Key Findings

❖ In India the female Labour Force Participation Rate (LFPR) is very low compared to the male counterparts.

❖ In 2023, for male LFPR was **78.5%**; and for women LFPR was **37%.**
  ✓ The world women LFPR rate is **49%,** according to the World Bank figures.

❖ The female LFPR had been steadily declining since 2000 and touched 24.5% in 2019, before inching up, particularly in rural areas.

❖ **Status of women employed:**
  ✓ The Report shows that it is women who largely account for the increase in self-employment and unpaid family work.
  ✓ The share of regular work, which steadily increased after 2000, started declining after 2018.

Reason for poor women labor force participation

❖ **Cultural and Social Norms:** In traditional societies, gender roles may discourage women from entering or staying in the workforce. Expectations around women's responsibilities for caregiving and homemaking limit their ability to pursue full-time employment.

❖ **Educational Attainment:** Limited access to quality education can be a barrier for women to acquire the necessary skills and qualifications for certain jobs.

❖ **Unequal Pay:** Difference between wage gap, discourage women from entering or staying in the workforce.

❖ **Structural rigidities** in India's manufacturing and service sectors have restricted employment opportunities in the informal sector, where a substantial amount of female workforce is involved.

❖ **Security Issues:** Sexual harassment at Worlplace often hinders women participation in labor force.

Steps taken by Government

❖ **Code on Wages, 2019:** It provides that there shall be no discrimination in an establishment among employees on the ground of gender in matters relating to wages by the same employer, in respect of the same work or work of similar nature done by any employee.

❖ **Maternity Benefit Act, 2017:** It was enacted to provide improved maternity benefits and promote a healthier work environment for pregnant and nursing women.

❖ **The Code on Occupational Safety, Health And Working Conditions (OSH), 2020:** It has proposed tweaks in employment terms and conditions for women workers in the above-ground mines.

❖ **Rashtriya Mahila Kosh (RMK):** It is a national-level organization that provides microfinance services to poor women for various livelihood activities. It supports income-generating projects and promotes women's economic empowerment.

❖ **National Rural Livelihoods Mission (NRLM):** NRLM focuses on creating sustainable self-employment opportunities for rural women. It provides skill training, capacity building, and financial support for women to engage in income-generating activities.

❖ **MGNREGA (Mahatma Gandhi National Rural Employment Guarantee Act):** It guarantees 100 days of wage employment in a financial year to rural households. Women's participation in this program is encouraged, and efforts are made to ensure equitable employment opportunities.

Way Ahead

❖ The increase in labor force participation has come mostly in rural areas and mostly in self-employment, which means largely unpaid work.

❖ Interventions are needed on both the demand and supply side of the labor market to improve the condition.
  ✓ On the demand side, policies that promote labor intensive sectors (in both manufacturing and relatively higher productivity services) are needed.

❖ Public investment in safety and transport is also critical along with public investment in affordable child and elderly care.

❖ All of these types of support can enable women to work outside the home and take advantage of relatively better paying opportunities.

PROTECTION OF WOMEN FROM DOMESTIC VIOLENCE ACT 2005

Context: The Delhi High Court has recently observed that the Protection of Women from Domestic Violence Act is a "measure of social justice applicable to each woman irrespective of religious affiliation or social background".

Protection of Women from Domestic Violence Act 2005

❖ It has come into force since 2006.

❖ Aim: To provide protection to wife or female live-in partner from violence at the hands of the husband or male live-in partner or his relatives.

❖ Domestic Violence: Domestic violence under the Act includes actual abuse or threat of abuse, whether physical, sexual, verbal, emotional, or economic.
  ✓ Harassment by way of unlawful dowry demands to the women victim or her relatives would also be covered under the definition of Domestic violence.

❖ Extension of Protection: The Law extends protection to women who are sisters including adopted sisters and mothers.

Salient features of the Act:

❖ Ensures Right to Residence under sec 17.

❖ Ensures economic relief by recognising economic violence.

❖ Recognises verbal and emotional violence.

❖ Provides temporary custody of the child.

❖ Judgements within 60 days of filing of the case.

❖ Multiple Judgements in a single case.

Protection Officers

❖ Protection Officers have been appointed by the Government to help the aggrieved woman in filing the case against her husband or against any male adult person who has committed domestic violence and who is in domestic relationship with the petitioner.

❖ The Protection Officer facilitates the women to approach the court by providing legal aid and get appropriate relief from the courts concerned.

Arguments Against the Act

❖ **Gender Bias:** Critics argue that the Act is inherently biased as it only provides protection to women, ignoring the fact that men can also be victims of domestic violence.

❖ **Misuse and False Accusations:** There are concerns that the Act is misused by some women to falsely accuse their partners or family members of domestic violence for personal gain, such as gaining leverage in divorce or child custody proceedings.

- ❖ **Family Disruption:** The Act's emphasis on providing protection orders and support services to victims may contribute to the breakdown of families and marriages rather than facilitating reconciliation and family harmony.
  - ✓ This could have negative consequences, particularly for children who may be adversely affected by family disruption.
- ❖ **Legal Complexity and Delay:** The legal processes involved in seeking protection orders under the Act can be complex and time-consuming, leading to delays in obtaining relief for victims.
  - ✓ This may deter some women from seeking help or prolong their exposure to abusive situations.
- ❖ **Need for Comprehensive Approach:** Addressing domestic violence requires a more comprehensive approach that goes beyond legal remedies alone.
  - ✓ This includes addressing underlying factors such as poverty, lack of education, and gender inequality, which contribute to the perpetuation of violence in intimate relationships.

Arguments in Favour of the Act

- ❖ **Legal Protection:** The Act provides a comprehensive legal framework specifically tailored to address domestic violence against women.
- ❖ **Recognition of Various Forms of Abuse:** The Act recognizes multiple forms of abuse beyond physical violence, including emotional, verbal, sexual, and economic abuse.
  - ✓ This recognition reflects a broader understanding of the ways in which domestic violence manifests and harms women.
- ❖ **Empowerment of Victims:** By providing legal remedies such as protection orders, the Act empowers victims to take action against their abusers and seek protection for themselves and their children.
- ❖ **Access to Support Services:** The Act mandates the establishment of protection officers and support services, including shelters, counseling, and legal aid, to assist victims in accessing the resources they need to escape abusive situations.
- ❖ **Gender Equality:** The Act acknowledges the systemic inequalities and power imbalances that contribute to domestic violence and seeks to address them.
- ❖ **International Obligations:** India is a signatory to various international conventions and treaties that obligate it to combat violence against women, including the Convention on the Elimination of All Forms of Discrimination Against Women (CEDAW).

Conclusion

- ❖ Overall, the Protection of Women from Domestic Violence Act represents a significant step forward in addressing domestic violence against women in India and is crucial for promoting gender equality, protecting women's rights, and creating a safer and more just society.

GENERAL STUDIES 2.

POLITY, CONSTITUTION AND GOVERNANCE

LADAKH'S DEMAND FOR SIXTH SCHEDULE

Context: Environmentalist Sonam Wangchuk, currently on a 21-day fast to demand the implementation of the **Indian Constitution's Sixth Schedule** and statehood for the Union Territory (UT) of Ladakh.

About Sixth Schedule

❖ The Sixth Schedule under **Article 244 of the Constitution** protects tribal populations, allowing for the creation of **autonomous development councils** which can frame laws on **land, public health, agriculture.**

   ✓ autonomous councils exist in Assam, Meghalaya, Tripura, and Mizoram.

❖ Under the provision of the Sixth Schedule, the Governor of the State is

❖ empowered to determine the area or areas as administrative units of the Autonomous Districts and Autonomous Regions.

Demand of Ladakh

❖ Ladakh has a population of 2.74 lakh, according to the 2011 Census.

❖ Ladakh was turned into a **Union Territory** without any Legislative Assembly after the special status o**f Jammu and Kashmir under Article 370** of the Constitution was revoked by the Parliament in 2019 and the erstwhile State was split into the **UTs of Ladakh and J&K.**

❖ Ladakh has erupted in protests several times over the past few years amid concerns about the protection of **land, resources, and employment for local residents, and bureaucratic overreach.**

   ✓ It is argued that Ladakh is heading towards an uncertain, perhaps destructive future, all in the name of development. Its natural resources are under attack in the name of large-scale tourism, hydel and even solar power.

❖ Climate activists have raised serious concerns **regarding mining and industrialisation in the fragile glacial ecological system of Ladakh**. Sixth schedule status is being demanded to protect the high-altitude deserts, glaciers and alpine meadows which are a crucial habitat for rare and endangered species.

Benefits

❖ Inclusion under Sixth Schedule would allow Ladakh to create Autonomous District and Regional Councils (ADCs and ARCs) — elected bodies with the power to administrate tribal areas.

❖ This would include the power to make laws on subjects such as forest management, agriculture, administration of villages and towns, inheritance, marriage, divorce and social customs.

❖ These provisions would enable greater autonomy for the people of Ladakh in determining development policies and exercising control over their natural resources

❖ The Sixth Schedule would allow the **Kargil and Ladakh Autonomous Hill Development Councils** to regulate land, minerals, tourism, and developmental activities as per local needs.

   ✓ Statehood is seen as critical for political empowerment.

Challenges and Limitations

❖ The granting of special provisions to certain tribal groups can lead to a further demand by other groups.

❖ This can create a disparity among the people residing in the area where a particular group has been granted while others have felt deprived of it.

✓ This has resulted in the rise of conflict between different groups—tribes vs tribes and tribes vs non-tribes.

❖ The introduction of the Autonomous District Councils under the Sixth Schedule has **weakened the position and relevance of the traditional structure** ruled by the Chiefs and Headmen in the tribal society.

❖ Number of criticisms have been levelled against the functioning of District and Regional Councils. Some sections of people alleged that the Autonomous District and Regional Councils are used by some vested interests.

❖ They are also accused of indulging in corruption and misuse of public funds.

Conclusion and Way Forward

❖ The special provisions of the constitution are meant to protect the cultural identities and the rights of the tribal inhabitants of the concerned regions, especially from the encroachment and cultural, economic and political exploitation by the outsiders.

❖ According to the government the main objective of including tribal population under the Sixth Schedule is to "ensure their overall socio-economic development, which the UT Administration has already been taking care of since its creation.

✓ Sufficient funds are being provided to Ladakh to meet its overall developmental requirements".

❖ Still, there is a need to discuss measures to protect the region's unique culture and language taking into consideration its geographical location and strategic importance.

DIGITAL GOVERNANCE IN INDIA

Context: Recently, the Prime Minister of India and Bill Gates discussed the role of Artificial Intelligence (AI) for digital governance in key focus areas like health, agriculture and education.

About the Digital Governance:

❖ It is the application of **Information and Communication Technology (ICT)** for d*elivering government services, exchange of information, communication transactions, integration of various stand-alone systems and services between government-to-customer (G2C), government-to-business (G2B), government-to-government (G2G)*, and also back-office processes and interactions within the entire government framework.

❖ **Data Governance** is a crucial aspect of digital governance. The launch of **India's Data Empowerment and Protection Architecture (DEPA)**, a consent management tool, has generated both excitement and concern among stakeholders.

✓ It is important that the tool is implemented in a transparent, consistent, and secure manner.

Role of Artificial Intelligence (AI) in Digital Governance:

❖ AI plays a pivotal role in Indian election campaigns by leveraging technology to overcome language barriers, marking a shift towards progressive politics empowering linguistic diversity and inclusive engagement.

❖ AI is also being used to drive economic growth and improve the lives of citizens.

Key Benefits of Digital Governance:

❖ *Efficiency in Administration, Inclusiveness, Time and Cost Effectiveness, Transparency and Accountability, Data-Driven Decision Making, Empowerment of Citizens, Innovation, Improved Public Services, Economic Growth, Sustainable Development.*

Digital Governance and Health:

❖ The 'Digital India' initiative has brought significant changes in the healthcare sector of India. Initiatives like Ayushman Bharat Digital Mission (ABDM), CoWIN App, Aarogya Setu, e-Sanjeevani, and e-Hospital have made healthcare facilities and services reach every corner of India.

❖ The Ayushman Bharat Health Account (ABHA) Number is a hassle-free method of accessing and sharing one's health records digitally. The Aarogya Setu app has transformed into a National Health App, bringing a whole plethora of digital health services powered by the ABDM.

Digital Governance and Agriculture:

❖ The **National e-Governance Plan in Agriculture (NeGPA)** was launched to achieve rapid development in India through the use of ICT for timely access to agriculture-related information to the farmers.

❖ Realising the significance of new digital & emerging technologies, the **NeGPA guidelines were amended in 2020-21** and funds were released for sanctioning projects for customization/shifting of web & mobile applications already developed by the States, to the platform to be developed using digital/emerging technologies.

Digital Governance and Education:

❖ Digital Empowerment and Online Education are significant components to attain the **Gross Enrolment Ratio (GER) of 50% by 2035** as targeted in the **National Education Policy (NEP) 2020.**

❖ Digital empowerment in the field of education opens up a plethora of options for the learners of today. Digital advancements have wide-ranging implications on higher education.

Other Key Initiatives:

❖ **Digi-Locker:** This initiative assists citizens in storing important documents in a digital format, such as degree certificates, PAN numbers, and mark sheets.
  - ✓ It makes it easier to share documents and reduces the need for physical documents.

❖ **Mobile Seva:** It aims to provide government services via tablets and mobile phones.

❖ **myGov.in:** It is a platform for national citizen engagement where people can share ideas and get involved in policy and governance issues.

❖ **UMANG:** It is a unified mobile application that gives users access to services offered by the federal and state governments.

❖ **Computerisation of Land Records:** It ensures that landowners get digital and updated copies of documents relating to their property.

❖ **e-Office:** It received an award for its role in ensuring continuity of Government services and operations during the COVID-19 pandemic.

Potential Threats:

❖ **Cybersecurity Risks:** With the increasing dependence on digital systems, the risk of cyber threats has heightened.
  - ✓ About 91% of Indian companies experienced ransomware attacks in 2022, and about 55% of these companies reported financial implications.

❖ **Data Privacy Concerns:** The implementation of tools like India's Data Empowerment and Protection Architecture (DEPA) may pose risks associated with security and privacy.
  - ✓ If not properly implemented or managed, there is a risk that personal information could be misused or misappropriated.

❖ **Digital Inequality:** As the world becomes increasingly digital, there is a risk of digital inequality, where certain sections of the society might not have equal access to digital resources and services.

❖ **Dependence on Service Providers:** Remote work has moved digital exchanges from office networks to residential ones, which have a greater variety of connected devices with less protection against cyber intrusion.

❖ **AI-Enabled Threats:** With the increasing use of AI in digital governance, there is a risk of AI-enabled threats. AI-powered malware is a top concern for cybersecurity experts.

- ❖ **Deep Fakes Technology:** It can pose serious ethical and social challenges, such as creating fake news, spreading misinformation, violating privacy, and harming reputation.
- ❖ **Infrastructure Vulnerability:** India's critical infrastructure, such as power grids, transportation systems, and communication networks, is vulnerable to cyber attacks that can disrupt essential services and endanger public safety and national security.

Conclusion and Way Ahead:

- ❖ Digital governance is transforming the way public services are delivered, making them more efficient, accessible, and transparent.
  - ✓ However, it also presents new challenges in terms of data security, privacy, and digital literacy.
- ❖ As India continues to evolve its digital strategies, it must ensure that they are inclusive, transparent, secure, and conducive to sustainable development.

ASSOCIATION OF DEMOCRATIC REFORMS DATA ON MPs

Context: Recently, the Association of Democratic Reforms (ADR) scrutinised the affidavits of the sitting MPs, and revealed several sitting MPs with criminal charges.

Criminalisation of Politics in India

- ❖ It is a phenomenon, where individuals with criminal charges are elected to positions of power, posing a significant threat to the democratic fabric of the nation.
- ❖ It refers to the involvement of individuals with criminal charges or backgrounds in Indian politics. It means that persons with criminal backgrounds contest in the election and get selected as a member of parliament or state legislature.

Major Reasons

- ❖ *Unholy Nexus between Bureaucracy and Politicians; Religion and Caste; Vote Bank Politics; Ineffective Legal Provisions; and Lack of Transparency and Accountability etc.*

The Extent of the Problem: Key Findings of ADR

- ❖ **Criminal Charges:** Out of the 514 sitting Lok Sabha MPs analysed, 225 (44%) have declared criminal cases against themselves.
  - ✓ ADR revealed that among the sitting MPs with criminal charges, 29% face serious criminal cases, including allegations of murder, attempt to murder, promoting communal disharmony, kidnapping, and crimes against women.
  - ✓ Out of the sitting MPs with serious criminal cases against them, nine face murder cases.
- ❖ **Educational Background, Age, and Gender:** 73% of the MPs have graduate or higher educational qualifications, while only 15% of the sitting MPs are women.
- ❖ **State-wise Distribution:** More than 50% of the MPs from Uttar Pradesh, Maharashtra, Bihar, Andhra Pradesh, Telangana, and Himachal Pradesh face criminal charges.
- ❖ **Party-wise Distribution:** Among major parties, the BJP and the Congress have the highest number of billionaire MPs.
- ❖ **Highest Declared Assets:** 5% of the analysed MPs are billionaires, with assets exceeding ₹100 crore.

Other Key Reasons Highlighted By ADR Earlier:

- ❖ **Electoral Bonds:** The Supreme Court held that the **Electoral Bonds Scheme** was unconstitutional for violating the right to information of voters.
- ❖ **Registered Unrecognised Political Parties:** According to a report by ADR, the number of registered unrecognised political parties has increased two-fold from 2010 to 2019.

- ❖ **Election Commissioners Appointment:** ADR argues that the present practice of appointment of Election Commissioners by the Centre is **violative of *Articles 14 and Article 324 (2)*** and the **basic features of the Constitution**.

Issues of Criminalization of Politics

- ❖ **Question of safety & security:** The main purpose of governance is to provide safety and security to citizens who elect their representatives for this role.
    - ✓ But if the elected members themselves have criminal records, would they be interested in a criminal justice system that is prompt and efficient?
- ❖ **Low conviction rate:** As per the **National Crime Records Bureau's 2021 report,** only 10,416 cases of murder were disposed of during the year with just a 42.4% conviction rate.
    - ✓ The law minister has admitted to more than 4.7 crore cases pending in various courts.
- ❖ **Situation in police stations:** Politicians play a very powerful role at police stations, compromising both integrity and impartiality of field staff.
    - ✓ In due course, ordinary criminals graduate to be dreaded ones and form gangs extorting money, grabbing land, threatening witnesses in criminal cases, etc.
- ❖ **Impact on Democracy:** The presence of criminals in politics undermines the very essence of democracy. It erodes public trust in the political system and compromises the integrity of our institutions.
- ❖ Moreover, it raises serious questions about the kind of representation citizens are receiving and the quality of governance being delivered.

Measures to Curb Criminalisation

- ❖ The **Vohra Committee** set up by the Centre in 1993 sounded a note of warning saying that "some political leaders become the leaders of these groups and, over the years, get themselves elected to local bodies, state assemblies, and the national Parliament.
- ❖ **Law Commission's 179th report:** It recommended an **amendment to the Representation of People Act 1951**, and suggested the people with criminal backgrounds should be disqualified for five years or until acquittal.
    - ✓ It also recommended that the person who wants to contest the election must furnish details regarding any pending case, with the copy of the FIR/complaint, and also furnish details of all assets.

The Legal Framework:

- ❖ **Representation of the People Act, 1951:** It provides the basis for disqualifying a sitting legislator or a candidate on certain grounds.
    - ✓ However, there is no provision regulating appointments to offices within political parties.
- ❖ **Right to Information Act, 2005:** Efforts have been made to bring political parties under the Right to Information regime to usher in transparency within political parties.

Related Supreme Court Judgement

- ❖ **In 2002:** Every candidate contesting election **had to declare his criminal and financial records** along with educational qualifications.
- ❖ **In 2005:** A sitting MP or MLA will be **disqualified** from contesting the election **if convicted and sentenced to imprisonment for two years or more** by a court of law.
- ❖ **In 2014:** The Supreme Court **accepted the Law Commission recommendations** and passed an order directing that trials against sitting MPs and MLAs should be concluded within a year of charges being framed and conducted on a day-to-day basis.
    - ✓ As a follow-up to these directives, in 2017, the government started a **scheme to establish 12 special courts** for a year to **fast-track** the trial of criminal cases against MPs and MLAs.

❖ **In 2021:** The **political parties** need to upload on their websites and social media platforms the **details of pending criminal cases** against their candidates and the reasons for selecting them as also for not giving tickets to those without criminal antecedents.

❖ **Recently,** the Supreme Court published **some necessary mandates** to avert the criminalisation of politics as many lawsuits have been withdrawn against MPs and MLAs in the past.

Conclusion and Way Forward

❖ The criminalisation of politics in India is a grave issue that needs immediate attention. The involvement of criminals in politics not only undermines the democratic process but also hampers the development of the nation.

❖ There is a **need to fix the role of Political Parties** that should be more transparent and accountable in their candidate selection process.

❖ The **Election Commission of India and other respective authorities** need to take transparency measures about the Political Parties and their funding to the People of India so that they can **make informed decisions** while exercising their vote.

❖ It is high time that stringent measures are taken to curb this menace and restore faith in the democratic system.

CENTRE-STATE FINANCIAL RELATIONS: CONCERNS AND CHALLENGES

Context: Public debt management is getting wider attention in Centre-State financial relations, against the backdrop of the recently constituted Sixteenth Union Finance Commission.

About

❖ Kerala, had filed a suit in the Supreme Court of India against the Centre's decision on the net borrowing ceiling of States.

❖ These recent developments relate to a clarion call for "asymmetric fiscal rules" relating to deficits and debts in India.

Centre-State Financial Relations

❖ The Indian Constitution has all the **features of a federation with the specification of financial powers a**nd functional responsibilities of the Centre and the States .

❖ The **Union and the State Lists** under the **Seventh Schedule** prescribed in the Constitution under **Article 246** contain subjects in respect of which the Union and the States have exclusive jurisdiction to make laws, respectively.

  ✓ In addition, a few subjects are listed in the Concurrent List in respect to which both the Union and the States have concurrent powers to make laws.

❖ **Article 270** of the Constitution provides for the scheme of distribution of net tax proceeds collected by the Union government between the Centre and the States.

  ✓ The taxes that are shared between the Centre and the States include corporation tax, personal income tax, Central GST, the Centre's share of the Integrated Goods and Services Tax (IGST) etc.

Basis for Allocation

❖ The share of States from the divisible pool (vertical devolution) stands at 41% as per the recommendation of the 15th FC.

❖ The distribution among the States (horizontal devolution) is based on various criteria.

❖ The criteria as per the 15th FC can be briefly explained as follows.

  ✓ **'Income distance' : It** is the distance of a State's income from the State with highest per capita income.

> ➢ States with lower per capita income would be given a higher share to maintain equity among States.

- ✓ **'Population'** is the population as per the 2011 Census.
- ✓ **'Forest and ecology'** consider the share of dense forest of each State in the aggregate dense forest of all the States.
- ✓ **'The demographic performance'** criterion has been introduced to reward efforts made by States in controlling their population.
- ✓ **'Tax effort'** as a criterion has been used to reward States with higher tax collection efficiency.

Concerns of States Government

- ❖ Over the years, the share of Union Finance Commission tax transfers has declined for a few States.
- ❖ The Union government has sought to keep an increasing share of its proceeds out of the divisible pool so that they need not be shared with States.
- ❖ It has also not been devolving the shares of net proceeds to the States as mandated by successive FCs.
- ❖ The Fifteenth Finance Commission has designed the tax transfer formula based on population (15%), area (15%), income distance (45%), demographic transition (12.5%), forest and ecology (10%) and tax effort (2.5%).
  - ✓ The weightage given to the distance of per capita income in the Finance Commission tax transfer formula adversely affects growing States, including Kerala.
    - ➢ This leads to the debate on equity versus efficiency principles of intergovernmental fiscal transfers.

Suggestions and Way Ahead

- ❖ **Judicious bargaining with the Finance Commission** relating to magnitude and criteria (with weightage decisions) is key to ensuring the progressivity of fiscal transfers to the State.
- ❖ There needs to be a negotiation with the **Sixteenth Finance Commission** for specific-purpose transfers to tackle State-specific issues such as demographic transition, inward and outward migration and climate change crisis.
- ❖ **Fiscal transfe**r based on the **advancement of gender budgeting** (including the care economy infrastructure) in the State is critical to redress gender inequalities.
- ❖ Apart from addressing rightful complaints on the inequalities in horizontal devolution, the stance of the 16th FC on vertical devolution would be critical to the survival of fiscal federalism in India.

INDIA'S 'NATIONAL ONE HEALTH MISSION': THE ADVENT OF A HOLISTIC APPROACH TO 'ONE HEALTH'

Context: The article discusses India's 'National One Health Mission,' which aims to prepare us for better management of diseases affecting humans, animals, and the environment. It involves various ministries and departments working together for disease control, research, and pandemic preparedness. The mission includes setting up a national network of laboratories and using technology like AI for disease monitoring.

What is the India's 'National One Health Mission'?

- ❖ **Mission Overview:** The 'National One Health Mission' is **India's integrated approach to managing diseases** affecting humans, animals, and the environment.
- ❖ **Participating Bodies**: Coordination among 13 Ministries and Departments, including those for Science and Technology, Biotechnology, Health, and Animal Husbandry.
- ❖ **Objectives and Goals:** Developing strategies for disease surveillance, research, and response to human and animal diseases.
- ❖ **Focus on Diseases:** Tackling diseases that affect humans such as COVID-19, foot and mouth disease, and lumpy skin disease.

Why is 'One Health' important globally?

1. One Health is globally essential for integrated disease management across humans, animals, and the environment.
2. It addresses widespread diseases like COVID-19, which affect multiple species, showing the interconnectedness of health sectors. It also concerns wildlife diseases, like canine distemper, crucial for conservation efforts.
3. It focuses on establishing a global network of 'One Health' institutes for unified disease response strategies.
4. It extends beyond diseases to address wider issues like antimicrobial resistance, food safety, and climate change impacts.
5. 'One Health' was endorsed during India's G-20 presidency, highlighting the need for international collaboration in health surveillance.

What initiatives has the Indian government taken for the 'National One Health Mission'?

1. The Indian government has **launched the 'National One Health Mission'**, aiming to synergize efforts in managing diseases that impact humans, animals, and the environment.
2. A key step was the **establishment of the National Institute for One Health in Nagpur**, serving as a central hub for coordinating both national and international activities related to health management.

What should be done?

1. **Enhancement of disease management** across human, animal, and environmental sectors by efficiently using the national network of high-risk pathogen laboratories, including BSL 3 and BSL 4 labs.
2. **Application of advanced technologies** such as AI and machine learning to enhance epidemiology and data analysis. This approach can be modeled on the success of genomic surveillance from wastewater, as demonstrated during the COVID-19 pandemic.
   Promotion of active collaboration between government agencies, NGOs, academia, the private sector, and citizens to advance the 'One Earth, One Health' initiative, aiming for inclusive health management.

An Overview of the PMAY-U Scheme

Context: Recent estimates of the government show that there is a shortage of three million houses in urban centres.

About the Pradhan Mantri Awas Yojana (PMAY) Scheme

❖ It is a flagship and Centrally Sponsored Scheme by the Union Ministry of Housing and Urban Affairs (MoHUA), launched in 2015, to provide affordable housing to the urban poor.

Objectives

❖ The PMAY scheme aims to address the urban housing shortage among the Economically Weaker Section (EWS), Lower Income Group (LIG), and Middle Income Group (MIG) categories, including slum dwellers.
❖ It includes the rehabilitation of slum dwellers with the participation of private developers, promotion of affordable housing for the weaker sections through Credit Linked Subsidy Schemes (CLSS), affordable housing in partnership with public and private sectors, and subsidy for Beneficiary-led Construction (BLC).
❖ It ensures a pucca house to all eligible urban households (housing for all) by the year 2022, coinciding with the 75th year of India's Independence.

Coverage

❖ It covers the entire urban area consisting of Statutory Towns, Notified Planning Areas, Development Authorities, Special Area Development Authorities, Industrial Development Authorities or any such authority under State legislation which is entrusted with the functions of urban planning & regulations.

Components (Four Verticals)

❖ **In-situ Slum Redevelopment (ISSR):** It involves the rehabilitation of slum dwellers with the participation of private developers.
❖ **Affordable Housing in Partnership (AHP):** This involves the promotion of affordable housing for the weaker sections through partnerships with the public and private sectors.
❖ **Credit Linked Subsidy Scheme (CLSS):** This scheme provides interest subsidy on housing loans to eligible beneficiaries.
❖ **Beneficiary-led Construction (BLC):** This involves providing central assistance to eligible families for the construction or enhancement of houses.

Additional Initiatives of MoHUA under PMAY

❖ **Affordable Rental Housing Complexes (ARHCs):** It is a sub-scheme under PMAY-U that aims to provide ease of living to urban migrants/poor in the Industrial Sector as well as in the non-formal urban economy by providing access to dignified affordable rental housing close to their workplace.
❖ **Global Housing Technology Challenge –** India (GHTC-India): It aims to identify and mainstream a basket of innovative construction technologies from across the globe for the housing construction sector that are sustainable, eco-friendly, and disaster-resilient.

Progress of the PMAY Scheme

❖ As of now, the PMAY (Urban) scheme has sanctioned 118.64 lakh houses, grounded 114.15 lakh houses, and completed 82.16 lakh houses.
❖ The Central Assistance Committed is ₹2 Lakh Cr., and the Central Assistance Released is ₹163926 Cr. The total investment is ₹8.07 Lakh Cr.

Challenges ahead of the scheme:

❖ **Housing Shortage:** The urban housing shortage has increased by 54%, from 1.88 crore in 2012 to 2.9 crore in 2018.
  ✓ As of April 2024, there is a shortfall of around 40 lakh houses from the sanctioned and completed segments.
❖ **Implementation Issues:** There is a shortfall of around 40 lakh houses from the sanctioned and completed segments.
❖ **In-situ Slum Redevelopment:** The ISSR vertical has failed, with only 2,10,552 houses sanctioned for eligible beneficiaries.
  ✓ Under the ISSR, only 2,10,552 houses have been sanctioned for eligible beneficiaries.
  ✓ Even if the remaining houses are constructed by the end of 2024, it would have addressed just about 37% of the real need.
  ✓ Almost 2.4 crore households will still be without a roof.
❖ **Unmet Targets:** The PMAY-U has only addressed about 25.15% of the housing shortage by delivering 80 lakh homes.

Future of the PMAY Scheme

❖ In August 2022, the government approved the continuation of the PMAY-U up to December 31, 2024, for the completion of already sanctioned houses till March 31, 2022.
❖ However, the current housing programme, which was a kind of merger of the Rajiv Awas Yojana into the PMAY, has spent over $29 billion in the last five years providing support for both rural and urban low-cost housing.
❖ Despite this focus and budgetary infusion, 'Housing for All' remains an unfulfilled promise.

Conclusion

❖ PMAY is a significant step towards achieving the goal of 'Housing for All' by 2022. It has made some progress in addressing India's urban housing shortage, but fallen short of its ambitious goals.
❖ The challenges faced by the scheme highlight the complexities of urban development and the need for comprehensive and sustainable solutions.

REALITY OF THE SWACHH BHARAT MISSION

Context: India was ranked right at the bottom of 180 countries in the Environment Performance Index (EPI) in 2022.

❖ **T**he ranking raises questions about the success of the Swachh Bharat Mission.

About

❖ The EPI ranks countries on climate change performance, environmental health, and ecosystem vitality.
  ✓ It measures 40 performance indicators across 11 issue categories, such as air quality, and drinking water and sanitation.
❖ The government responded to the rank saying the methodology is faulty and does not quantify the Indian scenario objectively.
❖ The Swachh Bharat Mission (SBM) aims to enable better living standards, so the poor ranking can be linked to the success of SBM.

What is the Swachh Bharat Mission?

❖ The Swachh Bharat (Clean India) Mission (SBM) was launched in 2014 with the goal of achieving universal sanitation coverage by 2019, as a tribute to the 150th Birth Anniversary of Mahatma Gandhi.
❖ It consisted of two sub-missions, urban, and rural or Gramin (G).
  ✓ The urban component of the mission is implemented by the Ministry of Urban Development, and the rural component by the Ministry of Drinking Water and Sanitation.
❖ SBM(G) sought to improve "the levels of cleanliness through Solid and Liquid Waste Management activities and making Gram Panchayats Open Defecation Free (ODF), clean and sanitized.
❖ **SBM Phase II:** The second phase, started in 2020-2021, expands efforts with a focus on safe management of solid and liquid waste and sustainability of ODF.
  ✓ An ODF Plus village is one which has sustained its Open Defecation Free (ODF) status along with implementing either solid or liquid waste management systems.
  ✓ It would transform villages from ODF to ODF Plus by 2024-25.

Achievements

❖ **SBM Phase I:** The programme led to the construction of over 10 crore individual household toilets, taking sanitation coverage from 39% in 2014 to 100% in 2019 when around 6 lakh villages declared themselves Open Defecation Free (ODF).
  ✓ While studies indicate that the SBM-G campaign led to significant economic, environmental and health impacts, contributing to the empowerment of women in particular, it also led to the achievement of SDG 6.2 (Sanitation and Hygiene), 11 years ahead of the stipulated timeline.
❖ **SBM Phase II:** 75% villages have achieved ODF Plus status under Phase II of the Mission.
  ✓ The top performing States/UTs which have achieved 100% ODF Plus villages are – Andaman & Nicobar Islands, D&N Haveli, Goa, Gujarat, Himachal Pradesh, Jammu & Kashmir, Karnataka, Kerala, Ladakh, Puducherry, Sikkim, Tamil Nadu, Telangana, and Tripura.

Challenges in Implementing Swachh Bharat Mission

❖ **Behavioral Change:** One of the primary challenges has been changing deep-rooted cultural attitudes and behaviors towards cleanliness and sanitation.
  ✓ Encouraging people to adopt hygienic practices, such as proper waste disposal and toilet usage, requires sustained efforts in education and awareness campaigns.
❖ **Infrastructure Development:** Building adequate sanitation infrastructure, including toilets and waste management systems, especially in rural areas, has been a considerable challenge.
  ✓ Ensuring the availability of facilities in remote and economically disadvantaged regions requires significant investment and logistical planning.
❖ **Maintenance of Infrastructure:** Merely constructing toilets is not sufficient; ensuring their proper maintenance and usage over time is crucial.
  ✓ Many toilets constructed under SBM have faced issues of poor maintenance and non-functionality due to lack of ownership or awareness among users.

- ❖ **Open Defecation:** Despite efforts to eradicate open defecation, it remains prevalent in certain areas due to various factors such as lack of awareness, cultural practices, or inadequate toilet facilities.
  - ✓ Changing these behaviors requires not only infrastructure development but also community engagement and behavior change communication.
- ❖ **Waste Management:** Proper solid and liquid waste management is essential for maintaining cleanliness and preventing environmental pollution.
  - ✓ However, the infrastructure and systems for waste collection, segregation, and disposal are often inadequate, leading to issues such as littering and contamination of water sources.
- ❖ **Funding and Resources:** Adequate funding and resources are necessary for the successful implementation of SBM.
  - ✓ While the government has allocated significant funds for the mission, ensuring effective utilization and allocation of resources at the grassroots level remains a challenge.

Way Ahead

- ❖ Addressing these challenges requires a multi-pronged approach involving not only government intervention but also active participation and cooperation from communities, civil society organizations, and other stakeholders.
- ❖ Sustainable solutions that address the root causes of sanitation and cleanliness issues, along with continuous monitoring and feedback mechanisms, are essential for the long-term success of the Swachh Bharat Mission.

SUPREME COURT BACKS EVMS

Context: The Supreme Court upheld the electronic voting machine (EVM) system of polling and refused a plea to revive paper ballots.

Supreme Court Judgement

- ❖ The court refused to hand over paper slips from Voter Verifiable Paper Audit Trail (VVPAT) units to electors to take a leisurely look before inserting them into the ballot boxes.
- ❖ It also declined to direct the cross-verification of 100% EVMs and VVPATs across the country.
  - ✓ Currently, only five percent of EVM-VVPAT counts are randomly verified in any given Assembly constituency.
- ❖ It also directed the Election Commission of India (ECI) to "seal and secure" the Symbol Loading Unit (SLU) for 45 days after the declaration of election results.
  - ✓ Currently, only the three components of the EVM — the ballot unit, control unit, and VVPAT — are stored for 45 days after the results.
- ❖ The court has allowed candidates to check the one-time programmable software in the BU (Ballot Unit), CU (Control Unit), and VVPAT for tampering, in case of any doubts regarding the result.
  - ✓ This verification involves inspecting the burnt memory/ microcontrollers of these three components.

What are Electronic Voting Machines (EVMs)?

- ❖ It is a device used to electronically record and count votes cast in elections.
- ❖ EVMs were first used in 1982 in the Assembly constituency of Paravur in Kerala in 50 out of 123 booths.
- ❖ EVM has two parts, it consists of a 'control unit' and a 'balloting unit', connected by a 5-meter cable.
- ❖ The control unit is with the Election Commission-appointed polling officer and it is the brain of the EVM.
- ❖ The balloting unit is in the voting compartment into which the voter enters to cast the vote in secret by pressing the button against the name and symbol of the candidate of her choice.
  - ✓ The balloting unit is turned on only after the polling officer presses the 'Ballot' button on it.

Voter Verified Paper Audit Trail (VVPAT)

- ❖ A VVPAT is intended as an independent verification system for voting machines designed to allow voters to verify that their vote was cast correctly.
- ❖ It contains the name of the candidate (for whom vote has been cast) and symbol of the party/individual candidate.
- ❖ When a vote is cast, the VVPAT machine, which is attached to the ballot unit (BU) of the EVM, prints out a slip of paper with the voter's choice indicated on it.
  - ✓ Though it remains behind glass, the printed slip is visible for seven seconds so the voter can see that the vote has been recorded correctly, before it falls into a box underneath.
- ❖ The idea of the VVPAT machine first emerged in 2010. However it was used for the first time in the Noksen Assembly constituency of Nagaland in 2013.
  - ✓ The Conduct of Elections Rules, 1961 were amended in 2013 to allow for a printer with a drop box to be attached to the EVM.
- ❖ From 2017, 100% of VVPATs began to be used in polls, and the 2019 Lok Sabha elections became the first general election to have 100% of EVMs being attached to VVPATs.

What is a Symbol Loading Unit (SLU) ?

- ❖ The SLU is used to load the symbols of the candidates onto the VVPAT.
- ❖ Candidate-setting happens at any time from five to two days before voting at a seat. After loading the symbols onto the VVPAT, the SLU is of no relevance to the actual voting process.
- ❖ Once the symbol-loading is complete, the SLUs are handed over to the concerned district election officer for safekeeping. They remain in the officer's custody until the day after voting.

Conclusion

- ❖ Overall, while the VVPAT system in India represents a significant step towards enhancing transparency and accountability in elections, it continues to face criticism and scrutiny regarding its effectiveness, cost, and implementation challenges.
- ❖ However, "blind distrust" of an institution or a system breeds unwarranted skepticism and impedes progress.
- ❖ Addressing these concerns requires efforts to improve the reliability, accessibility, and public acceptance of the VVPAT system.

INTERNATIONAL

BIMSTEC CHARTER

Context: Recently, a majority in the Lower House of Nepal supported the proposal seeking endorsement of the BIMSTEC Charter.

About the BIMSTEC Charter

❖ It was signed and adopted during the **Fifth BIMSTEC Summit** held in Colombo, Sri Lanka in 2022.

❖ It provides a **legal and institutional framework** for BIMSTEC, aiming to create an enabling environment for **rapid economic development** through the identification and implementation of specific cooperation projects in the agreed areas of cooperation and other areas that may be agreed upon by the Member States.

❖ It reaffirms the commitment to the principles and purposes of BIMSTEC as enshrined in the **Bangkok Declaration of 1997**.

Significance of the BIMSTEC Charter

❖ The adoption of the BIMSTEC Charter formalises the grouping into an organisation made up of member states that are littoral to, and dependent upon, the Bay of Bengal.

❖ The Charter allows BIMSTEC to engage in external relations with non-member States, developmental partners, and regional as well as the UN and International Organisations.

❖ It stresses the need for a fair, just, equitable, and transparent international order and reaffirms faith in multilateralism with the United Nations at the centre and the rule-based international trading system.

BIMSTEC and India

❖ **Alignment with Foreign Policy:** BIMSTEC aligns with India's 'Neighbourhood First' and 'Act East' policies.

  ✓ It provides a natural platform for India to foster greater regional cooperation in South and Southeast Asia.

❖ **Economic Integration:** BIMSTEC is an important element in India's strategy for economic cooperation with South East Asian countries.

  ✓ The **BIMSTEC Free Trade Area Framework Agreement**, signed in 2004, aims to increase trade and economic integration among member countries.

❖ **Security Cooperation:** India plays a significant role in BIMSTEC's security cooperation. Under the new changes adopted in the summit, India has become the 'security pillar' of BIMSTEC.

  ✓ It includes cooperation in areas such as counter-terrorism and transnational crime.

❖ **Connectivity and Infrastructure Development:** The **BIMSTEC Master Plan for Transport Connectivity** seeks to connect several major transport projects in India, Bangladesh, Myanmar, and Thailand and establish a shipping network across the Bay of Bengal.

  ✓ It aims to benefit the littoral states as well as the Bay of Bengal dependent states like Nepal and Bhutan.

Challenges Associated with BIMSTEC for India

❖ **Uneven Progress:** Despite being in existence for over 25 years, the pace of cooperation within BIMSTEC has been somewhat uneven.

  ✓ The progress across different sectors has been inconsistent, which has affected the overall effectiveness of the organisation.

❖ **Regional Conflicts among member states:** It can hamper the smooth functioning of BIMSTEC.

  ✓ For instance, the Rohingya refugee crisis created tensions between Myanmar and Bangladesh, which affected the working of BIMSTEC.

- ❖ **Legal and Institutional Challenges:** Finalising legal instruments for various initiatives, such as coastal shipping and road transport, can be time-consuming and complex.
  - ✓ These can slow down the progress towards stronger trade relations among the member countries.
- ❖ **Security Concerns:** Terrorism remains a significant threat to peace and stability in the region.
  - ✓ While BIMSTEC has been working towards strengthening cooperation against terrorism, it continues to be a major challenge.

Conclusion

- ❖ The BIMSTEC Charter represents a significant step forward in regional cooperation. It provides a robust framework for the organisation to work towards a peaceful, prosperous, and sustainable Bay of Bengal Region.
- ❖ As BIMSTEC enters a new era with the adoption of its Charter, it is poised to play a crucial role in fostering regional cooperation and integration.

75 YEARS OF ESTABLISHMENT OF NATO

Context: NATO has completed its **75 years of establishment in 2024.**

About NATO

- ❖ NATO, or the North Atlantic Treaty Organization, is a **military alliance of countries.**
- ❖ **Establishment:** It was founded in **1949** with the signing of the North Atlantic Treaty, more popularly known as the **Washington Treaty**.
- ❖ **Aim:** To ensure the **security and defense of its member countries** through collective defense.
- ❖ **Founding Members:** The original members of NATO were Belgium, Canada, Denmark, France, Iceland, Italy, Luxembourg, the Netherlands, Norway, Portugal, the United Kingdom, and the United States.
- ❖ **Collective Defense:** The cornerstone of NATO is Article 5 of the North Atlantic Treaty, which states that an armed attack against one or more of its members is considered an attack against all members.
- ❖ **Decision-Making:** Decisions within NATO are made on the basis of **consensus among member countries.**
  - ✓ **The North Atlantic Council,** which includes the ambassadors of all member countries, is the **principal political decision-making body.**
- ❖ **Members:** It has **32 member countries, Finland** and **Sweden** became the 31st and 32nd members respectively.
  - ✓ On signing the Treaty, countries voluntarily commit themselves to participating in the political consultations and military activities of the Organization.

Expansion of NATO

- ❖ NATO now has **32 members** across **Europe and North America,** including the **UK, US, Canada, France, Germany, Italy, Spain and Turkey.**
- ❖ **After the Soviet Union's collapse in 1991, many Eastern European countries joined:** Albania, Bulgaria, Hungary, Poland, the Czech Republic, Slovakia, Romania, Lithuania, Latvia and Estonia.
- ❖ **Sweden and Finland** applied to join in 2022, following Russia's invasion of Ukraine. **They had been neutral for decades.**
- ❖ **Finland –** which has a 1,340km (832 mile) **land border with Russia** – joined in 2023. **Sweden** became a member in March 2024**.**
- ❖ With Sweden and Finland joining Nato, it is seeing its **biggest expansion since the 1990s.** They will add nearly 300,000 active and reserve troops to the alliance's ranks.

❖ Ukraine, Bosnia and Herzegovina, and Georgia also hope to join Nato.

Concerns of NATO Expansion

❖ **Geopolitical Tensions:** Expanding NATO's borders potentially provokes tensions with neighboring countries, especially those with close ties to Russia.

  ✓ The immediate reason for the Russian – Ukraine war can be associated with the fact the Russia wanted to prevent Ukraine from joining NATO.

❖ **Security Dilemma:** NATO expansion can trigger a security dilemma wherein one country's effort to enhance its security is seen as a threat by another, leading to an **arms race or increased military tensions.**

❖ **Strategic Interests:** Expanding NATO's membership raises questions about the strategic interests of the alliance and its commitment to collective defense.

  ✓ Some argue that NATO should focus on consolidating its existing members rather than taking on new ones.

❖ **European Security Architecture:** NATO expansion could undermine efforts to develop a broader European security architecture, including initiatives such as the Organization for Security and Co-operation in Europe (OSCE).

❖ **Promoting such new alliances:** Countries who sees NATO as a security threat can come up with a counter alliance such as the Warsaw Treaty Organization by the Russia. These alliances can further accelerate the geopolitical tensions.

❖ **Potential for Conflict:** NATO expansion raises the risk of conflict, particularly if it involves regions with existing territorial disputes or unresolved conflicts.

  ✓ This could escalate tensions and increase the likelihood of military confrontation.

Way Ahead

❖ Overall, while NATO expansion can enhance the security of new member states and contribute to the stability of the Euro-Atlantic region, it also poses various challenges and concerns that need to be carefully considered by all parties involved.

❖ Diplomacy, dialogue, and a nuanced understanding of each other's security concerns are essential for addressing these concerns and maintaining peace and stability in the region.

EXPANSION OF AUKUS

Context: The **AUKUS security Pact** is set to begin talks on bringing new members and plans to include **Japan** into the group.

What is AUKUS?

❖ AUKUS is a **trilateral defence and security partnership** between **Australia, the United Kingdom and the United States.**

❖ It was established in **2021** to bolster their allied deterrence and defense capabilities in the **Indo-Pacific.**

❖ The trilateral partnership has two pillars.

  ✓ **Pillar I** revolves around the acquisition and development of conventionally armed nuclear-powered submarines for the Royal Australian Navy;

  ✓ and **Pillar 2** focuses on cooperation in eight advanced military capability areas: artificial intelligence (AI), quantum technologies, innovation, information sharing, and cyber, undersea, hypersonic and counter-hypersonic and electronic warfare domains.

Why was AUKUS formed?

❖ **Increasing Presence of China:** The Indo-Pacific region has witnessed increasing geopolitical tensions, including territorial disputes, military build-up, and assertive behavior by China.

✓ The participating countries share concerns about maintaining peace, stability, and freedom of navigation in the region.

❖ **Technological Cooperation:** AUKUS aims to enhance technological cooperation, particularly in the field of defense and security.

❖ **Alliance Strengthening:** AUKUS represents a deepening of security ties between Australia, the United Kingdom, and the United States.

❖ **Response to Regional Dynamics:** The formation of AUKUS is seen as a response to shifting regional dynamics and evolving security challenges in the Indo-Pacific.

✓ It reflects a broader trend of countries in the region seeking to forge closer security partnerships and alliances to address common concerns and counterbalance China's influence.

Way Ahead

❖ Lasting success for AUKUS in deterring regional threats and reinforcing regional stability hinges on participating states overcoming barriers to **progress in technology and information sharing,** and meeting benchmarks for both Pillars.

❖ Achieving the core objectives will take years, with Pillar I likely requiring decades, even with all states moving forward at full speed.

❖ Regardless, AUKUS still holds immediate promise for participating countries.

❖ Critically, it will help catalyze technological innovation and enhance research and development for emerging capabilities necessary to maintain a competitive edge, strengthen defense ties, and deepen the three countries' presence in the Indo-Pacific.

FINANCING FOR SUSTAINABLE DEVELOPMENT REPORT 2024: UNITED NATIONS

Context: Recently, the United Nations (UN) has recently released the 'Financing for Sustainable Development Report 2024' highlighting the urgent need for increased investment in sustainable development to achieve the SDGs.

About Sustainable Development Goals (SDGs):

❖ These are a set of 17 goals established by the UN as a shared blueprint for peace and prosperity for people and the planet.

❖ These goals, adopted by all UN Member States in 2015, are an urgent call for action by all countries – developed and developing – in a global partnership.

The Journey of SDGs:

❖ More than 178 countries adopted Agenda 21, a comprehensive plan of action to build a global partnership for sustainable development at the Earth Summit in Rio de Janeiro, Brazil in 1992.

❖ It continued through the Millennium Summit in 2000, the World Summit on Sustainable Development in South Africa in 2002, and the United Nations Conference on Sustainable Development (Rio+20) in Rio de Janeiro, Brazil, in June 2012.

❖ These SDGs recognise that ending poverty and other deprivations must go hand-in-hand with strategies that improve health and education, reduce inequality, and spur economic growth – all while tackling climate change and working to preserve our oceans and forests.

Key Issues Highlighted in Report:

❖ **Sustainable Development Crisis:** The report identified that the world is facing a sustainable development crisis. It identified financing challenges as the heart of this crisis, which threatens the achievement of the SDGs and climate action.

✓ Rising geopolitical tensions, climate disasters, and a global cost-of-living crisis have hit billions of people, battering progress on healthcare, education, and other development targets.

- ✓ If current trends continue, the UN estimates that almost 600 million people will continue to live in extreme poverty in 2030 and beyond, more than half of them women.
- ❖ **The Finance Divide:** Developing countries are paying around twice as much on average in interest on their total sovereign debt stock as developed countries.
    - ✓ Staggering debt burdens and sky-high borrowing costs are preventing developing countries from responding to the confluence of crises they face.
    - ✓ Many of these countries lack access to affordable finance or are in debt distress.
- ❖ **The Financing Gap:** The report estimated that the development financing gap has grown to USD 4.2 trillion annually, up from USD 2.5 trillion before the COVID-19 pandemic.
    - ✓ It represents a more than 50% increase over the pre-pandemic estimates.
- ❖ **Weak Enabling Environments:** Average global growth has declined, while policy and regulatory frameworks still do not set appropriate incentives.
    - ✓ Public budgets and spending are not fully aligned with SDGs. Private investors are not incentivised to invest enough in SDGs and climate action.
- ❖ **Closing Window:** The window to rescue the SDGs and prevent a climate catastrophe is still open but closing rapidly.

Suggestions Made in Report:

- ❖ **Urgent Actions Needed**: This is the last chance to correct course if we want to achieve the SDGs by the 2030 deadline.
    - ✓ Only an urgent, large-scale and sustainable investment push can help us achieve our global goals.
- ❖ **Four Actions:**
    - ✓ Close financing gaps for SDG/climate investments (both public and private) at scale and with urgency;
    - ✓ Close policy and architecture gaps, and reform international institutions;
    - ✓ Close credibility gaps and trust deficits both international and domestically; and
    - ✓ Formulate and finance new development pathways.
- ❖ **Reforms in existing systems:** The report concludes that the international financial system, which was set up at the 1944 Bretton Woods Conference, is no longer fit for purpose.
    - ✓ It proposes a new coherent system that is better equipped to respond to crises, scales up investment in the SDGs especially through stronger multilateral development banks, and improves the global safety net for all countries.

Conclusion:

- ❖ The 'Financing for Sustainable Development Report 2024' serves as a stark reminder of the urgent need for increased investment in sustainable development.
- ❖ As the world stands at a crossroads, this report underscores the importance of closing financing gaps, reforming international institutions, and formulating and financing new development pathways.

INDIA'S STAND ON IRAN- ISRAEL CONFLICT

Context: Iran launched drones and cruise missiles against Israel under Operation True Promise (Also called **"Operation Honest Promise").**

About

- ❖ India issued a statement expressing India's "serious concern" at the escalation of hostilities, and called for **"immediate de-escalation".**
- ❖ The Iranian attack was in response to the suspected Israeli strike on an Iranian consular building in Syria's Damascus that killed 12 people.

Significance of the Region for India

❖ **Threat to Indian Community:** There are about 18,000 Indians in Israel and about 5,000-10,000 Indians in Iran, about 90 lakh people are living and working in the Gulf and West Asia region.
  ✓ Any conflict that expands will end up posing a risk to the Indian community that is based in the region.

❖ **Energy Security:** The West Asia region contributes to India's 80 percent of oil supplies, which a potential conflict will impact.
  ✓ India has been able to minimise the impact of oil prices due to the Russia-Ukraine war by buying Russian oil at discounted prices, but this conflict will have an adverse impact on energy prices.

❖ **Investment and Strategic Importance:** India has invested in a strategic relationship with major Arab countries, Iran, and Israel.
  ✓ India sees the region as its extended neighbourhood, and it has been pushing for the India-Middle-East-Europe Economic corridor, which has strategic as well as economic benefits.
  ✓ Chabahar in Iran is another strategic economic project, which acts as a gateway to Afghanistan and Central Asia — since Pakistan denies land transit to Indian goods.

❖ **Defence Relations with Israel**: India has a very deep strategic relationship with Israel, especially in the context of defence and security partnership.

India's Neutral Stand

❖ **Maintaining a Balanced Stand:** India's stakes in the bilateral relationships with both Israel and Iran are huge, India will hope that Israel will avoid new military actions that will trigger a dangerous and wider war in the region.
  ✓ Earlier India was seen as taking "Israel's side", but today its position urging restraint will be viewed as "balanced" and in favour of regional peace.

❖ **Based on the Complex Regional Politics:** Inter-state and intra-state conflicts in the Middle East are deep and pervasive, and India will have to forever balance its engagement with key regional actors — Egypt, Iran, Israel, Qatar, Turkey, Saudi Arabia, and the United Arab Emirates — whose orientation and interests are different and often in conflict.
  ✓ India's call for de-escalation between Israel and Iran is about recognising the complexity of the region's politics.

❖ **Non- Ideological Engagement:** The non-ideological engagement with the region is a necessary complement to India's expanding interests in the Middle East.
  ✓ India's interests in the region are no longer limited to oil imports and labour exports.
  ✓ **The Gulf Arab states —** especially Saudi Arabia and the United Arab Emirates — have emerged as major economic and political partners for India.

Way Ahead

❖ **India has strategic ties with both Iran and Israel —** and for decades, it has been able to balance between the two sides. But if the conflict widens, it would be difficult for it to maintain an ambivalent position.
  ✓ In the context of such deep ties with both Israel and Iran, India has difficulty in choosing sides.

❖ India's position that there should be **"immediate de-escalation" and "step back from violence" and "return to the path of diplomacy"** is, therefore, crucial to its national interest.

STABILIZING REGIONAL PLATFORM BIMSTEC

Context: Presenting the BIMSTEC Charter in Nepal's Parliament signifies progress towards regional cooperation and economic prosperity for the member states.

The Charter serves as the foundational document, setting out principles and structures for cooperation among member states.

BIMSTEC

- ❖ **About:** The Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC) is a multilateral regional organisation.
- ❖ **Aim:** It was established with the aim of accelerating shared growth and cooperation between littoral and adjacent countries in the Bay of Bengal region.
- ❖ **Origin and Membership:** It was founded as BIST-EC, in June 1997, with the adoption of the Bangkok Declaration, with Bangladesh, India, Sri Lanka and Thailand as members.
  - ✓ It became BIMST-EC (Bangladesh, India, Myanmar, Sri Lanka and Thailand Economic Cooperation) with the entry of Myanmar in late 1997, And eventually, it was named in its current form, when Nepal and Bhutan became members in 2004.
- ❖ **Strength:** The BIMSTEC region hosts 22% of the world population or 1.68 billion people; and the member states have a combined GDP of US$3.697 trillion/per year.
- ❖ **Working Mechanism:** Policy making would be done through two types of meetings:
  - ✓ Summits, which are supposed to be held every two years; and
  - ✓ Ministerial meetings of Foreign and Commerce Ministers of member countries for deciding on trade and economic affairs, to be held once every year. An operational meeting of senior officials to monitor the activities of the grouping is also supposed to be held twice a year.

Significance

- ❖ **Need of formation:** The Bay of Bengal region was one of the world's most integrated regions until the early twentieth century.
  - ✓ But, after the 1940s, members of the region became independent and pursued separate goals and alliance systems, the region's sense of community has almost completely eroded.
- ❖ So, the aim of setting up the regional grouping was not to create a new region for cooperation but to revive the connectivity and common interests of the members of the Bay of Bengal region.
- ❖ **Acting as a bridge:** Its significance lies in the fact that it serves as a direct link between South Asian and South East Asian countries through intra-regional collaboration.
  - ✓ It represents a reinforcement of relations among these countries.
- ❖ **Sector-driven approach:** What makes BIMSTEC different from other regional groupings such as SAARC or ASEAN is that it is a sector-driven organisation.
  - ✓ This means the goals or areas of cooperation are divided between members, for instance, out of the multiple sectors like trade, energy, transport, fishery, security, culture, tourism and so on.
    - ➢ For example, India was made responsible for areas like transportation, tourism and Counter-Terrorism earlier.
    - ➢ After which, India was BIMSTEC's pillar for security; this will include areas of counter Terrorism and Transnational Crime (CTTCC) Disaster Management and Energy.
- ❖ **Alternative to SAARC:** The progress of SAARC has stalled over the years due to Indo-Pak relations and what experts call Pakistan's obstructionist approach to the organisation.
  - ✓ BIMSTEC emerged as an alternative platform for cooperation.

India & BIMSTEC

- ❖ **Importance of BIMSTEC for India:** For India, BIMSTEC aligns with its 'Act East' policy for greater regional cooperation in southeast Asia.
  - ✓ It could also be seen as aligning with India's larger goal to gain trade and security prominence in the Indian Ocean region and to cater to the concept of the 'Indo-Pacific' region, a major focus of Quad countries.
  - ✓ Another important factor for India in becoming a prominent leader in the Bay of Bengal and maintaining peace and security.
- ❖ **India's efforts:** India also made efforts to enhance the pace of BIMSTEC's progress in recent years.
  - ✓ The BIMSTEC Energy Centre was set up in Bengaluru, along with the BIMSTEC Business Council, a forum for business organisations to promote regional trade.
    - ➢ It aims to create free-trade and power grid interconnectivity agreements, and a masterplan for transport connectivity in the Bay of Bengal region.

Challenges

❖ **Sluggish pace:** The first and major challenge, according to foreign policy researchers, is a lack of efficiency and **"sluggish" pace of BIMSTEC's** progress.
  ✓ The inconsistency in holding policy making and operational meetings is also a concern.
❖ **Inadequate assistance:** BIMSTEC secretariat also suffers from inadequate financial and manpower assistance for its operational activities.
❖ **Trade challenges: India's** percentage of annual trade with BIMSTEC countries as a percentage of its total foreign trade was in the double digits in the 1950s, but was just 4% as of 2020.
  ✓ Inter-regional trade within BIMSTEC countries also varies significantly; research shows that member countries trade with each other in terms of the proximity, availability of trade routes and the size of the country's economy.
  ✓ Notably, it was also seen that a lot of the time, BIMSTEC member countries don't import goods that are manufactured and exported by other members, instead importing from other non-member countries.
❖ **Absence of connected coastal ecosystem:** BIMSTEC members are yet to build a shared and lucrative coastal shipment ecosystem and also grapple with frequent detention of fishermen who cross territorial borders.
❖ **Challenges faced by members:** In recent years, the progress of BIMSTEC has also been underscored by Bangladesh-Myanmar relations over the Rohingya refugee crisis, the India-Nepal border issue, and most recently, the political situation in Myanmar.
  ✓ The first half of 2024 may witness elections in Bhutan, Bangladesh, India and Sri Lanka. Most likely, there will be further delay in holding the Summit.

Suggestions & Way Ahead

❖ Trade is one of the priority areas of the BIMSTEC.
  ✓ The progress needs to be made in the BIMSTEC Free Trade Agreement (FTA).
❖ BIMSTEC's connectivity plan is ready, but the real implementation is yet to start.
  ✓ Since the BMCA is ready, the Secretariat may pick up the maritime sector (example, ports, IWT, and shipping) as low-hanging fruit to start with. Besides, trade and transit facilitations must be given top priority along with energy and digital connectivity.
❖ Overall, a stronger secretariat is a must to drive meaningful interactions among member-states.

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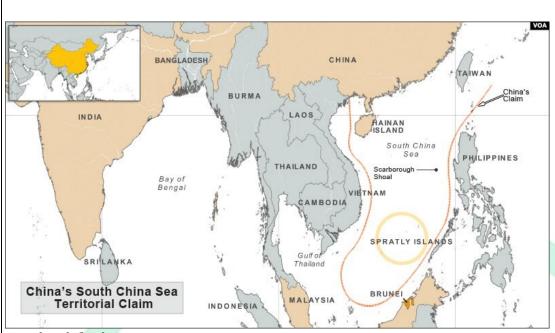## INDIA'S APPROACH IN THE SOUTH CHINA SEA

Context: Recently, India delivered the strategic BrahMos cruise missile and articulated its full support in upholding national sovereignty for the Philippines.

About the South China Sea

- ❖ It is one of the most strategically and economically important waterways in the world, extending from the Strait of Malacca in the southwest, to the Strait of Taiwan in the northeast.
  - ✓ It is a crucial maritime gateway and junction for shipping between the Pacific and Indian Oceans.
- ❖ It is surrounded by several nations, including China, Taiwan, the Philippines, Malaysia, Brunei, Indonesia, Singapore, Cambodia, Thailand, and Vietnam.
- ❖ The region is rich in natural resources, including oil, gas, and fisheries, and serves as a crucial trade route for various economies.

Economic Importance of the Region

- ❖ **Trade Route:** The South China Sea serves as a crucial trade hub for various economies of East Asia, South Asia, and beyond.
  - ✓ A trade of more than $5.3 trillion happens on these waters. It makes up about one-third of all marine traffic.
- ❖ **Natural Resources:** The region has proven oil reserves of around 7.7 billion barrels, with an estimate of 28 billion barrels in all.
  - ✓ Natural gas reserves are estimated to total around 266 trillion cubic feet.
  - ✓ The Philippines is counting on the US and its allies to play a crucial role in its plans to explore energy resources in the disputed South China Sea.
- ❖ **Fisheries:** More than half of the world's fishing vessels are in the South China Sea, and millions of people depend on these waters for their food and livelihoods.

China's South China Sea Territorial Claim

Territorial Disputes

❖ The territorial disputes in the South China Sea primarily involve China and several Association of Southeast Asian Nations (ASEAN) countries.

❖ China claims sovereignty over virtually the entire South China Sea, putting it at odds with the Philippines, Vietnam, Malaysia, Taiwan, and Brunei, who all maintain claims over islands, reefs, and undersea resources in the region.

  ✓ These disputes have implications for the freedom of navigation and overflight.

❖ **The South China Sea dispute essentially revolves around multiple claims to the land features** — islands and reefs — and associated territorial waters.

India and South China Sea

❖ India's stance on the South China Sea has seen a significant shift in recent years, reflecting its broader strategic and economic aspirations on the global stage.

❖ India has been increasing cooperation, defence as well as economic, with these countries to take its resistance to maritime Chinese influence to China's own backyard.

India's Evolving Position

❖ Recently, India articulated its full support for the Philippines in upholding its national sovereignty amid the ongoing South China Sea dispute between Philippines and China.

❖ In 2023, a joint statement between India and Philippines had called for China to adhere to the rules-based maritime order and acknowledge the International Court of Justice (ICJ) ruling (2016) in favour of the Philippines.

  ✓ These are part of an evolving approach that signals a departure from India's earlier more cautionary and neutral position vis-à-vis the South China Sea.

❖ India has significantly enhanced its military and diplomatic engagement with claimant states such as the Philippines and Vietnam.

  ✓ It has been offering military aid and more supportive rhetoric to China's rival claimants.

Economic Stakes and Strategic Engagements

❖ India's engagement with the region was initially primarily economic, driven by its Look East Policy, which aimed to enhance economic integration with Southeast Asia and the imperative to secure energy resources to fuel its growing economy.

❖ The participation of Indian state-owned enterprises, such as the ONGC Videsh, in oil and gas exploration projects in Vietnam's Exclusive Economic Zones (EEZs) and other similar ventures not only signified India's economic stakes in the region but also its support for the principle of freedom of

exploration and exploitation of maritime resources within the bounds of international law, specifically UNCLOS.

Policy Transformation
- ❖ The transformation of India's policy orientation from Look East to Act East has marked a shift towards a more strategic and active engagement with the Indo-Pacific region.
- ❖ It reflects India's acknowledgment of the changing geopolitical landscape and the need for a more proactive and multifaceted foreign policy approach with the Act East Policy emphasising not only economic integration but also strategic partnerships and expanded security cooperation with countries in the Indo-Pacific including Vietnam, Malaysia, and Singapore, besides the Philippines.

Geopolitical Impact and International Stance
- ❖ Major Asia-Pacific economies could lose up to 12% of their GDP if the geopolitical tensions were to force closure of key trade routes in the region.
- ❖ The United States champions a free and open Indo-Pacific and has made clear that Beijing's claims to offshore resources across most of the South China Sea are completely unlawful, as is its campaign of bullying to control them.
  - ✓ The U.S. stands with its ally, the Philippines, in the face of this escalation that directly threatens regional peace and stability.

Way Ahead
- ❖ The disputes in the South China Sea require a political framework, which can only be created through dialogue.
- ❖ Leaders of the Association of Southeast Asian Nations (ASEAN) should try to find a political solution through 'quiet diplomacy'.
  - ✓ The potential for resolving this issue through legal methods is very low.

One of the most important ways to de-escalate the current tensions in the South China Sea for both parties is to avoid hostile actions against each other, uphold a more reconciliatory attitude and emphasise the need to cooperate rather than compete.

GERMANY'S RELATIONSHIP WITH INDIA

Context: Germany has granted a licence to India to purchase small arms from German companies.

About India-Germany Relations
- ❖ **Diplomatic:** Germany is one of India's most important partners in Europe.
  - ✓ India was also among the first countries to establish diplomatic ties with the Federal Republic of Germany after the Second World War.
- ❖ **Strategic Partnership:** India and Germany have a 'Strategic Partnership' since May 2000, which has been further strengthened with the launch of Intergovernmental Consultations (IGC) in 2011 at the level of Heads of Government which allows for a comprehensive review of cooperation and identification of new areas of engagement.
- ❖ **High-level Engagements :** There are regular high-level contacts between India and Germany. PM and Chancellor meet regularly for bilateral meetings and on the sidelines of multilateral meetings
  - ✓ India is among a select group of countries with which Germany has such a dialogue mechanism.
- ❖ **Multilateral Cooperation :** Germany and India support each other on UNSC reforms within the framework of the G4.
  - ✓ Germany joined the Coalition for Disaster Resilient Infrastructure (CDRI) in February 2020 and participated in the first Governing Council meeting in March 2020.
  - ✓ In April 2021, the German Federal Cabinet approved the signing of the amended framework agreement of the International Solar Alliance (ISA), confirming Germany's accession

❖ **Economic & Commercial Relations :** Germany is currently the 12th largest trading partner for India in 2022-23.
   ✓ It was India's 11th largest trading partner in 2021-22 and 7th largest trading partner in 2020-21.
   ✓ India constitutes about 1% of Germany's total foreign trade in 2022.
   ✓ Major Indian exports to Germany include electrical products and automobiles/auto components, textile and garments, chemicals, pharma, metal/metal products, food/beverages and tobacco and leather/leather goods.
   ✓ Major exports to India include machinery automobiles/auto components, chemicals, data processing equipment, and electric equipment
❖ Germany is the 9th largest foreign direct investor in India (8th largest in 2021-22) with a cumulative FDI in India of US$ 14.1 bn. from April 2000 to March 2023.
❖ **Bilateral Cooperation :**   Important bilateral agreements between India and Germany are the Agreement on Avoidance of Double Taxation (DTAA), which came into force in 1996, and the Comprehensive Agreement on Social Security, which entered into force from May 2017
   ✓ The Indo-German Energy Forum (IGEF) has been promoting cooperation in the priority areas of energy security, energy efficiency, renewable energy, investment in energy projects and collaborations in R&D, taking into account the environmental challenges of sustainable development.
❖ **Science & Technology :** Bilateral Science and Technology cooperation is implemented under an Inter Governmental Agreement on 'Cooperation in Scientific Research and Technological Development' signed in 1974
   ✓ The IndoGerman Committee on S&T, established in 1994 coordinates the implementation and reviews joint activities.
❖ **Culture :** The longstanding cultural relations between India and Germany are strengthened by the cultural and intellectual exchanges between the two countries. The study of Indian literature, especially Vedas and Upanishads, and also translation of famous works from Sanskrit to German language significantly contributed to the better understanding of India.
   ✓ The visit of Nobel Laureate Gurudev Rabindranath Tagore to Germany in 1921, 1926 and 1930 bridged cultural and intellectual exchange between India and Germany, further supported by established networks in socio-cultural fields.
❖ **Indian Diaspora :** There are around 2.20 lakh (December 2022) Indian passport holders and Indian-origin people in Germany.
   ✓ There has been a significant in the number of qualified and highly skilled Indian professionals in the fields of IT, banking, finance, etc
❖ **Defence:** Germany has significantly simplified the licensing requirements for the sale of military equipment to India.
   ✓ Germany granted a small arms licence to India. which is a huge exception.
     o Germany for some time has had a bar on the sale of small arms to third countries with the exception of European Union member states, NATO (North Atlantic Treaty Organisation) countries and NATO-equivalent countries (Australia, Japan, New Zealand and Switzerland).
   ✓ The German government has also eased the approval process for defence purchases by India.
   ✓ India has an inventory of MP5 submachine guns manufactured by Heckler & Koch.
   ✓ Germany has also approved the offer of a tank engine and propulsion system for India's indigenous light tank project.
   ✓ In August 2024, the Indian Air Force (IAF) is scheduled to hold the multilateral exercise Tarang Shakti, in which the German Air Force would be joining other countries like the U.K, France, and Spain.

GENERAL STUDIES 3.
ECONOMY

PREVENTION OF MONEY LAUNDERING ACT (PMLA): KEY ASPECTS

Context: The Punjab and Haryana high court has made it clear that courts can order release of an accused of money laundering under police custody without fulfilling twin conditions as mandated under the **Prevention of Money Laundering Act (PMLA), 2002.**

About the Act

❖ PMLA forms the core of the legal framework put in place by India to combat **money laundering.**

❖ PMLA and the Rules notified there under came into force with effect from July 1, 2005 .

  ✓ The PMLA was enacted by India's Parliament under **Article 253** which empowers it to make laws for implementing the international conventions.

❖ The Act seeks to combat money laundering in India and has **three main objectives:**

  ✓ to prevent and control money laundering

  ✓ to confiscate and seize the property obtained from the laundered money

  ✓ to deal with any other issue connected with money laundering in India.

❖ Director, **FIU-IND and Director (Enforcement)** have been conferred with exclusive and concurrent powers under relevant sections of the Act to implement the provisions of the Act.

❖ The Act was amended by the Prevention of Money Laundering (Amendment) Act, 2009 and by the Prevention of Money Laundering (Amendment) Act, 2012.

Emerging Issues

❖ **Crime proceeds:** PMLA revolves around the **"crime proceeds"** which are laundered.

  ✓ persons who have nothing to do with the crime but who have some involvement at a later stage in the laundering process are also guilty under this law.

  ✓ an accused under PMLA is presumed to be guilty until proven innocent.

    ➤ A fundamental principle of **Anglo-Saxon jurisprudence** is that a person is presumed innocent until proven guilty. PMLA turns this principle upside down.

❖ **Large number of Offences:** PMLA **includes a large number of offences in the schedule** which have nothing to do with the original purpose of this law.

  ✓ its ambit has been extended to cover even offences not related to drug trafficking, organised crimes, and other serious crimes.

❖ **Lack of Transparency : Enforcement Case Information Report (ECIR):** the absence of a procedure to commence investigation and summoning, while the accused was not made aware of the contents of the Enforcement Case Information Report (ECIR).

❖ **The bail provision:** The bail provision of the PMLA Act (Section 45) is invested with a lot of political significance in present day India.

  ✓ It was held **unconstitutional by a two-judge Bench of the Supreme Court of India in Nikesh Tarachand Shah vs Union of India (2018**) as violating Article 14 and Article 21.

    ➤ But In 2022, the Supreme Court upheld the validity of various provisions of the Prevention of Money Laundering Act (PMLA) which empowers ED to make arrests, conduct search and seizures and attach proceeds of crime.

Conclusion and Way Forward

- ❖ India as a signatory to the treaties and an important participant in the international process and the fight against money laundering, is bound legally and morally, to adopt the global best practices and respond to the changing needs of the times .
  - ✓ But legal and constitutional safeguards must be kept in mind in this context .
- ❖ The Supreme Court's decision in Pankaj Bansal vs Union of India is a significant step towards enhancing transparency, accountability, and fairness in the arrest procedures under PMLA.
  - ✓ It delved into an important point of law — how is the enforcement directorate (ED) required to "inform" persons arrested under the Prevention of Money Laundering Act, 2002, (PMLA) of the grounds of their arrest.
  - ✓ In addition to increased transparency, the decision will foster better corporate governance.
- ❖ There must be a global consensus on the need to have a law to deal effectively.

INDIA AND AFRICA: FORGING A STRATEGIC PARTNERSHIP

Context: Present circumstances call for a new chapter in India-Africa relations.

India-Africa relations

- ❖ India and Africa have a time-honoured partnership based on shared values and the country enjoys considerable goodwill within Africa.
- ❖ India's trade with Africa has grown from US$ 68.5 billion in 2011-12 to US$ 90.5 billion in 2022-23 and Indian investors have also expanded their footprint in Africa.
- ❖ India is now one of the top five investors in Africa.

Developments

- ❖ India and Africa have made effective contributions to protect the interests of developing countries at international fora, particularly the **World Trade Organisation (WTO).**
  - ✓ They moved joint proposals such as the **Agriculture Framework Proposal** and India and South Africa proposed an intellectual property right waiver for **COVID-19 vaccines at the WTO.**
- ❖ India used its G20 presidency to solidify its position as the leader of the Global South.
  - ✓ The African Union became a full member of the G-20
- ❖ Indian investments in Africa reached $98 billion in 2023, with trade totalling $100 billion.
- ❖ Indian social enterprises and NGOs are exporting low-cost, scalable solutions, from eco-friendly houses to rural women solar engineers.

Importance

- ❖ Africa's significant growth rate of **3.8 per cent** and its young population, with 60 per cent under the age of 25, estimated to reach 1.1 billion people by 2040.
- ❖ **Global forums:** Africa's influence in global forums will be important for India's vision for global governance.
  - ✓ As the Global South houses three-fourths of humanity and over 39 per cent of the global GDP.
- ❖ **Cooperation in the critical minerals sector:** Africa, with 30 percent of the world's mineral reserves, is vital to power the energy transition.
  - ✓ To **build solar panels and batteries necessary for a low-carbon future**, access to minerals classified as "**critical", "transition" or "green**" is key.
  - ✓ Given the geographical concentration of critical minerals, diversifying sources and fostering strategic partnerships with resource-rich nations are imperative for India's growth and national security.

Challenges

❖ The **twin shocks of the COVID-19 pandemic** and the **Ukraine-Russia conflict** have dealt heavy blows to African economies and much of the continent is currently reeling under **debt distress and food insecurity.**

❖ **China** has emerged as one of largest trading partners and one of largest investors in the African continent through its steady diplomacy and extensive economic engagement.

❖ The **inordinate delay** in the **fourth India-Africa Forum Summit**, after three consecutive summits in 2008 (New Delhi), 2011 (Addis Ababa), and 2015 (New Delhi), does not bode well for the partnership.

Conclusion and Way Forward

❖ In this era of geopolitical competition and realignment, India's multifaceted relationship with African nations is poised for a fundamental transformation.

  ✓ As India's aspirations for the Global South take shape, leveraging historical partnerships with African countries remains imperative.

❖ India should actively engage with the AU to hold the India-Africa Forum Summit as soon as possible.

  ✓ The India-Africa Forum Summit should build on the gains made at the G20 summit and spell out the agenda for the future.

❖ **Africa's food security and agricultural** transformation should be one of the top priorities for India-Africa engagement in the coming years.

❖ Given India's longstanding commitment to education and capacity building in Africa, New Delhi could revamp existing collaborations or establish new ones with African technical organisations.

  ✓ This endeavour would bolster negotiation skills, training in project management, and devising industry-specific technical courses.

❖ Indian research institutes engaging with Africa's research community can facilitate the creation of solutions to address Global South challenges.

HYDROPONIC FARMING

Context: In the wake of evolving consumer preferences, Hydroponic Farming has emerged as, at the forefront of an agricultural transformation.

Hydroponic Farming

❖ The Hydroponic System is a system of **growing crops without soil**, often called soilless farming. In this system, the plant roots grow in a liquid nutrient solution or inside the moist inert materials like **Rockwool and Vermiculite**.

❖ The liquid nutrient solution is a mixture of essential plant nutrients in the water.

❖ The plant roots are suspended either in the static liquid solution or in a continuously flowing nutrient mixture.

Suitable Regions for Hydroponic Farming

❖ **Areas with Limited Water Supply:** Hydroponics drastically reduces water usage, making it ideal for drought-prone areas.

❖ **Rocky Regions:** In places where the terrain is unsuitable for soil-based agriculture, hydroponics offers a practical alternative.

❖ **Low Soil Fertility Areas:** Hydroponics bypasses the need for fertile soil, allowing cultivation in regions with poor soil quality.

❖ **Demand-Driven Areas:** Regions with a high demand for fresh products are perfect for hydroponic farms, catering to health-conscious consumers in urban and semi-urban locales.

The Edge with Hydroponic Farming

❖ **Higher Yields:** The efficiency and controlled environment of hydroponic systems result in substantially higher crop yields.

❖ **Resource Efficiency:** The recycling of water and nutrients significantly cuts down on input costs and environmental impact.

❖ **Labour and Maintenance Savings:** The absence of weeding and traditional cultivation reduces labor requirements and costs.

❖ **Pest and Disease Reduction:** By eliminating soil, hydroponics reduces the risk of soil-borne diseases and pests.

JOBLESS GROWTH: KEY CONCERNS

Context: According to a study by the Indian Institute of Management (IIM), Lucknow there is a surge in output growth and employment from 1987–88 to 2004–05, followed by **'jobless growth'** from 2004–05 to 2018–19.

❖ Even the premier institutions are struggling to place students in the Campus Placements.

Key Findings

❖ The study highlights the **growing level of unemployment for the highly educated youth** than the less educated.

  ✓ The unemployment for the illiterate and less educated class (below primary) was 0.57% and 1.13% respectively while, for the highly educated class (graduates and above), it was 14.73% in 2020–21 for the age group '15–29 years'.

❖ **Gender disparity** in the labour market: There is a persistence of gender-based disparity in the Labour Force Participation Rate (LFPR) in rural and urban areas and the decline of LFPR is higher for females as compared to males from 1983 to 2020–21.

  ✓ The overall female Work Force Participation Rate (WFPR) for those aged 15–59 in 2020–21 stood at 32.46%, a full 44.55 percentage points below that of men.

What Is Jobless Growth?

❖ The concept of jobless growth refers to a situation where economic growth does not lead to job creation.

  ✓ This phenomenon can occur when a country emerges from a recession, and despite an expanding economy, unemployment remains the same or worsens.

Factors

❖ **Global economic slowdown:** It is likely to force more workers to accept lower quality, poorly paid jobs which lack job security and social protection.

❖ **Focus on Limited Sectors:** In India, jobless growth has become a significant problem because much of the country's economic growth is driven by finance, real estate, and IT sectors, which are not major job creators.

❖ **Lack of skills:** Additionally, **India's education and training system** has been criticized for not equipping graduates with the skills employers require.

❖ **Underutilisation of resources:** The industrial sector does not work to its maximum capacity due to lack of adequate machinery and supply of raw materials due to which they are unable to hire maximum workers in factories.

  ✓ The stagnant rate of growth and high rates of unemployment occurs as a result of a shortage in capital equipment.

❖ **Informal sectors:** As India is a developing country with a majority of population living in the rural areas, people are more dependent on informal jobs that are irregular in nature with several health hazards

  ✓ The **agricultural sector,** though employing the most youth, contributed low value-added to the overall economy, resulting in significant employment challenges.

Impacts

❖ Jobless growth leads to underutilization of labour and human capital resulting in lower productivity in the economy.

❖ This will further aggravate poverty, malnutrition and lower per capita income of the population.

❖ Falling employment and earnings undermine India's chances to fuel the economic growth needed to create jobs for its young and growing population.

Indian initiatives to improve employability

❖ **National Skill Development Corporation (NSDC):** Launched in 2015, as a public-private partnership that finances and oversees various skill development programs across India.

❖ **Pradhan Mantri Kaushal Vikas Yojana (PMKVY):** A flagship scheme offering short-term, industry-relevant skill training programs to youth.

❖ **Digital skilling programs**: Equipping individuals with the necessary skills to thrive in the digital economy.

❖ **Apprenticeship programs**: Encouraging industry participation in providing on-the-job training to fresh graduates.

Suggestions and Way Ahead

❖ India's economic growth is promising, but job creation and education quality remain significant challenges.

   ✓ Therefore, addressing these issues requires a focus on mass education, quality teachers, and conditions for labour-intensive manufacturing, along with creating a safer environment for women in the workforce.

❖ There is also a need for increased investment from the government and diversification in the agricultural sector will not only increase productivity but also help to reduce unemployment.

❖ On-the Job training and employment subsidies can be provided to the existing employees to improve their current skills and to increase job satisfaction and reduce shifts from one job to another.

HOUSEHOLD CONSUMPTION EXPENDITURE SURVEY (HCES) 2022-23

Context: The National Sample Survey (NSS) Office released the **key results** of the **Household Consumption Expenditure Survey (HCES) 2022-23.**

About

❖ **The National Sample Survey Office (NSSO) under Ministry of Statistics and Programme Implementation** has been conducting household surveys on **consumption/consumer expenditure** at regular intervals as part of its rounds, normally of **one-year duration**.

❖ **Since 1972**, NSSO has been conducting the Consumer Expenditure Survey.

❖ It is designed to collect i**nformation on consumption of goods and services** by the households.

❖ The survey aims at generating estimates of household **Monthly Per Capita Consumption Expenditure (MPCE)** and its distribution separately for the rural and urban sectors of the country, for States and Union Territories, and for different socio-economic groups.

Methodology Used

❖ In the present survey, three **3 questionnaires** were used, covering:

❖ Food items;

❖ Consumables and services items, and;

❖ Durable goods used.

❖ The survey had a separate **provision for collection of information** on the quantity of consumption of the number of items received and consumed by the households **free of cost through various social welfare programmes.**

Changes in the Methodology

❖ First, there is **change in item coverage** with inclusion of new items and merging some of the obsolete items. Overall, the **number of items covered has increased from 347 to 405 items.**

❖ Secondly, there have been changes in the **questionnaire of the survey.**

   ✓ Instead of a single questionnaire as used in earlier surveys, HCES 2022-23 uses **four separate questionnaires** for food, consumables and services items, and durable goods, apart from a separate questionnaire for canvassing household characteristics to be used in three separate monthly visits in a quarter.

   ✓ Thus, there have been **multiple visits for data collection** instead of the usual practice of a single visit in the earlier surveys.

Major Findings

❖ **Rise in Income:** The income levels of both the Urban and Rural households have risen since the last survey, with Rural households showing a sharper growth in spending.

❖ **Rise in MPCE:** The average Monthly per capita consumption expenditure of both Urban and Rural households has doubled in the 11-year period with both spending less on food items.

   ✓ Of the total expenditure, 46% was spent on food items in Rural households and 39% in Urban homes in 2022-23.

❖ **Spending increased in Rural Households:** Household spending increased 2.6 times in Rural areas and 2.5 times in Urban areas since the last survey in 2011-12.

   ✓ The gap between Urban and Rural household consumption has narrowed, and Indian households have been spending more on non-food items.

❖ **Gap Between Rich and Poor:** The top 5% of India's Rural population has 7 times the MPCE of the bottom 5 % rural population.

   ✓ The top 5 % of India's urban population has 10 times the MPCE of the bottom 5 % Urban population.

❖ **Among the States,** the MPCE is the highest in Sikkim for both rural (₹7,731) and urban areas (₹12,105).

   ✓ It is the lowest in Chhattisgarh, where it was ₹2,466 for rural households and ₹4,483 for urban household members.

It can be inferred from the data presented in the survey that:

❖ The difference between Rural and Urban MPCE has **narrowed substantially** over the years, implying the success of government policies in improving Rural incomes.

❖ While the difference is more pronounced at the lower levels, the gap is bigger at the top, reflecting an **increase in inequality at higher income levels.**

❖ The poorest Rural households have been able to spend at a much closer level to their Urban Counterparts, implying that government's policy initiatives for enhancing Rural incomes have worked to an extent.

WOMENOMICS REFORMS- LESSONS FOR INDIA

Context: Despite Japan facing challenges such as low birth rates, a shrinking population, and slow economic growth, reforms promoting "womenomics" were implemented during the "Abenomics" (Tenure of PM Shinzō Abe)period. Now, these reforms are yielding positive outcomes

The women's labour force participation rate (WLFPR) in Japan has increased by ten percentage points, rising from 64.9% in 2013 to 75.2% in 2023. This marks the fastest growth in Japan's WLFPR in recent decades and stands as the highest among G7 countries over the past decade. It's estimated that this rise in women's labour force participation rate could boost Japan's GDP per capita by 4% to 8%.

What reforms were undertaken by Japan to enhance participation of women in labour force?

1. **Investment in care economy-**The government's investment in expanding daycare capacity from 2.2 million in 2012 to 2.8 million in 2018 has decreased daycare waiting lists. Further, in 2023, Japan's government announced an additional investment of $26 billion for childcare measures from 2023 to 2026.
2. **Rebalancing of gender norms–** From 2022,the government has introduced greater flexibility in paternity leave provisions such as reduced notice periods, and allowing men to break up their paternity leave. This has resulted in boosting paternity leave uptake from 2 per cent in 2012, to 17 per cent in 2023.

What are the lessons that India can learn from Japan to boost its Female Labour Force Participation Rate?

1. India can also invest in long-term public support for care infrastructure and services, particularly childcare.
2. India can enhance paternal leave uptake among men by adopting an employer-led approach that dispels gender stereotypes around care work. However, this would also require change in people's mindsets.
3. India can invest in various care services like childcare, elder care, domestic assistance, and long-term care for those with high needs. This helps decrease dependency and taps into the growing market for elder care services. For ex-Japan has collaborated with the private sector to invest in affordable senior living and care. With India's elderly population expected to double by 2050, it can also make similar investments in elder care infrastructure.

What are the policy changes that can be made by India to improve its Female Labour Force Participation Rate?

There is a need to adopt a five-pillar strategy to unlock business opportunities in India's care economy, such as-

1. There should be formulation of gender-neutral and employee friendly paternity leave policies.
2. Government should provide subsidies for availing/providing care services.
3. Public and private sector should enhance investment in care infrastructure and services.
4. There should be skill development programmes for care workers.
5. Government should pay attention to quality assurance for care services and infrastructure.

HORTICULTURE CLUSTER DEVELOPMENT PROGRAMME (CDP)

Context: The government has come up with a new platform to disburse subsidies to horticulture farmers under the **Cluster Development Programme (CDP)** known as **CDP-SURAKSHA.**

CDP-SURAKSHA

❖ The CDP-SURAKSHA is essentially a digital platform. SURAKSHA stands for **"System for Unified Resource Allocation, Knowledge, and Secure Horticulture Assistance."**
❖ The platform will allow **an instant disbursal of subsidies to farmers** in their bank account by utilising the **e-RUPI** voucher from the **National Payments Corporation of India (NPCI).**
  ✓ The voucher is a **one-time payment mechanism** that can be redeemed without a card, digital payments app or internet banking access, at the merchants accepting e-RUPI.
  ✓ e-RUPI can be shared with the beneficiaries for a specific purpose or activity by organisations or government via SMS or QR code.
❖ **Significance:** The CDP-SURAKSHA platform will provide subsidies to farmers upfront, at the time of purchasing the planting material.
  ✓ Vendors, who will supply planting materials to farmers, will receive their payment only after farmers verify the delivery of their orders.
  ✓ The move seeks to push the growth of India's horticulture sector.

Horticulture Sector in India

- ❖ Horticulture is the science and art of **cultivating fruits, vegetables, flowers, and ornamental plants**.
  - ✓ It encompasses a wide range of activities including **plant propagation, production, management, and marketing.**
- ❖ The Indian horticulture sector contributes about **33% to the agriculture Gross Value Added (GVA)** making a very significant contribution to the Indian economy.
- ❖ India is currently producing about **320.48 million tons of horticulture produce** which has surpassed the food grain production, that too from much less area.
  - ✓ Productivity of horticulture crops is much higher compared to productivity of food grains.
- ❖ At present, India is the **second largest producer** of vegetables and fruits in the world.
  - ✓ India ranks first in the production of a number of crops like Banana, Lime & Lemon, Papaya, Okra.
- ❖ India's advantage lies in being a **low-cost producer of fruits and vegetables because of a combination of factors such as** favourable agro-climatic conditions, availability of labour, and low input costs.
  - ✓ As a result, fruits and vegetables account for almost 90% of the total horticulture production in the country.

Challenges Faced by the Sector

- ❖ **Lack of Infrastructure:** Insufficient infrastructure for post-harvest handling, storage, and transportation leads to significant losses of perishable horticultural produce.
- ❖ **Water Management:** Horticulture is water-intensive, and water scarcity or inefficient water management practices affect crop yields and quality.
- ❖ **Pest and Disease Management:** Pests and diseases cause significant damage to horticultural crops, and the misuse of pesticides lead to environmental pollution and health hazards.
- ❖ **Market Linkages:** Limited market linkages and price fluctuations affect farmers' income and discourage investment in horticultural production.
- ❖ **Climate Change:** Erratic weather patterns, including unpredictable rainfall and temperature fluctuations, pose challenges to horticultural production and require adaptation strategies.
- ❖ **Quality Standards and Certification:** Meeting quality standards and obtaining certification for export markets can be challenging for small-scale horticultural producers.

Government of India Initiatives for the Promotion of Horticulture Sector

- ❖ **National Horticulture Mission (NHM):** Launched in 2005-06, NHM aims to promote holistic growth of the horticulture sector by enhancing production, productivity, and quality of horticulture crops.
  - ✓ It focuses on creating infrastructure, providing technical assistance, and promoting market linkages.
- ❖ **National Horticulture Board (NHB):** NHB provides financial assistance, technical guidance, and market intelligence to horticulture growers, processors, and exporters to promote production, processing, and marketing of horticultural crops.
- ❖ **Cluster Development Program (CDP):** The CDP is a component of the central sector scheme of NHB.
  - ✓ It is aimed at leveraging the geographical specialisation of horticulture clusters and promoting integrated and market-led development of pre-production, production, post-harvest, logistics, branding, and marketing activities.
  - ✓ So far, 55 horticulture clusters have been identified, out of which 12 have been selected for the pilot.
- ❖ **Mission for Integrated Development of Horticulture (MIDH):** MIDH, launched in 2014, integrates various horticulture development schemes under one umbrella to provide holistic support for the entire value chain, from pre-production to post-harvest management and marketing.

- ❖ **Rashtriya Krishi Vikas Yojana (RKVY):** RKVY supports states in planning, implementing, and monitoring their horticulture development strategies by providing financial assistance for infrastructure development, capacity building, and other interventions.
- ❖ **Sub-Mission on Agriculture Mechanization (SMAM):** SMAM supports the adoption of mechanization in horticulture for activities like land preparation, planting, harvesting, and post-harvest management to improve efficiency and reduce labor dependency.

GAS BASED POWER GENERATION IN INDIA

Context: The Centre has directed all gas-based power generating stations to operationalise their plants from May 1 to June 30 in view of rise in electricity demand due to an early onset of the heat wave this summer.

India's Gas Based Energy Sector

- ❖ The Central Electricity Authority under the Ministry of Power, monitors 62 gas based power stations, with a total capacity of 23,845 MW using gas as primary fuel.
- ❖ India's natural gas demand is expected to rise by 6 percent in 2024 with a rise in consumption in fertiliser units, power generation and industrial sectors, according to the International Energy Agency (IEA).
- ❖ India is the 4th largest importer of liquefied natural gas (LNG).
- ❖ **Significance:** Gas-based power plants offer several advantages, including lower emissions and quicker ramp-up times compared to coal-based plants.
  - ✓ However, the share of gas-based power generation in India's total power mix remains relatively small compared to coal and renewable energy sources.

Need for the Gas Based Power Generation in India

- ❖ **Cleaner Energy Source:** Gas-based power generation emits fewer pollutants compared to coal-based power plants, making it a cleaner option, especially in urban areas where air quality is a significant concern.
- ❖ **Flexibility and Efficiency:** Gas-based power plants are highly efficient and offer greater operational flexibility compared to coal-based plants.
- ❖ **Reduced Dependence on Coal:** India heavily relies on coal for electricity generation, but diversifying the energy mix with gas can reduce this dependence, enhancing energy security and reducing vulnerability to supply disruptions.
- ❖ **Rapid Deployment:** Gas-based power plants can be constructed relatively quickly compared to large-scale coal or nuclear plants.
  - ✓ This rapid deployment capability makes them a viable option for meeting short-term increases in electricity demand.

Challenges Faced by the Sector

- ❖ **Import of Natural Gas:** India has limited domestic natural gas reserves, and the majority of its natural gas consumption is met through imports.
  - ✓ Despite efforts to explore and exploit domestic reserves, India still relies heavily on imported natural gas, primarily from countries like Qatar, Australia, and the United States.
- ❖ **Infrastructure Constraints:** The development of infrastructure, including pipelines, LNG terminals, and city gas distribution networks, is essential for the efficient transportation and distribution of natural gas.
  - ✓ However, the expansion of infrastructure in India has been hampered by factors such as land acquisition issues, regulatory hurdles, and funding constraints.
- ❖ **Competitive Pricing:** Natural gas competes with other energy sources such as coal, renewable energy, and imported liquefied petroleum gas (LPG) in India.
  - ✓ The pricing of natural gas relative to these competing fuels influence its attractiveness for various applications, including power generation, industrial use, and transportation.

❖ **Environmental Concerns:** While natural gas is considered a cleaner alternative to coal and oil, its extraction, transportation, and combustion still produce greenhouse gas emissions.
   ✓ Addressing environmental concerns related to methane leakage, air pollution, and carbon emissions is crucial for the sustainable development of the gas-based energy sector.

Government Initiatives to Increase Gas Based Energy

❖ **Infrastructure Development:** A total of 23,391 km of the natural gas pipeline is operational and about 4,125 km of the gas pipeline is under construction as of Feb 2024.
   ✓ Target to increase the pipeline coverage by ~54% to 34,500 km by 2024-25 and to connect all the states with the trunk natural gas pipeline network by 2027.
❖ **Pradhan Mantri Urja Ganga (PMUG):** Launched in 2016, PMUG aims to develop the natural gas pipeline infrastructure in eastern India, connecting gas sources and major demand centers.
   ✓ The project involves the construction of a pipeline connecting Uttar Pradesh to West Bengal, passing through Bihar, Jharkhand, and Odisha.
❖ **City Gas Distribution (CGD) Network Expansion:** The government has been promoting the expansion of CGD networks across India to increase access to piped natural gas (PNG) for households, industries, and commercial establishments.
   ✓ Under the CGD bidding rounds, licenses are awarded to entities for developing CGD networks in geographical areas identified by the Petroleum and Natural Gas Regulatory Board (PNGRB).
❖ **Natural Gas Marketing Reforms**: The government has introduced reforms in the marketing of natural gas to enhance transparency, promote competition, and attract investment in the sector.
❖ **Gas Price Rationalization:** Reforms such as the New Domestic Gas Pricing Guidelines (2014) and the introduction of the Hydrocarbon Exploration and Licensing Policy (HELP) have aimed to provide pricing incentives for domestic gas producers while balancing the interests of consumers.
❖ **Natural Gas Infrastructure Development Fund (NGIDF):** The government has set up the NGIDF to provide financial support for the development of natural gas infrastructure in India.
❖ **Promotion of LNG Imports and Terminals:** The government has encouraged investment in LNG import terminals to diversify gas supply sources and enhance energy security.

INDIA'S DEMOGRAPHIC DIVIDEND

Context: Recently, the International Monetary Fund (IMF) has suggested that India needs to focus on investing heavily in education and health to ensure that its growing, young population is adequately employed.

Understanding the Demographic Dividend

❖ It refers to the economic growth potential that results from shifts in a population's age structure, mainly when the share of the working-age population **(15 to 64 years old)** is larger than the non-working-age **population (14 or younger and 65 or older).**
   ✓ The change in age structure is typically brought on by a decline in fertility and mortality rates.

Key areas where a country can find demographic dividends

❖ **Savings —** During the demographic period, personal savings grow and can be used to stimulate the economy.
❖ **Labour Supply —** More workers are added to the labour force, including more women.
❖ **Human Capital** — With fewer births, parents are able to allocate more resources per child, leading to better educational and health outcomes.
❖ **Economic Growth** — GDP per capita is increased due to a decrease in the dependency ratio.

Demographic Dividend of India

❖ India, with its large and young population, is currently experiencing a demographic dividend.
   ✓ It is expected to last until 2055, providing India with a unique opportunity to boost its economic growth.
❖ India is expected to add another 183 million people to the working-age group between 2020 and 2050.

❖ This change in the age structure of the population can lead to a 'demographic dividend' of economic growth if it is accompanied by sustained investments in education and health, and policies that promote labour force participation.

Need for Investment in Education and Health

❖ According to the IMF's Asia and Pacific Department, if India really wants to benefit from this population adding to the labour force, it has to invest big time in both education and health.
  ✓ It emphasised that he would prioritise that much more so than other kinds of spending.
❖ The labour force needs to have the right skills, competing with AI and other such challenges.

Current Economic Scenario

❖ Growth in India was led by public investment and private consumption.
❖ While Public Capex spending **(for example infrastructure)** had a 'very beneficial' impact on growth, the issue was whether it had crowded in private investment.
❖ The IMF has projected a growth rate of **6.8%** for India's economy in FY 2024/25 notwithstanding the high rate of unemployment among youth, which according to some estimates was just **above 40% in** 2022-23.
  ✓ According to the IMF, private investment is on the weaker side, and it is continuously improving and argued as good for the future.

Challenges and Associated Risks

❖ **Lack of Job Creation:** The World Bank has warned that South Asia, including India, is not making use of its demographic dividend as the pace of job creation in the region fell well short of the growth in the working-age population.
  ✓ Even before the Covid-19 pandemic hit, unemployment levels in India had hit a 45-year high.
❖ **Low Human Capital Base and Lack of Skills:** Poor human capital formation is reflected in low employability among India's graduates and postgraduates.
  ✓ According **to ASSOCHAM,** only 20-30% of engineers find a job suited to their skills. It is a big challenge as skilling and reskilling are vital in current times because of the increasing new fields and opportunities.
❖ **The ongoing transformation of India's economy from primarily agrarian to more non-agrarian presents two challenges:**
  ✓ Changing people's skills to transit from the agricultural sector to either manufacturing or services, and;
  ✓ Requiring workers to change location, as non-agricultural employment opportunities tend to be in urban centres far from rural India.
❖ **Health Crisis and Macroeconomic Shocks:** With its large population, India faces many challenges, including coping with today's health crisis, creating more jobs, managing macroeconomic shocks and mitigating climate change.
❖ **Gender Disparity:** While gender inequality remains an issue in many parts of India, there has been significant progress in recent years toward gender equality.
  ✓ It includes increasing levels of education and workforce participation among women, which can help to further increase the size and productivity of the workforce.
❖ **Inadequate Investment in Education and Health:** To reap the benefits of the demographic dividend, India needs to invest heavily in education and health.
  ✓ It is crucial to equip the workforce with the right skills to compete in the modern economy.

Way Forward

❖ To reap the benefits of the demographic dividend, India needs to invest heavily in education and health.
❖ It is crucial to equip the workforce with the right skills to compete in the modern economy.
❖ Forward-looking policies incorporating population dynamics, education and skills, healthcare, gender sensitivity, and providing rights and choices to the younger generation are needed.

DEMOGRAPHIC DIVIDEND

UNFPA ON INDIA'S POPULATION

Context: According to a recent report by the United Nations Population Fund (UNFPA), India's population is estimated to have reached 1.44 billion, with 24% in the 0-14 age bracket.

About

❖ **The UNFPA's State of World Population –** 2024 report, titled 'Interwoven Lives, Threads of Hope: Ending Inequalities in Sexual and Reproductive Health and Rights', revealed that India's population is estimated to double in 77 years.
❖ India leads globally with an estimated population of 1.44 billion, followed by China at 1.425 billion.
  ✓ India's population was recorded at 1.21 billion during the last census, conducted in 2011.
❖ **Demographic Categorisation in India:**
  ✓ An estimated 24% of India's population is aged 0-14, while 17% is within the 10-19 age range.
  ✓ The segment aged 10-24 is estimated to constitute 26%, with the 15-64 age group making up 68%.
  ✓ Additionally, 7% of India's population is aged 65 years and above, with men having a life expectancy of 71 years and women 74 years.

Key Takeaways from the Report

❖ **Progress in Sexual and Reproductive Health:** Over the past 30 years, significant strides have been made in fulfilling the International Conference for Population and Development (ICPD) agenda.
  ✓ The global rate of unintended pregnancies has fallen by nearly 20% globally.
  ✓ The number of women using modern contraceptive methods has doubled.
  ✓ At least 162 countries have adopted laws against domestic violence, and maternal deaths have decreased by 34% since 2000.
❖ **Persistent Inequalities:** Despite the progress, millions are still denied their health and rights every day.
  ✓ Gender-based violence remains rampant in practically every country and community.
  ✓ There has been zero reduction in maternal mortality since 2016, and in an alarming number of countries, the rates are rising.
  ✓ Nearly half of women still are unable to make decisions about their own bodies.
❖ **Marginalised Groups:** The report shows that although women across socioeconomic classes and ethnicities say barriers to health care have come down over time, the women most marginalised have experienced the least improvement.
  ✓ Women of African descent are found to be more vulnerable to obstetric mistreatment and negative maternal health outcomes.
  ✓ Indigenous women are often denied culturally appropriate maternal health care, and their own childbirth practices may be criminalised, resulting in significantly higher risk of death in pregnancy and childbirth.

Key concerns highlighted in the report

❖ **Discrimination and Stigma:** The report highlights the role racism, sexism, and other forms of discrimination continue to play in blocking broad gains in sexual and reproductive health for women and girls.
  ✓ Women and girls with disabilities face up to 10 times more gender-based violence while also facing higher barriers to sexual and reproductive information and care.
  ✓ LGBTQIA+ people face serious health disparities in addition to – and as a result of – discrimination and stigma.
❖ **Health and Social Challenges:** The report has found that 30 years of progress in sexual and reproductive health has mostly ignored the most marginalised communities worldwide.
  ✓ According to it, the child marriage percentage in India was at 23% between 2006-2023.

- ✓ The maternal deaths in India have fallen considerably, accounting for 8% of all such fatalities worldwide.
- ✓ However, the report noted that India continues to see inequities in maternal death risk.

Conclusion and Way Forward

- ❖ The report suggests that to fulfil the promise of universal sexual and reproductive health and rights, one needs to root out inequalities from our health systems and policies and focus as a priority on those women and young people who are most marginalized and excluded.
- ❖ On the other hand, the large young population presents a significant opportunity for economic growth and development.
  - ✓ However, it also underscores the need for continued efforts in improving health and social outcomes, particularly for the most marginalised communities.

INDIA'S AGEING POPULATION

Context

- ❖ Article unveils critical Insights into Elderly Care in India.

About

- ❖ The world's population is living longer and growing older.
- ❖ Embracing and planning for this massive demographic transition is one of the greatest social challenges of the 21st century.

Data Analysis

- ❖ India is moving towards a future where the elderly will make up a significant proportion of society, primarily due to advances in health care and increased life expectancy.
- ❖ The current elderly population of 153 million (aged 60 and above) is expected to reach a staggering 347 million by 2050.
- ❖ According to Census 2011, India has 104 million older people (60+years), constituting 8.6% of total population.
  - ✓ Amongst the elderly (60+), females outnumber males.

Concerns and Challenges

- ❖ Social-cultural mindsets and norms that label the elderly as a "burden", elderly abuse, as well as a lack of comprehensive safety nets increase the vulnerability of older individuals manifold.
- ❖ Households with smaller families and a growing number of older people, who may suffer from chronic illness
- ❖ Care for seniors at home is a growing concern as it oscillates between social care and health care.
  - ✓ Care practices at home are not well-defined and standardised.
  - ✓ There are no specific grievance redressal mechanisms for either the users or the caregivers.
- ❖ **Impact on women:** Poverty is inherently gendered in old age when older women are more likely to be widowed, living alone, with no income and with fewer assets of their own, and fully dependent on family for support.
- ❖ The ageing population could turn out to mean serious economic trouble unless India manages to grow its economy at a rapid pace in the coming decades.

Steps of India

- ❖ the Government of India has made positive strides with its forward looking and inclusive policies, programmes, and schemes such as the National Programme for Health Care of the Elderly (NPHCE),
  - ✓ the National Social Assistance Programme (NSAP), the Maintenance and Welfare of Senior Citizens Act, 2007 and the (Amendment) Bill, Atal Vayo Abhyuday Yojana' (AVYAY), and Elderline–a national helpline, among others.

✓ It was also a frontrunner in addressing the concerns of the elderly through its National Policy on Older Persons (NPOP) in 1999, three years before the Madrid International Plan of Action on Ageing (MIPPA).

✓ The National Programme for Health Care of Elderly and Health and Wellness Centres under the Ayushman Bharat programme provide dedicated healthcare to elderly at primary health care settings.

Conclusion and Way Forward

❖ India still stands at a pivotal crossroads– facing an ageing population that demands a comprehensive framework of care, new institutions, services, and support dedicated to the evolving needs of the elderly

❖ As India ages, it is imperative to ensure that elderly population has access to the care and support they need to live healthy, dignified, and fulfilling lives.

❖ India can redefine the narrative from one of demographic challenge to demographic resilience, inclusivity and growth.

✓ To achieve this, India must chart a transformative multi-pronged path with supportive institutions such as the private sector, academia, civil society

❖ There is a need for a comprehensive policy on home-based care, incorporating aspects such as a registry of providers of such services; ensuring transparency and accountability; establishing grievance redressal mechanisms; and insurance coverage, among others.

✓ The policy should particularly cater to the more vulnerable and dependent older single women so that they can live respectable and independent lives.

❖ This is precisely the right moment for India to not only focus on reaping the benefits of Demographic Dividend through its hefty youth population but to also embrace the concept of "Silver Dividend".

❖ To achieve this, India must chart a transformative multi-pronged path with supportive institutions such as the private sector, academia, civil society, media

INFRASTRUCTURE

INFRASTRUCTURE AND CONNECTIVITY ALONG LAC IN ARUNACHAL PRADESH

Context: Recently, India has accelerated the efforts to improve infrastructure and connectivity along the Line of Actual Control with China.

Enhanced Connectivity and Development

❖ The Line of Actual Control (LAC) in Arunachal Pradesh, a contested border area between India and China, has seen significant developments in infrastructure and connectivity in recent years.

Boosting Connectivity:

❖ The **Indian Army** has been instrumental in connecting remote areas of the state, speeding up efforts to improve infrastructure along the LAC.

❖ It has both military and civilian advantages, boosting tourism and quickening the Army's movements.

❖ The work on the 2,400-km-long **Trans Arunachal Highway** is nearing completion, and the focus of infrastructure development has shifted to the trans-frontier highway, which will connect all the valleys in the state.
   ✓ It aims to significantly reduce time and effort for both military and general movement, especially in eastern Arunachal Pradesh.

❖ **Nechiphu Tunnel:** It is the 500-metre long Nechiphu Tunnel on **Balipara-Chariduar-Tawang Road in Arunachal Pradesh**. This tunnel, along with the under construction **Sela Tunnel,** will provide all-weather connectivity to the **strategic Tawang Region.**

Enhancing Surveillance:

❖ In the last few years, the Army has significantly upgraded firepower and infrastructure along the LAC in the Tawang sector of Arunachal Pradesh.

❖ The pace of capability and infrastructure development in the rest of the state has gained significant pace in the last few years.

❖ This includes road infrastructure, bridges, tunnels, habitat and other storage facilities, aviation facilities, and upgradation of communications and surveillance.

Associated Challenges

❖ **Geographical Challenges:** The areas along the LAC in Arunachal Pradesh are characterised by high-altitude terrain and sparse population.
   ✓ It makes infrastructure development and connectivity a challenging task.

❖ **Educational Limitations:** The remote areas along the LAC have limited access to quality education.
   ✓ It is a significant challenge as it affects the quality of life for the residents of these areas.

❖ **Financial Constraints:** The cost of infrastructure development in these remote and difficult terrains is high.
   ✓ It poses a significant challenge in terms of resource allocation and management.

❖ **Security Concerns:** The proximity to the contested border with China adds a layer of complexity to the infrastructure development process.
   ✓ Ensuring the security of the infrastructure projects and the workers involved is a major challenge.

❖ **Lack of Last-Mile Connectivity:** While major highways and other connectivity improvements are being constructed, providing last-mile connectivity to the most forward posts is a significant challenge.

Related Government Initiatives

❖ **Inter-state Border Areas Development Programme (ISBADP):** It aims to provide facilities for the socio-economic development of the people living along the Inter-State boundary with Assam.

- ✓ Projects taken up under this program are to ensure sustainability and provide value addition to any given product.

❖ **Border Areas Development Department (BADP):** It is to meet the special developmental needs and well-being of the people living in remote and inaccessible areas situated near the International Boundary (IB).

- ✓ The provision of essential infrastructure facilities and opportunities for sustainable living would help integrate these areas with the hinterland, create a positive perception of care by the country and encourage people to stay on in the border areas, leading to safe and secure borders.

❖ **Infrastructure Development by Ministry of Home Affairs:** It includes the construction of fences, floodlighting, roads, Border Out Posts (BOPs), Company Operating Bases (COBs), and deployment of technological solutions along the *India-Pakistan, India-Bangladesh, **India-China**, India-Nepal, India-Bhutan, and India-Myanmar borders*.

❖ **Vibrant Villages Programme:** It has been instrumental in developing remote villages in Arunachal Pradesh.

- ✓ Under this programme, primary health centres and residences of school teachers are being upgraded, and concrete tracks are being laid.
- ✓ It has brought about a significant improvement in the quality of life for the residents of these villages.

Conclusion

❖ The development of infrastructure and connectivity along the LAC in Arunachal Pradesh is a testament to India's commitment to securing its borders and improving the lives of its citizens in border areas. While challenges remain, the progress made so far is promising and sets the stage for a more connected and secure future.

SCIENCE AND TECHNOLOGY

GLOBAL GREENHOUSE GAS (GHGs) LEVELS

Context: Recently, the National Oceanic and Atmospheric Administration (NOAA) revealed that global carbon dioxide levels reached a record high in 2023.

About the Carbon Dioxide (CO_2):

❖ It is an important heat-trapping gas, also known as a greenhouse gas, that comes from the extraction and burning of fossil fuels (such as coal, oil, and natural gas), from wildfires, natural processes like volcanic eruptions, and land use changes like deforestation, peat emissions, and agricultural activities.

❖ Since the onset of industrial times in the 18th century, human activities have raised atmospheric CO2 by 50% – meaning the amount of CO_2 is now 150% of its value in 1750.

❖ This human-induced rise is greater than the natural increase observed at the end of the last ice age 20,000 years ago.

Global Carbon Dioxide Levels (Current Status):

❖ The global average atmospheric carbon dioxide was 419.3 parts per million (ppm) in 2023, which is more than 50% higher than pre-industrial levels.
  ✓ This increase was the third-largest in the last decade.

❖ The increase between 2022 and 2023 was 2.8 ppm — the 12th year in a row where the amount of carbon dioxide in the atmosphere increased by more than 2 ppm.

❖ The 2023 increase was the third-largest in the last decade and is likely a result of an ongoing increase of fossil fuel carbon dioxide emissions, coupled with increased fire emissions possibly as a result of the transition from La Nina to El Nino.
  ✓ El Nino and La Nina are the warm and cool phases of a recurring climate pattern across the tropical Pacific called the El Nino-Southern Oscillation (ENSO).

❖ In March 2024, the CO_2 levels at Mauna Loa Observatory, Hawaii, were recorded at 425.38 ppm, up from 420.99 ppm in March 2023.
  ✓ It has the longest record of direct measurements of CO2 in the atmosphere.

Global Methane Levels (Current Status):

❖ Methane is emitted during the production and transport of coal, natural gas, and oil.
  ✓ Methane emissions also result from livestock and other agricultural practices, land use, and by the decay of organic waste in municipal solid waste landfills.

❖ Despite being less abundant than CO_2, Methane is more potent at trapping heat in the atmosphere.

❖ Methane levels in the atmosphere are now more than 160% higher than their pre-industrial level.
  ✓ It first rose in the 1980s, and nearly stabilised in the early 2000s before rapidly increasing again in 2007.
  ✓ It went up to an average of 1922.6 parts per billion (ppb) in 2023 — a 10.9 ppb jump over 2022.
  ✓ The year 2023 marked the fifth-highest since 2007.

❖ More than 85% of the increase from 2006 to 2021 was due to increased microbial emissions generated by livestock, agriculture, human and agricultural waste, wetlands and other aquatic sources.
  ✓ The rest could be coming from fossil fuel emissions.

Global Nitrous Oxide Levels (Current Status):

❖ Nitrous oxide is emitted during agricultural, land use, and industrial activities; combustion of fossil fuels and solid waste; as well as during treatment of wastewater.

❖ It is the third-most significant human-caused greenhouse gas, and its concentrations are 25% higher than the pre-industrial level of 270 ppb.
  ✓ The current levels climbed by 1 ppb to 336.7 ppb in 2023.

❖ This increase in recent decades is being traced back to the use of nitrogen fertiliser and manure from the expansion and intensification of agriculture.

Impact of Rising Levels:

❖ Without carbon dioxide, Earth's natural greenhouse effect would be too weak to keep the average global surface temperature above freezing.
  ✓ By adding more carbon dioxide to the atmosphere, people are supercharging the natural greenhouse effect, causing global temperature to rise.
❖ The rising CO_2 levels have put us in a precarious position, mirroring atmospheric conditions from the Pliocene epoch, a period roughly 4.3 million years ago.
❖ During that geological period, sea levels were approximately 23 metres higher than today, and the average temperature was higher than in pre-industrial times.
❖ If the current level of emissions persists, there is a 50% chance that global warming of 1.5°C will be exceeded in nine years.
  ✓ This is the opposite trend needed to reverse climate change.

Conclusion:

❖ CO_2 is the single most important greenhouse gas leading to human-induced climate change.
❖ Although other GHGs are more powerful per molecule in warming the planet than CO_2, the CO_2 emissions stay in the atmosphere for hundreds to thousands of years, making CO_2 the biggest challenge in combating climate change.
❖ The increasing levels of carbon dioxide in our atmosphere are a clear indication of the urgent need for action.
❖ The data from NOAA highlight the critical state of earth's carbon cycle and underscore the importance of reducing greenhouse gas emissions.

FDI IN INDIA'S SPACE SECTOR

Context: Recently, the Union Finance Ministry notified new rules backing Foreign Direct Investment (FDI) for the space sector under the Foreign Exchange Management Act (FEMA).

FDI in Space Sector

❖ The Finance Ministry came with new rules, known as the Foreign Exchange Management **(Non-debt Instruments) (Third Amendment)** Rules, 2024, that provide a liberalised entry route for FDI in satellites, launch vehicles, spaceports, and manufacturing space-related components and systems.
❖ According to it, 100% percent FDI has been allowed for the space sector category of manufacturing and operation of satellites, satellite data products, and ground segment and user segment.
❖ Out of this, up to **74%** would be through the automatic route and government nod would be required for investment beyond that.
  ✓ Under the earlier policy, any foreign investment in manufacturing and operating satellites was allowed only with government approval.

Significances of FDI in Space Sectors

❖ **Private Sector Participation:** The Indian space structure is moving from building India's capabilities under ISRO to further capitalization of space-based technology for commercial applications as well as industry involvement in the sector.
  ✓ It is expected to integrate Indian companies into global value chains.
❖ **Space Missions:** India has achieved many considerable feats in space missions and has established its name in the global picture as a provider of reliable and cost-effective space solutions.
❖ **Technology Absorption and Global Integration:** It will enable modern technology absorption.
  ✓ With increased investment, companies could achieve sophistication of products, global scale of operations, and enhanced share of the global space economy.
  ✓ It is expected to integrate Indian companies into global value chains.

❖ **Boost Manufacturing:** Companies will be able to set up their manufacturing facilities within the country, encouraging the Government's **'Make In India'** initiative.
❖ **Ease of Doing Business:** The FDI policy reform will enhance Ease of Doing Business in the country, leading to greater FDI inflows and thereby contributing to the growth of investment, income, and employment.
❖ **Promote Research and Innovations:** FDI in space will promote technology transfer and research innovations.

Concerns and Challenges

❖ **Limited Investor Interest:** There is limited investor interest at later stages of development.
  ✓ This could be due to the high-risk nature of space investments and the long-term return on investment.
❖ **Talent Pool:** The talent pool for space tech startups needs to grow.
  ✓ There is a need for more skilled professionals in the field of space technology.
❖ **Policy Clarity:** There is a need for more policy clarity.
  ✓ Clear and consistent policies can help attract more foreign investors.
❖ **Simplifying the FDI Process:** The process for foreign direct investment needs to be simplified.
  ✓ A complex process can deter potential investors.
❖ **Capital-Intensive Requirements:** Space technology is capital-intensive.
  ✓ This means that it requires a significant amount of capital investment, which can be a challenge for startups and smaller companies.
❖ **Conflict of Interest with ISRO:** Foreign investors have been on the fence about investing in the Government monopolised Indian space sector.
  ✓ The conflict of interest with ISRO as a competitor had perpetuated apprehension in the minds of foreign investors.

Conclusion

❖ The liberalisation of the FDI policy in the space sector is a strategic move by the Indian government to lower entry barriers for foreign players seeking to collaborate with or invest in Indian space enterprises.
❖ This move is set to revolutionise the Indian space industry by opening new avenues for foreign investment and participation, thereby accelerating India's journey towards becoming a global space powerhouse.

ADITYA MISSION

Context: Aditya L1 solar mission of the ISRO is continuously sending data about the Sun.

What is the Aditya-L1 mission?

❖ Aditya-L1 is the first space-based Indian observatory to study the Sun. It was launched on September 2, 2023 by the PSLV-C57.
❖ Solar observatory is placed at Lagrangian point L1 for "Observing and understanding the chromospheric and coronal dynamics of the Sun" in a continuous manner.
❖ **Placing the Aditya-L1 in a halo orbit around L1 point has advantages as compared to placing in a Low Earth Orbit (LEO):**
  ✓ It provides a smooth Sun-spacecraft velocity change throughout the orbit, appropriate for helioseismology.
  ✓ It is outside of the magnetosphere of Earth, thus suitable for the "in situ" sampling of the solar wind and particles.
  ✓ It allows unobstructed, continuous observation of the Sun, and view of earth for enabling continuous communication to ground stations.
❖ It is equipped with seven payloads (instruments) on board with four of them carrying out remote sensing of the Sun and three of them carrying in-situ observation.

What are the seven payloads?

❖ The Visible Emission Line Coronagraph (VELC) will study the Corona, imaging and spectroscopy, and Coronal mass ejections.
❖ The Solar Ultraviolet Imaging Telescope (SUIT) will focus upon the Photosphere and Chromosphere imaging- narrow and broadband. It will also measure the solar irradiance variations.
❖ The Solar Low Energy X-ray Spectrometer (SoLEXS) and High Energy L1 Orbiting X-ray Spectrometer (HEL1OS) will study the soft and hard X-ray flares from the Sun over a wide X-ray energy range.
❖ The Aditya Solar wind Particle Experiment (ASPEX) and Plasma Analyser Package For Aditya (PAPA) will analyze the electrons and protons in the Solar wind or particles. It will also study the energetic ions.
❖ The Advanced Tri-axial High Resolution Digital Magnetometers will study the interplanetary magnetic field at L1 point.

BIOTECHNOLOGY

FIRST HOME-GROWN GENE THERAPY FOR CANCER

Context: The President of India, launched India's first home-grown gene therapy which is CAR-T cell therapy (NexCAR19) for cancer at IIT Bombay.

About

❖ NexCAR19 is the indigenously developed **therapy for B-cell cancers** (types of cancers that form in the immune system's cells) such as leukemia and lymphoma.

❖ It has been developed collaboratively by **ImmunoACT,** a company incubated at the Indian Institute of Technology Bombay (IITB), and **Tata Memorial Hospital**.

CAR-T Cell Therapy

❖ T cells are the cells of the immune system that fights infections and can kill cancer.

❖ But, sometimes cancers can evade the T cells and there comes the use of "CAR-T cell therapy" or **Chimeric antigen receptor (CAR) T-cell therapy.**

❖ In this, patients own T cells are taken and modified in the lab so that they can recognise and react against the cancer.

❖ These modified T cells, also called CAR-T cells are then reinfused back into the patients. Now, these cells can better recognise cancer and are able to attack it.

What are B and T-Cells?

❖ B-cells and T-cells are a specific type of white blood cell called lymphocytes.

❖ **Types of T cells:**

  ✓ **Cytotoxic T-cells:** They kill cells infected with viruses and bacteria, and they also destroy tumor cells.

  ✓ **Helper T-cells:** They send signals that direct other immune cells to fight infection.

  ✓ **Regulatory T-cells (Tregs):** These cells suppress excessive immune responses to prevent autoimmune reactions and maintain immune tolerance. They play a crucial role in preventing the immune system from attacking the body's own cells and tissues.

❖ **T-cells** start in bone marrow, mature in thymus and eventually relocate to lymph tissue or bloodstream.

❖ **B-cells** make antibodies in response to antigens (antibody generators).

  ✓ **There are two main types of B-cells:** plasma cells and memory cells. Both types help to protect from infection and disease.

ENVIRONMENT

VIABILITY OF GREEN HYDROGEN

Context: The **Ministry of New and Renewable Energy (MNRE)** has announced to support efforts to **test the viability of green hydrogen as a fuel for cars and heavy vehicles.**

Scheme Guidelines for Pilot Project

❖ The scheme will support development of technologies for use of Green Hydrogen as a fuel in Buses, Trucks and 4-wheelers, based on **fuel cell/internal combustion engine**-based propulsion technology.

❖ The other thrust area for the scheme is to support development of infrastructure such as **hydrogen refueling stations.**

❖ The scheme will also seek to support any other innovative use of hydrogen for reducing carbon emissions in the transport sector, such as blending of methanol/ethanol, based on green hydrogen and other synthetic fuels derived from green hydrogen in automobile fuels.

What is hydrogen

❖ Hydrogen is the chemical element with the **symbol H** and **atomic number 1.**

❖ Hydrogen is the **lightest element** and the most abundant chemical substance in the universe, **constituting roughly 75%** of all normal matter.

❖ It is colorless, odorless, tasteless, non-toxic, and highly combustible gas.

Extraction of Hydrogen

❖ Hydrogen exists in **combination with other elements.**

❖ Hence, for using it as a source of energy, it has to be **extracted from naturally occurring compounds** like water (which is a combination of two hydrogen atoms and one oxygen atom).

❖ **Green hydrogen** refers to hydrogen that is produced **using renewable energy sources**, such as wind, solar, or hydropower, through a process called electrolysis.

❖ Electrolysis involves splitting water (H_2O) into hydrogen (H_2) and oxygen (O_2) using an electric current.

❖ When this electricity comes from renewable sources, the hydrogen produced is considered "green" because the overall process has a **minimal environmental impact.**

❖ **Grey Hydrogen:** It involves extracting hydrogen from natural gas through a process called **steam methane reforming (SMR).**

    ✓ This process releases **carbon dioxide (CO_2)** as a byproduct, contributing to greenhouse gas emissions.

❖ **Blue Hydrogen**: It involves **capturing and storing the CO_2 emissions** generated during the production of hydrogen from **natural gas.**

Significance of Green Hydrogen

❖ **Zero Emissions:** Unlike conventional hydrogen production methods that rely on fossil fuels, green hydrogen production emits no greenhouse gases or pollutants, making it a zero-emission energy carrier.

❖ **Energy Storage:** Green hydrogen can serve as a means of storing excess renewable energy generated during periods of low demand for later use, helping to balance the grid and enhance energy security.

❖ **Versatile Applications:** Hydrogen can be used as a fuel in various sectors including transportation, industry, and heating.

❖ **Economic Opportunities:** The transition to green hydrogen presents significant economic opportunities, including job creation, investment in new infrastructure, and the growth of related industries such as electrolyzer manufacturing and hydrogen fuel cell technology.

❖ **Climate Mitigation:** By replacing fossil fuels with green hydrogen, countries can reduce their carbon emissions and contribute to global efforts to mitigate climate change.

Challenges

❖ **Risks associated with the transportation:** Hydrogen in gaseous form is highly inflammable and difficult to transport, thereby making safety a primary concern.

❖ **Higher Cost:** Green hydrogen production is currently more expensive than conventional methods, primarily due to the high cost of renewable energy sources and electrolysis technology.

❖ **Lack of fuel station infrastructure:** India will need to compete with around 500 operational hydrogen stations in the world today which are mostly in Europe, followed by Japan and South Korea.

Way Ahead

❖ Increasing renewable energy use across all economic spheres is central to India's Energy Transition.

❖ Hydrogen offers the possibility to decarbonize applications, end uses, and sectors that have been traditionally difficult to tackle with other clean energy solutions.

❖ Hydrogen is expected to be used widely in the transportation sector in the coming years, and as a large and growing market for both vehicles and energy.

❖ India stands to gain significantly from the large-scale adoption of green hydrogen as vehicular fuel.

EVOLUTION AND ESSENTIALS OF INDIA'S CLIMATE POLICY

Context: India's climate policy has evolved significantly over the years, reflecting the country's commitment to addressing the challenges posed by climate change.

The Evolution of India's Climate Policy:

❖ India's climate change policies have primarily focused on supporting synergies between development and climate outcomes, and it has always been clear, consistent, and coordinated.

❖ After the Rio **Summit of 1992, the Divisions of Climate Change and Biodiversity** in India's then Ministry of Environment and Forests came to life slowly and steadily.

   ✓ The **Rio Summit of 1992** saw the emergence of the United Nations Framework Convention on Climate Change **(UNFCCC)** and the Convention on Biological Diversity **(CBD) and Forest Principles**.

Major Determinants of India's Climate Policy:

❖ **Geography:** The Indian landmass has an area of 3.28 million sq km, accounting for 2.4% of the world's geographical land surface area and 4% of the world's freshwater resources.

   ✓ India is the seventh largest country in the world.
   ✓ It is one of the 17 mega-biodiverse countries, having four biodiversity hotspots, 10 biogeographic zones, and 22 agro-biodiversity hotspots.

❖ **Population:** India's **1.4 billion** people account for almost **one-sixth of humanity**.

   ✓ It is home to 7-8% of the world's recorded species, with more than 45,500 species of plants and 91,000 species of animals documented so far.
   ✓ The **human to land ratio is very low** in India at 0.0021 sq km, and is continuing to recede.

❖ **Impacts:** The Global Climate Risk Index (2020) prepared by German watch puts **India as the fifth most** affected country in terms of experiencing extreme weather events, a sharp rise from its 14th position in 2017.

   ✓ The World Bank report on the Impact of Climate Change on South Asia predicts that rising temperatures and changing monsoon rainfall patterns could cost India 2.8% of its GDP and depress the living standards of nearly half the country's population by 2050.

❖ **Worldview:** Our worldview is shaped by our ancestors — of living in harmony and consonance with nature.

- ✓ **The 'Prithvi Sukta' says** that the Earth is our Mother, and sacred groves tell us that the idea of protection of nature and natural resources is seeped in our way of life.
- ✓ **Gandhi's ideals of** standing up for the last man, trusteeship, and the ability of the Earth to provide enough for everyone's need and not anyone's greed represents a continuous strain of thought since time immemorial.

❖ **Actions:** The logo of the Ministry of Environment, Forest and Climate Change (MoEFCC) — **'Nature Protects if She is Protected'** — shows our reverence, respect for nature, and our focus towards conserving it.

- ✓ Despite having historical cumulative emissions of less than 4% (1850-2019) and 1.9 tonnes CO2 per capita emissions, India has not dissuaded itself from taking resolute domestic and international actions that benefit the planet.

Role of Supreme Court in Climate Policy:

❖ The Supreme Court of India has recognized the links between ecology, human dignity, and climate change and made important connections between human rights and global warming mitigation.

❖ It stated, 'Without a clean environment which is unimpacted by the vagaries of climate change, the right to life is not fully realised'.

❖ It noted that the right to a healthy environment, safe from the ill-effects of climate change, was a **'fundamental human right'.**

❖ The court linked the right against climate change to **Articles 21** (right to life) **and 14** (right to equality), stating that the **rights to life and equality could not be fully realised without a clean, stable environment.**

- ✓ It highlighted the **interconnection** between climate change and various human rights, including the right to health, indigenous rights, gender equality, and the right to development.

Conclusion:

❖ India's climate policy is informed by its vision of inclusive growth for all-round economic and social development, the eradication of poverty, declining carbon budget, firm adherence to the foundational principles of the UNFCCC, and climate-friendly lifestyles.

❖ It has created international institutions like the International Solar Alliance (ISA) to focus on the transition to renewable energy, separated carbon emissions from economic growth, Coalition for Disaster Resilient Infrastructure (CDRI) and the Global Biofuels Alliance (GBA).

❖ As the world grapples with the effects of climate change, India's climate policy will continue to evolve, reflecting the country's commitment to sustainable development and environmental protection.

INDIA LOST 2.33 MILLION HECTARES OF TREE COVER SINCE 2000: GLOBAL FOREST WATCH

Context: India has lost 2.33 million hectares of tree cover since 2000, equivalent to a six percent decrease in tree cover during this period, according to the latest data from the Global Forest Watch monitoring project.

❖ The Global Forest Watch tracks forest changes in near real-time using satellite data and other sources.

Findings

❖ **Primary Forest Loss:** India lost 4,14,000 hectares of humid primary forest (4.1 per cent) from 2002 to 2023, making up 18 percent of its total tree cover loss in the same period.

❖ **Tree Cover Loss:** From 2001 to 2023, India lost 2.33 Mha of tree cover, equivalent to a 6.0% decrease in tree cover since 2000.

- ✓ From 2013 to 2023, 95% of tree cover loss in India occurred within natural forest.
- ✓ Five states accounted for 60 percent of all tree cover loss between 2001 and 2023.
- ✓ Assam had the maximum tree cover loss followed by Mizoram, Arunachal Pradesh, Nagaland, and **Manipur.**

- ❖ **Tree Cover Gain**: In India, the top 6 regions were responsible for 54% of all tree cover gain between 2000 and 2020. Karnataka had the most tree cover gain.
  - ✓ From 2000 to 2020, India gained 1.4% of the global total.
- ❖ **All Tree Cover:** As of 2010, the top 7 regions represent 55% of all tree cover.
  - ✓ Arunachal Pradesh had the most tree cover followed by Assam, Chhattisgarh, Kerala and Odisha.
- ❖ **Loss Due to Forest Fires:** India lost 35,900 hectares of tree cover due to fires from 2002 to 2022, with 2008 recording the maximum tree cover loss due to fires.
  - ✓ From 2001 to 2022, Odisha had the highest rate of tree cover loss due to fires. Arunachal Pradesh lost 198 hectares, Nagaland 195 hectares, Assam 116 hectares, and Meghalaya 97 hectares.
- ❖ **Carbon Sink:** Between 2001 and 2022, forests in India emitted 51 million tons of carbon dioxide equivalent a year and removed 141 million tons of carbon dioxide equivalent a year.
  - ✓ This represents a net carbon sink of 89.9 million tons of carbon dioxide equivalent a year.

Conclusion

- ❖ The tree cover loss data featured on the Global Forest Watch represents the best available spatial figures on how forests are changing around the world.
- ❖ The monitoring and alert system is designed to empower people everywhere with the information they need to better manage and conserve forest landscapes.

FORESTS AS NATIONAL ASSET: SUPREME COURT

Context: Recently, the Supreme Court of India has asserted in a judgement that forests in India are a national asset and a major contributor to the nation's financial wealth.

Forest as Financial Wealth and National Asset

- ❖ The Supreme Court of India has asserted that forests in India are a national asset and a major contributor to the nation's financial wealth.
  - ✓ The judgement was based on an appeal filed by the State of Telangana against a High Court decision 'graciously gifting' forest land to a private person.
- ❖ The Supreme Court observed that India's forests serve as a major sink of carbon dioxide (CO_2). The value of mitigation has put a conservative value of US$ 5 per tonne of CO_2 locked in our forests (about 24,000 mt of CO_2 is worth $120 billion, or ₹6 lakh crores).
- ❖ **According to the 'India's Forest and Tree Cover:** Contribution as a Carbon Sink (2009)', from '1995 to 2005, the carbon stocks stored in our forests and trees have increased from 6,245 million tonnes (mt) to 6,662 mt, registering an annual increment of 38 mt of carbon or 138 mt of CO_2 equivalent'.

Forest Resources in India

- ❖ India, with its diverse ecosystems, is rich in forest resources.
- ❖ The Forest Survey of India (FSI), an organisation under the Ministry of Environment, Forest and Climate Change (MoEF&CC) is responsible for the survey and assessment of forest resources in the country.

Forest Cover in India

- ❖ The FSI's reports identify 63 million hectares of potential areas for restoration across different categories, namely, open forest, recently impaired forests, cultural wastelands, agro-forestry plantations, and potential for plantations along roads and railway tracks.
- ❖ The National Forest Policy of India (1988) envisaged a goal of achieving 33% of the geographical area of the country under forest & tree cover.
  - ✓ The remote sensing-based nationwide Forest Cover mapping at a biennial interval serves as a monitoring mechanism towards the achievement of this goal.
- ❖ Forests in India cover about 24.62% of the country's land area (including tree cover) and are some of the most biodiverse forests in the world.
- ❖ They provide a range of important ecosystem services, such as protecting against soil erosion, regulating the water cycle, and serving as a home for a wide variety of plant and animal species.

Community Forest Resources
- ❖ These play a crucial role in supporting rural livelihoods.
- ❖ An estimated 200 million forest-dependent people collect several valuable products from India's forests.
- ❖ These are used as raw materials in diverse industries, such as processed foods and confectionery, pharmaceuticals, alternative medicine, cosmetics and perfumery, and paper and pulp.

Ecological Importance
- ❖ Forests are often referred to as the 'green lungs' of the nation by providing various ecological services like clean air, water, maintenance of soil-moisture regime by checking soil erosion, preserving biodiversity, checking global warming and climate change by sequestering carbon dioxide.

Social Importance
- ❖ Forests provide habitats to diverse animal species and form the source of livelihood for many different human settlements.
- ❖ They offer watershed protection, timber, and non-timber products.
  - ✓ Over 1.6 billion people depend on forests for food or fuel.

Conservation Efforts
- ❖ India has developed a strong legal and policy framework for the forestry sector for sustainable forest governance through the National Forest Policy, 1988, Indian Forest Act, 1927, Forest (Conservation) Act, 1980, and Wildlife (Protection) Act, 1972.
- ❖ The National Forest Policy sets a strategy of forest conservation with the principal aim of ensuring environmental stability and maintenance of ecological balance by bringing a minimum of one-third of the total land area of the country under forest or tree cover.

Conclusion
- ❖ India's forest resources are a vital part of the country's ecological and economic wealth.
- ❖ The Supreme Court's judgement underscores the importance of forests as a national asset and a significant contributor to the nation's financial wealth.
- ❖ It highlights the need for effective forest conservation policies and strict enforcement to protect and preserve these valuable resources.

REGULATING SINGLE USE PLASTICS

Context: Ahead of the UN meeting in Canada, India chooses to 'regulate', not ban, single-use plastic.

About the Single Use Plastics:
- ❖ Single-use plastics have become a ubiquitous part of our daily lives, used in everything from packaging to consumer goods.
  - ✓ These are those that are discarded after one-time use.
- ❖ However, the environmental impact of these materials is now a major global concern.

The Global Plastic Problem:
- ❖ Plastic's invention in 1907 led to its widespread use due to affordability, durability, and aesthetic appeal.
- ❖ Major single-use plastic applications include food and beverages (31%), bottle and container caps (16%), plastic bags (11%), and straws, stirrers, beverage bottles, and containers (7%).
  - ✓ However, the non-degradable nature of these materials has led to significant environmental challenges.
- ❖ India, a country with a population of over 1.4 billion, has chosen to regulate, rather than outright ban, single-use plastic.

Challenges Associated with Single-Use Plastics:
- ❖ **Enforcement and Compliance:** One of the significant challenges associated with single-use plastics is the enforcement and compliance of regulations.

✓ While many governments have implemented regulations to restrict the use of single-use plastics, ensuring compliance can be challenging.

❖ **Waste Management:** India lacks an organised system for the management of plastic waste, leading to widespread littering across its towns and cities.
  ✓ Many plastic items end up in landfills or as litter in the streets, rivers, and other public spaces.
  ✓ This not only creates unsightly and unhygienic conditions but also poses severe threats to the environment and wildlife.

❖ **Economic Impact:** The economic impact of single-use plastics is another significant challenge. Many alternatives to single-use plastics are currently more expensive, which can burden retailers and consumers.
  ✓ Furthermore, there are more than 22,000 plastic manufacturing units in India, and it will take time before enough numbers are brought under the alternative segment to make a tangible difference to the packaging sector's environmental footprint.

❖ **Health Risks:** Single-use plastics pose environmental, social, economic, and health risks to people by contributing to the climate crisis, ecosystem degradation, and resource use.
  ✓ Microplastics, non-biodegradability, and their carbon footprint compound these issues.

India's Efforts Related to Single-Use Plastics:

❖ **Regulatory Measures:** In 2022, India implemented the **Plastic Waste Management Amendment Rules (2021)** that banned 19 categories of **'single-use plastics'**.
  ✓ These include items such as plastic cups, spoons, earbuds, decorative thermocol, wrapping or packaging film used to cover sweet boxes and cigarette packets, and plastic cutlery.
  ✓ However, it does not include plastic bottles – even those less than 200ml— and multi-layered packaging boxes **(like in milk cartons).**
  ✓ Despite the ban, enforcement has been inconsistent, with several outlets continuing to retail these goods.
    ➢ The current ban only addresses about 11% of single-use plastic in India.

❖ **International Commitments:** India is a party to the United Nations Environment Assembly (UNEA).
  ✓ In all, 124 nations are part of the UNEA, and India has signed a resolution to draw up an agreement in the future that will make it legally binding for signatories to address the full life cycle of plastics, from production to disposal.

❖ **Public Awareness and Participation:** The Swachh Bharat Mission **(SBM)** to manage 100% of solid waste scientifically.
  ✓ It is being implemented with resolve, and progress is monitored, measured and results placed in the public domain.
  ✓ SBM 2.0 also emphasises the need for plastic management – working towards minimising single-use plastic and operationalising recycling and reuse through processing.

❖ **Extended Producer Responsibility (EPR):** EPR policies, which hold producers responsible for the disposal of their products, are often part of regulatory approaches.
  ✓ These policies can incentivize producers to design products that are easier to recycle or dispose of.

Way Ahead:

❖ The upcoming U.N. meet will involve discussions on 'problematic and avoidable plastic products including single-use plastics', which refer to sections of plastics that are likely to harm the environment as well as human health.

❖ The aim is to implement global and national measures such as removing these products from the market, reducing production through alternate practices or non-plastic substitutes, and redesigning problematic items to meet criteria for sustainable and safe product design.

❖ India has called a **'zero draft',** that vouches for 'regulating' instead of 'not allowing', the production, sale, import, and export of problematic and avoidable plastic goods.
  ✓ It has, however, agreed to a 'science-based criteria' for identifying such plastics.

IMPACTS OF WATER SCARCITY ON INDIA: PREPARING INDIA FOR WATER STRESS, CLIMATE RESILIENCE

Context: The article discusses India's need to prepare for hotter summers and water stress, shifting from temporary disaster relief to long-term climate resilience. It highlights the interconnectedness of water, food, and energy, and calls for policies, efficient water use, and increased adaptation funding.

What is the current status of water in India?

- ❖ India houses 18% of the world's population but only has 4% of its freshwater resources.
- ❖ Approximately half of India's rivers are polluted.
- ❖ The country's major reservoirs are at only 38% capacity.
- ❖ India is the largest user of groundwater globally.
- ❖ Three-quarters of India's districts are vulnerable to extreme climate events.
- ❖ A study by the Council on Energy, Environment and Water **(CEEW)** revealed that 55% of tehsils in India have experienced a significant increase of over 10% in southwest monsoon rainfall in the last decade compared to the previous three.

What are the impacts of water scarcity on India?

- ❖ **Agricultural Dependency:** About 45% of India's population works in agriculture, which is highly dependent on water for irrigation, influencing crop yields and harvest timing.
- ❖ **Economic Impact:** Water scarcity affects the economy, particularly through agriculture, which employs the largest sector of the workforce.
- ❖ **Energy Production:** Water is crucial for clean energy solutions like green hydrogen production and pumped storage hydropower, necessary for a sustainable power grid.
- ❖ **Climate Vulnerability:** Increased frequency of extreme weather events like floods and droughts disrupts water availability and agriculture.
- ❖ **Urban Stress:** Urban areas face challenges like insufficient water for domestic use and industrial activities due to inefficiencies and pollution.

What should be done?

- ❖ **Improve Policy Integration:** Develop and implement policies that recognize the interconnections between water, food, and energy systems to manage resources more holistically.
- ❖ **Enhance Water Use Efficiency:** Focus on achieving the National Water Mission's goal to increase water efficiency by 20% by 2025, utilizing water accounting to measure and manage water usage effectively.
- ❖ **Expand Reuse Initiatives:** Promote the reuse of urban wastewater as detailed in AMRUT 2.0, reducing non-revenue water and maximizing available resources.
- ❖ **Increase Funding for Adaptation:** Boost financial support for water-related climate adaptation, utilizing tools like the Green Credit Programme to fund initiatives that improve water management and promote agricultural resilience.

STATUS OF NATIONAL CLEAN AIR PROGRAMME (NCAP)

Context: The National Clean Air Programme missed the 2024 target to push back pollution.

What is the NCAP?

- ❖ It was launched by the Ministry of Environment, Forest and Climate Change in January 2019 as a comprehensive initiative in partnership with various Ministries and States to improve air quality at city, regional and national level.
- ❖ It aims to improve air quality in 131 cities (non-attainment cities and Million Plus Cities) in 24 States by engaging all stakeholders.
- ❖ **Features:** Under NCAP, cities continuously violating annual PM levels in India need to prepare and implement annual Clean Air Action Plans (CAAPs).
  - ✓ To facilitate this, the Ministry of Environment, Forest, and Climate Change has allocated ₹10,422.73 crore.
  - ✓ NCAP envisages reduction by 20-30% in PM 10 concentration over baseline in 2017 by 2024.

➢ Target has been revised to achieve reduction in PM10 level up to 40% or achievement of national standards (60 μg/m3) by 2025-26.

Issues and Concerns

❖ Most cities proactively submitted their Clean Air Action Plans(CAAPs) yet their implementation has been inconsistent.
  ✓ On average, only 60% of the allocated funds have been used thus far, according to the Ministry, with 27% of cities spending less than 30% of their designated budgets.
❖ Implementation delays hinder NCAP's success, particularly delays in approvals from the competent authorities (for example, the technical specification of tendering processes or for procuring products such as mechanical sweepers and electric buses).
❖ There is also a lack of standard operating procedures for the implementation process.
❖ Time-consuming tasks required to implement control measures and the absence of well-defined timelines create further delays.
❖ Yet other reasons include bureaucratic red-tape and lingering doubts regarding the effectiveness of proposed mitigation measures.
❖ Pollution from high-emitting industries and other sources outside city limits, carried into urban areas by winds complicates urban air-quality management.
❖ According to the Portal for Regulation of Air-pollution in Non-Attainment cities, only 37% of cities have completed EI and SA studies, meaning the remaining 63% don't have a clear idea about what is polluting their air.

Role of scientific tools

❖ Emissions Inventory (EI) and Source Apportionment (SA) studies are critical to identify and understand the origins of pollution.
  ✓ EIs provide insights into local pollution sources and their contributions, allowing experts to forecast future emissions based on demographic shifts and technological advancements across sectors, among other factors.
  ✓ EIs also help shape targeted pollution control strategies.
    ➢ They have their limitations, too, particularly in assessing the impact of transboundary pollution sources — such as when determining the effect of stubble-burning outside Delhi on the city's air quality.
❖ SA studies offer a detailed analysis of contributions from various pollution sources, including those located afar.
  ✓ However, they aren't suited for predictive analysis and require substantial resources, including specialised personnel and equipment for chemical analysis.
  ✓ SA studies also can't distinguish between the origins of pollution, like, say, emissions from diesel trucks 200 m away and 20 km away, because diesel emissions have similar chemical signatures.
  ✓ These gaps can be bridged through AQ modelling, which informs our understanding of pollution dispersion, including from distant sources.

Conclusion and Way Forward

❖ The cities should look into EI and SA data to pinpoint air pollutants and prepare mitigation measures targeting each polluting activity.
  ✓ Based on the potential and infrastructure requirements, cities need to set proper yearly targets and fund them.
❖ Many existing control measures focus only on primary PM emissions, neglecting their secondary precursors.
  ✓ A shift towards comprehensive strategies addressing both primary and secondary pollutants is thus important.
❖ Beyond the need for data and models, swift implementation on the ground is essential.
  ✓ For this, implementation agencies should seek to reduce bureaucratic red tape by utilising shared, standardised technical evaluations.

- ❖ As NCAP funding is linked with the performance of cities (based on the annual average PM concentration reduction), prior budgeting and time management play crucial roles.
  - ✓ Technical feasibility, budgeting, and time estimates need to be part of the initial plans.
- ❖ The journey towards cleaner air in India, as charted by NCAP, will be difficult but is necessary.
  - ✓ NCAP's success hinges on a multifaceted approach that combines rigorous scientific studies, strategic funds, and swift and effective implementation of mitigation measures.

RESTORING EARTH'S RIGHT TO 'GOOD HEALTH'

Context: The European Court of Human Rights found that Switzerland's actions to curb emissions were inadequate and had failed to protect women against the impacts of climate change.

Global Status

- ❖ The latest State of the Global Climate Report by the World Meteorological Organization reveals that most climate change indicators reached record levels in 2023.
  - ✓ It confirmed 2023 to be the hottest year since it started recording global temperatures.
  - ✓ Records were also broken for ocean heat, sea level rise, Antarctic Sea ice loss and glacier retreat.
- ❖ The health of the planet is under extreme stress, impacting people's right to live a healthy life.
  - ✓ **Some examples include:** Rising global temperatures are increasing water shortages and land degradation, including soil erosion, vegetation loss, wildfires, and permafrost, affecting people's rights to life, health, food, water and adequate standard of living, among other rights. .
- ❖ Air pollution is considered one of the biggest environmental threats to health resulting in an estimated seven million premature deaths every year in violation of the rights to health and life
- ❖ **Impact on vulnerable sections** : Environmental degradation disproportionately impacts persons, groups and peoples already in vulnerable situations.
  - ✓ **Women and girls :** environmental degradation reinforces pre-existing gender inequalities and discrimination on issues such as gender-based violence, and rights of access and tenure over land and natural resources.
  - ✓ Children experience the effects of environmental degradation more intensely due to food and water shortages, and transmission of diseases.-
  - ✓ Indigenous Peoples who often face grave and even life-threatening risks for defending the traditional lands, resources and territories upon which their communities depend for survival, livelihoods and religious and customary practices

Scenario In India

- ❖ As one of the world's fastest growing economies, India has made rapid strides in decoupling emissions from economic growth.
- ❖ It has already achieved two of its Nationally Determined Contribution (NDC) targets, viz. reducing the emissions intensity of its GDP by 33% to 35% from 2005 level, and achieving 40% cumulative electric power installed capacity from non-fossil fuel sources, well ahead of the target year of 2030.

Challenges and Concerns

- ❖ The country remains highly vulnerable to climate change.
- ❖ More than 80% of its population lives in districts that are at risk of climate-induced disasters.
- ❖ Rising temperatures and natural disasters are manifesting into major crises affecting livelihoods and food security, and exacerbating existing socio-economic inequalities.

Latest Developments

- ❖ **SDGs and localisation model:** India's localisation model for the Sustainable Development Goals (SDGs) has successfully integrated the SDGs into local-level planning through multi-tiered and multi-stakeholder processes.
  - ✓ States and territories take ownership by creating their own SDG road maps and monitoring systems, and friendly competition among them spurs innovation and faster progress.
  - ✓ The model also encourages broader participation from businesses, non-governmental organisations, and citizens.

- ❖ **One Health initiative:** It has brought together 13 Ministries and departments in the domains of health, environment, science and technology for disease control, research, and pandemic preparedness.
- ❖ The Supreme Court of India ruled that people have a right 'to be free from the adverse impacts of climate change', citing Articles 14 (equality before law and the equal protection of laws) and 21 (right to life and personal liberty) of the Indian Constitution as the sources.
  - ✓ The observation provides several points of departure with the potential to accelerate climate action both on the demand and supply side —
  - ✓ on the demand side, by invoking a more rights-based approach to climate action, and
  - ✓ on the supply side, by encouraging integrated approaches and action between government, private sector and civil society.
- ❖ **International Mother Earth Day:** Every year since 2009, April 22 is commemorated as International Mother Earth Day.
  - ✓ The idea of 'Mother' Earth has been embedded in India's culture and traditions for centuries, regarding nature as a 'living' entity rather than just a resource.
- ❖ In 2022, the Madras High Court in Tamil Nadu, while hearing a case on changing the classification of forest land, declared 'Mother Nature' a 'living being', granting it the status of a legal person with all corresponding rights, duties and liabilities, in order to preserve and conserve it.

Conclusion and Way Forward

- ❖ **Human rights and the environment are intertwined**; human rights cannot be enjoyed without a safe, clean and healthy environment; and sustainable environmental governance cannot exist without the establishment of and respect for human rights.
- ❖ As human rights and the environment are interdependent, a clean, healthy and sustainable environment is necessary for the full enjoyment of a wide range of human rights, such as the rights to life, health, food, water and sanitation and development, among others.
- ❖ At the same time, the enjoyment of all human rights, including the rights to information, participation and access to justice, is of great importance to the protection of the environment
- ❖ There is a need for adoption of an overarching regulation on climate change which takes forward the policy-driven approach of climate action in India couched in the National and State Action Plans on Climate Change.
- ❖ There is a need to expand One Health approach to the private sector on integrating a rights-based approach to climate action in their core operations.

GREEN CREDIT PROGRAMME: AN OPPORTUNITY OR A CHALLENGE

Context: The Environment Ministry issued further guidelines on its Green Credit Programme (GCP), two months after it had prescribed rules governing the first initiative, afforestation.

- ❖ Modifying the rules will prioritise the restoration of ecosystems over mere planting of trees.

About Green Credit Programme

- ❖ The Green Credit Programme was announced by the Environment Ministry in October 2023
  - ✓ It is an initiative within the governments Lifestyle for Environment or LIFE movement.
- ❖ The GCP programme presents itself as an "innovative, market-based mechanism" to incentivise "voluntary actions" for environmental conservation.
- ❖ Its goal is to lay an emphasis on sustainability, reduce waste and improve the natural environment.
- ❖ Under this, individuals, organisations and companies — public and private — would be encouraged to invest in sectors ranging from afforestation, water conservation, stemming air-pollution, waste management, mangrove conservation and in return be eligible to receive 'green credits.'
- ❖ An autonomous body of the Ministry, the Indian Council of Forestry Research and Education (ICFRE), is in charge of administering the programme. They will define methodologies to calculate 'green credits' that result from the activities prescribed.
  - ✓ They will also manage a trading platform whereby such credits could be traded.

Developments

- ❖ In February 2024 , the Ministry prescribed the rules governing the first of these initiatives — afforestation.
- ❖ Broadly, companies, organisations and individuals could offer to pay for afforestation projects in specific tracts of degraded forest and wasteland.
- ❖ The actual tree planting would be carried out by the State forest departments.
- ❖ Two years after planting and following an evaluation by the ICFRE, each such planted tree could be worth one 'green credit.'
- ❖ Those who are successful in fulfilling the criteria will be given an estimate of the costs involved in afforestation.

Challenges

- ❖ The scientific rationale behind assigning 'credits' based on the quantity of trees is unclear.
- ❖ There is criticism that these initiatives may be used to circumvent existing laws, particularly those that deal with forest conservation.
- ❖ There is a risk of 'Permanence' of carbon credits, which means that an individual or a farmer may cut the trees after getting payment for the carbon credit, or the trees may be burned in a fire or attacked by pests, or the trees may not grow at the rate required, given the degraded or poor fertility status of soils and erratic rainfall.
- ❖ The activities may or may not lead to real, measurable environmental benefits, particularly carbon sequestration benefits, contributing to the mitigation of climate change.

Conclusion and Way Forward

- ❖ Operationalization of GCP on a large scale requires the establishment of institutional arrangements, for which the government has selected the Indian Council of Forestry Research and Education (ICFRE) as the nodal agency, with a steering committee and a technical committee.
- ❖ Successful implementation requires developing a rigorous methodology to measure, verify, and report environmental benefits.
- ❖ GCP is a market-based mechanism, which means there must be demand for the green credits, such as tonnes of carbon sequestered through tree planting.
- ❖ More importantly, there must be an attractive price for the green carbon credits.
- ❖ The programme was currently in a "pilot project" mode and questions such as how shrubs and grasses could be quantified in terms of green credits were still being worked out.

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ENERGY

SOLAR SURGE IN INDIA

Context: The government is bringing into effect a policy that will discourage solar power project developers from relying on imported panels.

About Solar Energy Sector

❖ Solar energy is the most abundant & cleanest energy resource on earth.

  ✓ India is endowed with vast solar energy potential.

❖ Solar energy can be used mainly in three ways one is direct conversion of sunlight into electricity through PV cells, the two others being concentrating solar power (CSP) and solar thermal collectors for heating and cooling (SHC).

What is Driving India's Solar Power Plan?

❖ India gets around 250 to 300 days of sunshine per year; equivalent to about 2,200–3,000 sunshine hours in a year depending upon the location.

❖ In terms of energy, it receives around 5,000 trillion kWh of solar energy every year, and the incidence ranges from 4 to 7 kWh per square metre per day in most areas.

❖ Rampant air pollution emphasizes the need for cleaner energy sources like solar to combat pollution caused by fossil fuels

❖ Therefore, the government has undertaken a series of policy measures and provided financial incentives, keeping solar energy at the forefront of the push to achieve net-zero carbon emissions by 2070 and meet 50% of its electricity requirements from renewable sources.

❖ **Status :** India, one of the world's largest emitters of greenhouse gases, has set a target of 500 GW from non-fossil sources by 2030.

  ✓ Solar energy has emerged as a major prong of India's commitment to achieve these ambitious targets.

❖ India stands 4th globally in Renewable Energy Installed Capacity, 4th in Wind Power capacity and 5th in Solar Power capacity (as per International Renewable Energy Agency – Renewable capacity statistics 2023).

Benefits

❖ Solar provides the ability to **generate power** on a distributed basis and enables rapid capacity addition with short lead times.

❖ **From an energy security perspective**, solar is the most secure of all sources, since it is abundantly available.

❖ The **social and economic benefits** include reduction in drudgery among rural women and girls engaged in the collection of fuel wood from long distances and cooking in smoky kitchens, minimization of the risks of contracting lung and eye ailments, employment generation at village level.

❖ It will lead to the improvement in the standard of living and creation of opportunities for economic activities at village level in an environment friendly manner.

❖ It supports the government agenda of sustainable growth, while emerging as an integral part of the solution to meet the nation's energy needs and an essential player for **energy security.**

Related Initiatives

❖ Solar energy has taken a central place in India's National Action Plan on Climate Change with the **National Solar Mission (NSM)**

❖ **PM Surya Ghar Muft Bijlee Yojana :It** is a **Central Scheme** that aims to provide free electricity to one crore households in India, who opt to install roof top solar electricity units.

- ❖ The **International Solar Alliance (ISA)** : It is an **action-oriented**, member-driven, collaborative platform for increased deployment of solar energy technologies
  - ✓ The ISA was conceived as a joint effort by **India and France** to mobilize efforts against climate change through deployment of solar energy solutions.
  - ✓ It was conceptualized on the sidelines of the 21st Conference of Parties (COP21) to the United Nations Framework Convention on Climate Change (UNFCCC) held in Paris in 2015.
- ❖ Permitting **Foreign Direct Investment (FDI) up to 100** percent under the automatic route,
- ❖ Waiver of **Inter State Transmission System (ISTS) charges** for inter-state sale of solar and wind power for projects to be commissioned by 30th June 2025.
- ❖ The **Approved Models and Manufacturers of Solar Photovoltaic Modules (Requirement for Compulsory Registration) Order, 2019**, requires module makers to submit to an inspection of their manufacturing facilities by the National Institute of Solar Energy.
  - ✓ Being on the list as an 'approved' manufacturing facility certifies a company as legitimately manufacturing solar panels within its premises and not importing modules.
- ❖ In 2010, the **Centre launched the Jawaharlal Nehru National Solar Mission (JNNSM**) to focus on the promotion and development of solar power.

Concerns and Challenges

- ❖ Despite government nudges, solar power installed capacity had reached only **73.31 GW,** with rooftop solar around 11.08 GW by December 2023.
- ❖ The tepid growth of rooftop solar to **limited consumer awareness**, **inconsistent policies**, **high capital cost** and a dearth of suitable financing options.
- ❖ Policy uncertainty and regulatory pushbacks have been a major factor limiting growth in rooftop solar
- ❖ More importantly, **restrictions and/or ambiguity on provisions** such as banking of electricity and net metering have undermined rooftop solar opportunities in India
- ❖ In recent years, a significant fraction of India's solar installations has been met by imports.
  - ✓ This affects the **interests of domestic panel manufacturers** who have to pay the government to be certified while at the same time losing out on orders to the cheaper Chinese panels.

Conclusion and Way Forward

- ❖ India's energy demand is expected to increase more in the coming decades due to its sheer size and enormous potential for growth and development.
- ❖ Therefore,It is imperative for India to not only find alternatives to coal-based fuels but also secure its energy demands in a sustainable manner.
  - ✓ Most of this new energy demand must be met by low-carbon, renewable sources.
- ❖ The extensive use of solar power plants is a crucial step towards cleaner, cheaper, and sustainable energy, offering benefits at both utility and individual levels.
  - ✓ As soon as the targets are moved in line with India's demand, there is no doubt India can become a clean energy powerhouse."

RENEWABLE ENERGY CAPACITY OF INDIA

Context: According to the Ministry of New & Renewable Energy (MNRE), India has added 21% higher renewable energy capacity in 2023-24 than previous year.

About the Renewable Energy Capacity in India

- ❖ India, a country with a rapidly growing economy and increasing energy demands, has made significant strides in its renewable energy sector.

- ✔ It added 18.48 GW of renewable energy capacity in the fiscal year 2023-24, which is over 21% higher than the 15.27 GW added a year ago.
- ❖ It was primarily driven by solar installations (12.78 GW) and wind energy (2.27 GW).
- ❖ The total installed renewable energy capacity has increased from 76.37 GW in 2014 to 178.98 GW in October 2023, marking an increase of around 2.34 times.

Leading States in Renewable Energy

- ❖ **Gujarat and Rajasthan (27 GW each)** have the largest renewable energy capacities, followed by Tamil Nadu (22 GW), Karnataka (21 GW) and Maharashtra (17 GW).
- ❖ Himachal Pradesh and Andhra Pradesh (11 GW each) have installed renewable energy capacity.

Challenges Faced by the Renewable Energy Sector in India

- ❖ **Financial Health of Power Distribution Companies (DISCOMs):** The poor financial condition of power distribution companies **(discoms),** which are mostly owned by state governments.
  - ✔ Almost all renewable energy is purchased by such discoms, resulting in very long and unsustainable payment cycles.
- ❖ **Land Utilisation and Availability:** Issues such as lack of a proper Land Utilisation Policy, poorly maintained land records, land ceiling limits, and the task of obtaining permissions from local bodies act as roadblocks to the implementation of large-scale renewable energy projects.
- ❖ **Rapid Demand Growth and Chronic Supply Shortages:** India currently experiences a significant increase in energy demand driven by rapid economic growth, which necessitates a shift away from fossil fuels.
  - ✔ However, fossil fuels still dominate global energy consumption, continuing to raise GHG emission levels.

Government Efforts in India's Renewable Energy Sector

- ❖ **Permitting FDI:** India has permitted FDI up to 100% under the automatic route to attract foreign investments.
- ❖ **Waiver of Inter State Transmission System (ISTS) charges:** For inter-state sale of solar and wind power for projects, ISTS charges have been waived off.
- ❖ **Major Renewable Energy Schemes and Programmes:**
  - ✔ Scheme for Development of Solar Parks and Ultra-mega Solar Power Projects;
  - ✔ Central Public Sector Undertaking (CPSU) Scheme Phase-II;
  - ✔ Production Linked Incentive (PLI) Scheme 'National Programme on High Efficiency Solar PV Modules';
  - ✔ PM-KUSUM Scheme;
  - ✔ Rooftop Solar Programme Phase II;
  - ✔ Green Energy Corridors (GEC), and;
  - ✔ Bio-Energy Programme.
- ❖ **Increasing Awareness:** Efforts have been made by the Government to increase awareness about the use of renewable energy through introduction of various schemes and publicity through print and media.

Conclusion:

- ❖ India's record addition of renewable energy capacity in FY24 is a testament to the country's commitment to a sustainable and green future.
- ❖ As the world grapples with the challenges of climate change, India's strides in renewable energy offer a beacon of hope and a model for other countries to follow.

CHALLENGES OF RENEWABLE ENERGY

Context: Recent media highlights show that large-scale renewable energy development is sensitive to productive activities — agriculture and related livelihoods, with the potential for impacts on food security.

India and Renewable Energy

- ❖ India, the world's third-largest emitter of greenhouse gases, is making significant strides in its transition to renewable energy.
- ❖ The country's efforts are not only crucial for global climate change mitigation but also for addressing domestic energy needs.

Renewable Energy Capacity in India

- ❖ India, a country with a rapidly growing economy and increasing energy demands, has made significant strides in its renewable energy sector.
  - ✓ It added 18.48 GW of renewable energy capacity in the fiscal year 2023-24, which is over 21% higher than the 15.27 GW added a year ago.
- ❖ It was primarily driven by solar installations (12.78 GW) and wind energy (2.27 GW).
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Ambitious Targets

- ❖ India has set ambitious targets for renewable energy and plans to install 500 GW of renewable energy capacity by 2030. It includes a significant increase in solar and wind energy.
  - ✓ It is a significant increase from the previous target of 450 GW.
- ❖ The plan involves an investment of at least ₹2.44 lakh crore or ₹2.44 trillion.

Solar Power

- ❖ It is a key pillar of India's renewable energy strategy. The country has 214 sq. km of land under solar parks.
  - ✓ However, some studies estimate that India may need 50,000-75,000 sq. km, which is about half the size of Tamil Nadu, to achieve its Net Zero targets.
- ❖ The government's rooftop solar programme aims to enable 10 million households to obtain up to 300 units of free electricity every month.
  - ✓ It is expected to save households up to Rs 15,000-18,000 annually.

Challenges Of Renewable Energy

- ❖ **High Upfront Costs:** One of the most significant challenges of renewable energy is the high upfront costs associated with the installation of renewable energy technologies.
  - ✓ While renewable energy sources like solar and wind power save money in the long run, the initial setup costs can be prohibitive.
  - ✓ It is particularly true in developing countries, where the cost of borrowing is high.
- ❖ **Infrastructure and Technical Challenges:** Renewable energy technologies require specific infrastructure and technical expertise.
  - ✓ For instance, solar and wind energy systems require extensive land use, which can lead to conflicts over land rights.
  - ✓ Additionally, these systems require regular maintenance and skilled technicians for installation and repair.
- ❖ **Variability and Intermittency:** The variability and intermittency of renewable energy sources pose significant challenges.
  - ✓ Solar and wind power, for instance, are dependent on weather conditions and time of day, making them less reliable than traditional energy sources.
  - ✓ It necessitates the development of energy storage systems and grid infrastructure capable of managing these fluctuations.
- ❖ **Policy and Regulatory Hurdles:** Policy uncertainties and regulatory barriers can also hinder the growth of renewable energy.
  - ✓ Inconsistent policies and lack of long-term planning can create an uncertain investment environment, discouraging private sector involvement.

✓ Furthermore, bureaucratic red tape and complex permitting procedures can delay project implementation.

❖ **Access to Raw Materials:** Access to raw materials and rare earth metals is another challenge facing the renewable energy sector.

✓ These materials are essential for the manufacture of renewable energy technologies, and a projected shortage could impact the sector's growth.

❖ **Geographical Disparities:** Geographical disparities in the adoption of renewable energy technologies also pose a challenge.

✓ While some regions have abundant renewable resources, others may lack the necessary infrastructure or resources to harness these energies.

Renewable Energy and Concerns like Food Security in India

❖ India, the third-largest energy consumer in the world, is making significant strides in its transition to renewable energy.

✓ The transition to renewable energy in India is fraught with challenges. Land use for renewable energy may strain a variety of ecosystems. Moreover, electricity generation has to compete with alternative uses for land such as agriculture, urbanisation, human habitation and nature conservation.

❖ **The Land Use Challenge:** Large-scale renewable energy projects, particularly solar parks, require extensive land use.

✓ Some studies estimate that India may need 50,000-75,000 sq. km of land, about half the size of Tamil Nadu, to achieve its Net Zero targets.

✓ This land requirement poses a significant challenge as it may lead to the conversion of agricultural land into solar farms.

❖ **Impact on Food Security:** The conversion of agricultural land for renewable energy projects could potentially impact food security.

✓ Experts worry that this push for renewable energy may lead to food insecurity in the future as the country would need at least 400,000 hectares of land by 2030 to achieve its renewable goals.

✓ Agriculture is a critical sector in India, providing livelihoods for millions of people and playing a vital role in ensuring food security.

✓ Any policy that could potentially disrupt agricultural practices or reduce the amount of land available for farming needs to be carefully considered.

Balancing Renewable Energy and Food Security

❖ Balancing the need for renewable energy with the need to ensure food security is a complex challenge. It requires careful planning and policy-making65. Policymakers need to consider the potential impacts of renewable energy projects on agricultural practices and food security.

❖ One potential solution is to promote the use of wastelands for renewable energy projects.

✓ It could help to reduce the pressure on agricultural land and ensure that food production is not adversely affected.

❖ **Budgetary Provisions:** India is exploring innovative solutions to these challenges. For instance, the Union Budget 2024-25 has allocated Rs 10,000 crore for a grid-based solar power scheme.

✓ It includes provisions for viability gap funding for offshore wind energy for an initial capacity of 1 GW.

❖ **Global Recognition:** India's efforts in renewable energy have received global recognition. During his visit to India, the UN commended India on its shift towards renewable energy.

❖ It stated that India can become a true global superpower in the fight against climate change if it speeds up its shift from fossil fuels to renewable energy.

Conclusion and Way Forward

- ❖ Despite these challenges, the transition to renewable energy is crucial for mitigating climate change and achieving sustainable development.
  - ✓ It requires concerted efforts from governments, businesses, and individuals alike.
- ❖ Policymakers need to provide clear and consistent policy signals to encourage investment in renewable energy.
- ❖ Technological innovations are needed to improve the efficiency and reliability of renewable energy systems.
- ❖ Finally, public awareness and education are crucial for fostering acceptance and uptake of renewable energy technologies.

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Initiatives