

1ST EDITION
JUNE 2024



BI-WEEKLY EDITION

THE **MIB** | MENTORSHIP INDIA BI-WEEKLY

FROM POLE TO POLICY

Key Takeaways from the 46th Antarctic Treaty Meeting



SOURCES



Dear Students

The Mentorship India Bi-weekly is our half-monthly publication for staying updated on the latest developments shaping India and the World. Crafted with precision by our mentors, it serves as a comprehensive resource for students preparing for competitive exams. Offering insightful analysis, in-depth coverage, and strategic insights aligned with the exam syllabus, it empowers aspirants to navigate through contemporary issues with confidence. From breaking news to nuanced perspectives, our magazine transforms complex topics into easily digestible notes, ensuring every reader gains a holistic understanding of current affairs. Join us on a journey of knowledge enrichment and exam preparation excellence with our Bi-weekly Current Affairs.

FEATURES

- **MIB THEME BI-WEEKLY**
 - A comprehensive coverage of the most important bi-weekly topic.
- **MAINS IN-DETAIL BI-WEEKLY**
 - The in-depth coverage of issue that carry most probability to be asked in the Exam.
- **PRELIMS IN-BRIEF BI-WEEKLY**
 - Subject-wise reading notes of most expectable themes from Prelims point-of-view.
- **SELF EVALUATION BI-WEEKLY**
 - An assignment containing 25 Prelims Questions and 5 Mains Questions for your self-evaluation
- **SOLVED ESSAY BI-WEEKLY**
 - A Previous Year Solved Philosophical Essay to give student an extra edge on others.

FROM THE EDITORS

Do you Overthink?

Juggling endless study materials, strategizing for the next test, and constantly evaluating your progress – the UPSC journey is a mental marathon. But amidst this whirlwind, are you a victim of overthinking?

Critical thinking is essential for success in the Civil Services exam. It helps you analyze information, form strong arguments, and craft compelling answers. However, overthinking turns this strength into a weakness. It breeds self-doubt, paralyzes action, and fuels anxiety. Imagine missing deadlines, getting overwhelmed during exams, or losing focus due to constant "what ifs." Not the ideal recipe for cracking UPSC, right?

So, how do you conquer this? Start with mindfulness. Take breaks, meditate, and let your mind relax. Set realistic goals, break your study material into manageable chunks, and tackle them one at a time. Trust in your preparation, and remember, perfection is a myth. Mistakes are just stepping stones to success.

Remember, we, your mentors, are here to guide you every step of the way. Don't let overthinking dim your determination. You have the potential to excel – now go out there and prove it!

Team

UPSC Mentorship



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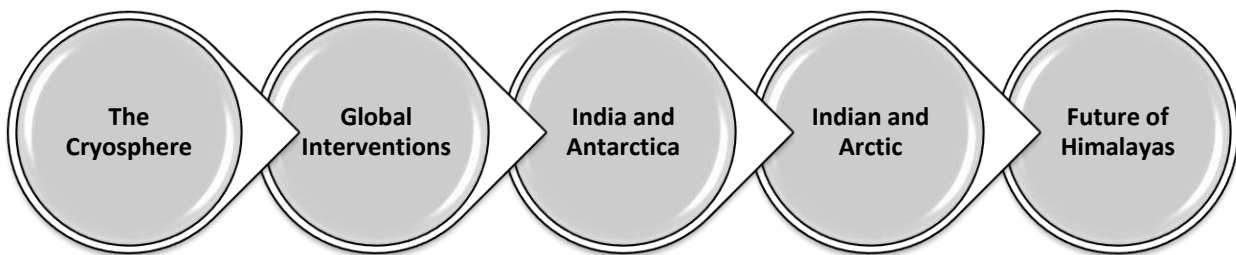
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THE MIB THEME BI-WEEKLY

FROM POLES TO POLICY

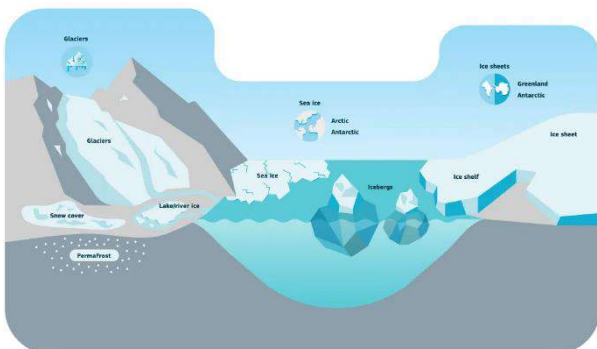
India hosted the 46th Antarctic Treaty Consultative Meeting (ATCM-46) and the 26th Committee for Environmental Protection (CEP-26) from May 20 to 30, 2024, in Kochi, Kerala. Organized by the Ministry of Earth Sciences through the National Centre for Polar and Ocean Research (NCPOR), the meetings included in-person and virtual attendance. A total of 404 delegates were registered for the 46th ATCM of which 328 attended in person and 76 attended virtually.



THE CRYOSPHERE

Cryosphere includes the components of the Earth System at and below the land and ocean surface that are frozen, including snow cover, glaciers, ice sheets, ice shelves, icebergs, sea ice, lake ice, river ice, permafrost, and seasonally frozen ground, and solid precipitation.

The cryosphere extends globally, existing seasonally or perennially at most latitudes, not just in the Arctic, Antarctic, and mountain regions, and in approximately one hundred countries.



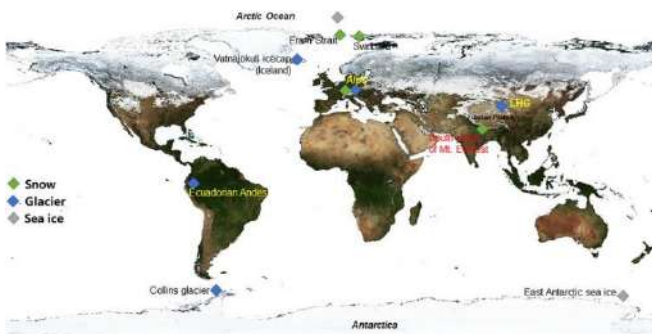
Significance of Cryosphere

- **Regulating Climate:** The cryosphere acts like a giant mirror, reflecting sunlight back into space thanks to its bright white surfaces. This helps regulate Earth's temperature.
- **Freshwater Reservoir:** Glaciers and ice sheets store vast amounts of freshwater. As they melt, they feed rivers and maintain water security for millions.
- **Carbon Sequestration:** Permafrost regions store large amounts of organic carbon, which, if released, can significantly impact global carbon cycles.
- **Supporting Ecosystems:** Polar sea ice provides critical habitat for marine life like polar bears and seals.
- **Climate Change Indicator:** The health of the cryosphere is a sensitive indicator of climate change. Melting ice sheets and shrinking glaciers signal a warming planet.

Major Cryosphere Regions

ANTARCTICA

- Ice Sheets: Home to the largest ice sheets, containing about 60% of the world's freshwater.
- Climate Influence: Acts as a major heat sink, affecting global climate patterns.
- Research Hub: Crucial for scientific research on climate change, glaciology, and marine biology.
- Unique Ecosystem: Hosts unique species adapted to extreme conditions.
- Sea Level Rise: Melting Antarctic ice contributes significantly to global sea level rise.



ARCTIC

- Sea Ice: Characterized by extensive sea ice that affects ocean circulation and weather patterns.
- Biodiversity: Rich in biodiversity, supporting species like polar bears, seals, and Arctic foxes.
- Indigenous Communities: Home to indigenous peoples who rely on the cryosphere for their traditional livelihoods.
- Resource Rich: Contains significant natural resources, including oil, gas, and minerals.

- Global Warming Indicator: Rapidly warming, making it a critical indicator of global climate change.

OTHERS

- Glaciers: Found in mountain ranges worldwide, providing freshwater and influencing regional climates.
- Permafrost: Covers vast areas in the Northern Hemisphere, storing large amounts of organic carbon.
- Ice Caps: Smaller than ice sheets but significant in places like Greenland and Patagonia.
- Snow Cover: Influences water availability for regions dependent on snowmelt.
- Sea Ice: Also present in areas like the Baltic Sea and Hudson Bay, affecting local ecosystems.

Threats to the Cryosphere

- Climate Change: Rising global temperatures are causing rapid melting of glaciers, ice sheets, and sea ice.
- Black Carbon Deposition: Soot from burning fossil fuels darkens snow and ice, reducing their reflectivity and accelerating melt.
- Ocean Acidification: As oceans absorb more carbon dioxide, they become acidic, harming marine life dependent on polar sea ice.
- Infrastructure Development: Human activities like mining and construction can disrupt fragile cryosphere environments.
- Reduced Albedo: Melting cryosphere exposes darker surfaces like soil and water, leading to increased heat absorption by Earth.

GLOBAL INTERVENTIONS

The Paris Agreement, adopted in 2015 under the United Nations Framework Convention on Climate Change (UNFCCC), is a landmark global accord aimed at limiting global warming to well below 2°C above pre-industrial levels, with efforts to limit the increase to 1.5°C.

This agreement directly addresses the issues of the cryosphere, recognizing the critical role that temperature rise plays in accelerating ice melt and the consequent rise in sea levels. The Paris Agreement encourages signatories to enhance their climate actions, with a strong focus on reducing greenhouse

gas emissions to mitigate the adverse effects on polar ice.

The Intergovernmental Panel on Climate Change (IPCC) Reports

The IPCC plays a pivotal role in assessing the science related to climate change, including its impacts on the cryosphere. The IPCC Special Report on the Ocean and Cryosphere in a Changing Climate (SROCC), released in 2019, provides a detailed analysis of the impacts of climate change on the world's oceans and cryosphere. It underscores the rapid warming of the Arctic, the loss of ice mass from the Antarctic ice sheet, and the

retreat of glaciers worldwide. The report calls for urgent global action to reduce greenhouse gas emissions and to implement adaptation strategies to protect vulnerable communities and ecosystems.

The Arctic Council

The Arctic Council, established in 1996, is a high-level intergovernmental forum that addresses issues faced by the Arctic governments and indigenous people. The Council's Sustainable Development Working Group focuses on the conservation of Arctic biodiversity, sustainable development, and environmental protection. Key initiatives include the Arctic Marine Shipping Assessment, which aims to reduce the environmental impacts of shipping in the Arctic, and the Arctic Biodiversity Assessment, which provides scientific advice on the protection of Arctic biodiversity. The Council also promotes scientific research and monitoring to understand and address the impacts of climate change on the Arctic region.



The Antarctic Treaty System (ATS)

The Antarctic Treaty System, established in 1959, sets aside Antarctica as a scientific preserve and bans military activity on the continent. The ATS is pivotal in regulating human activities in Antarctica to protect its unique environment. The Protocol on Environmental Protection to the Antarctic Treaty, adopted in 1991, specifically addresses the protection of the Antarctic environment and ecosystem. It regulates activities

such as mineral exploration, waste disposal, and the introduction of non-native species. The ATS also promotes international scientific cooperation, with numerous nations conducting research on climate change, ice dynamics, and ecosystem health in Antarctica.

The Global Ice Watch Initiative

Launched by the World Meteorological Organization (WMO) in collaboration with the European Space Agency (ESA) and other partners, the Global Ice Watch initiative aims to monitor and assess changes in the cryosphere using satellite observations. This initiative provides real-time data on ice conditions, which is crucial for understanding ice dynamics and predicting future changes. The data collected by Global Ice Watch is essential for improving climate models and enhancing our understanding of the feedback mechanisms between the cryosphere and global climate systems.

The United Nations Environment Programme (UNEP) and the Cryosphere

UNEP plays a significant role in addressing cryosphere-related issues through its various programs and initiatives. The UNEP's Global Environment Outlook (GEO) reports include assessments on the state of the cryosphere and its role in climate regulation. UNEP also supports the implementation of the Sustainable Development Goals (SDGs), particularly Goal 13 (Climate Action) and Goal 14 (Life Below Water), which address climate change and ocean conservation, including the protection of polar regions.

International Collaboration and Research Programs

Several international research programs focus on the cryosphere, promoting collaboration and knowledge sharing among scientists worldwide. Notable programs include:

- **The International Polar Year (IPY):** IPY, a series of coordinated international research efforts, has significantly advanced our understanding of polar regions. The most recent IPY took place from 2007 to 2008, focusing on climate change impacts,

ecosystems, and human health in the polar regions.

- **The International Cryosphere Climate Initiative (ICCI):** ICCI aims to enhance international cooperation in cryosphere research, particularly in improving observational networks and climate models to predict changes in ice dynamics.

- **The Collaborative Long-term Observing Network for the Cryosphere (CLOVER):** This initiative seeks to establish a global network of observatories to monitor cryosphere changes continuously, providing high-quality data essential for climate research and policy-making.

INDIA AND ANTARCTICA

Antarctica, the icy continent at the southernmost tip of the Earth, has long been a land of mystery and fascination. Today, Antarctica is not only a subject of scientific curiosity but also a critical area for global research on climate change, marine biology, and glaciology. India's involvement in Antarctic research dates back to the 1980s, and over the decades, it has established a significant presence on the continent. This relationship has evolved from mere exploration to a robust scientific collaboration, positioning India as a key player in Antarctic research.

Historical Context

- **1959 Antarctic Treaty:** Established Antarctica as a zone for scientific research, prohibiting military activity.
- **1989:** India established its first research station, "Maitri," in the Schirmacher Oasis, marking its commitment to Antarctic research.
- **2012:** Bharati research station established in Larsemann Hills, equipped with modern amenities and laboratories.
- **Logistics:** Use of icebreakers like "IBN Battuta" and "MV Nidesh" enhances transportation of personnel and equipment.

Scientific Research and Achievements

- **Disciplines:** Research spans glaciology, climate science, biology, and geology.
- **Ice Cores:** Studies on ice cores have provided data on past climate conditions, aiding future climate modeling.
- **Biodiversity:** Discovery of new species, such as a new diatom species, has expanded biodiversity records.
- **Microorganism Studies:** Research on microorganisms in extreme conditions impacts biotechnology and astrobiology.



Challenges

- Harsh climatic conditions and logistical complexities.
- Continuous funding and resource requirements for maintaining research stations.
- **Environmental Concerns:** Need for stringent measures to prevent pollution and protect the Antarctic environment.

Conclusion

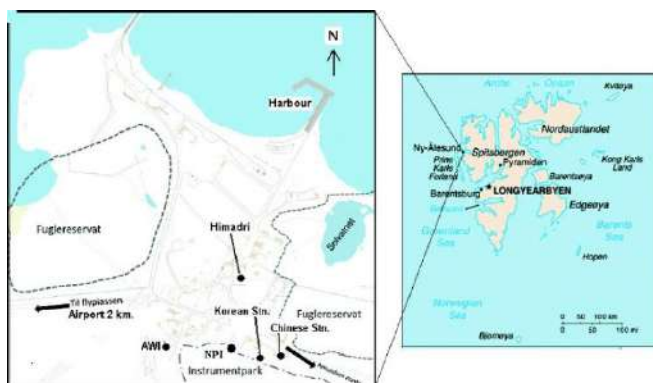
- **Achievements:** India's Antarctic program has significantly advanced scientific understanding of climate change, biodiversity, and polar sciences.
- **Global Role:** India's contributions through research and international collaboration enhance global scientific knowledge and environmental stewardship.
- **Future Outlook:** Continued investment in research and infrastructure is crucial for India to sustain its impactful presence in Antarctica, supporting global scientific and environmental goals.

INDIAN AND ARCTIC

The Arctic, increasingly influenced by climate change, is becoming central to global geopolitical and economic strategies. India, with its expanding polar research and strategic interests, is enhancing its engagement with the Arctic region.

Historical Context

- **Early Engagement:** India's interest in the polar regions began with the establishment of the Indian Antarctic Program in 1981.
- **Shift to the Arctic:** Interest in the Arctic grew in the early 2000s, driven by the need to understand climate change impacts and explore new opportunities.
- **Participation in Expeditions:** Since 2007, Indian scientists have been part of various international Arctic research expeditions, studying climate change, glaciology, marine biology, and atmospheric sciences.
- **Establishment of Himadri Station:** In 2008, India established the Himadri research station in Spitsbergen, Svalbard, serving as a hub for Arctic research.



Benefits of Arctic Expedition

- **New Maritime Routes:** The melting ice has opened new shipping routes like the Northern Sea Route (NSR) and the Northwest Passage (NWP), potentially reducing travel time and shipping costs.
- **Resource Exploration:** The Arctic's untapped natural resources, including oil, gas, and minerals, have attracted global interest, presenting economic opportunities for India.

- **Arctic Council Membership:** India became an observer in the Arctic Council in 2013, participating in discussions on Arctic governance, development, and environmental protection.
- **Bilateral Collaborations:** India has strengthened ties with Arctic nations like Norway, Russia, and Denmark, focusing on research, technology exchange, and capacity building.

Challenges

- **Climate Change Impact:** Rapid warming affects ecosystems and communities, requiring focused research on climate science and conservation.
- **Resource Management:** Exploiting Arctic resources necessitates balancing economic benefits with environmental protection.
- **Geopolitical Tensions:** The Arctic's strategic importance has led to competition among global powers, requiring careful diplomatic navigation.

Opportunities

- **Scientific Advancements:** Enhancing research capabilities can boost understanding of climate change and support global scientific goals.
- **Economic Potential:** New shipping routes and resource opportunities can enhance India's economic connectivity and energy security.
- **Diplomatic Influence:** Active participation in the Arctic Council and bilateral dialogues strengthens India's position in Arctic governance.

Way Forward

- **Expanding Research Infrastructure:** Enhancing Himadri and establishing more research stations will strengthen India's Arctic research presence.
- **Fostering International Partnerships:** Deepening ties with Arctic nations and international organizations will enhance India's research and strategic interests.
- **Promoting Sustainable Development:** Developing sustainable resource management frameworks will align India's Arctic engagement with global conservation goals.

THE FUTURE OF POLES

The cryosphere, comprising all the snow, ice, and frozen ground on Earth, plays a crucial role in regulating the planet's climate and sea levels. As climate change accelerates, the future of the cryosphere is a subject of intense study and concern.

Understanding the Threats

- **Accelerated Melting:** Rising temperatures will continue to drive ice loss, leading to rising sea levels, threatening coastal communities and infrastructure.
- **Disruptions in Ocean Currents:** Melting glaciers and ice sheets disrupt the delicate balance of global ocean circulation patterns, impacting weather systems worldwide.
- **Permafrost Thaw:** Warming permafrost releases potent greenhouse gases like methane, further accelerating climate change. Additionally, thawing permafrost can destabilize infrastructure and release stored pollutants.
- **Biodiversity Loss:** Melting glaciers and ice sheets disrupt habitats of polar and alpine species, leading to potential extinctions and ecosystem imbalances.

Emerging Technologies for Monitoring and Mitigation

- **Advanced Remote Sensing:** Utilizing high-resolution satellite imagery, LiDAR (Light Detection and Ranging), and other remote sensing techniques will provide crucial data for monitoring ice loss, glacier retreat, and permafrost changes.
- **Improved Climate Modeling:** Refining climate models to incorporate more precise cryosphere dynamics will enhance our understanding of future impacts and inform mitigation strategies.
- **Ice Sheet Mass Balance Studies:** Developing advanced techniques for measuring ice sheet mass balance is critical for better predicting sea-level rise.

Way Forward

- **Geoengineering Solutions:** While controversial, geoengineering solutions like solar radiation

management might be explored as a last resort to mitigate climate change and slow ice loss.

- **Ethical Considerations:** As the cryosphere thaws, ethical questions regarding the exploitation of newly accessible resources in previously ice-covered regions will need to be addressed.
- **The Role of Indigenous Communities:** Indigenous communities inhabiting cryosphere regions possess valuable knowledge and traditional practices for living in harmony with the environment. Their inclusion in decision-making processes and research initiatives is crucial.
- **Collaborative Research Programs:** Fostering international collaboration for research programs on cryosphere dynamics, mitigation strategies, and adaptation measures.
- **Financial Assistance:** Developed nations can provide financial assistance to developing countries to support their efforts in mitigating climate change and adapting to cryosphere changes.
- **Technology Transfer:** Facilitating the transfer of cryosphere monitoring and adaptation technologies to developing countries can enhance their preparedness for future impacts.
- **Raising Awareness:** Educating the public about the importance of the cryosphere and the consequences of its decline is essential to foster public support for mitigation and adaptation efforts.
- **Investing in Renewable Energy:** Transitioning to renewable energy sources is vital for reducing greenhouse gas emissions and slowing global warming.
- **Cryosphere-Specific Policies:** Implementing policies that incentivize sustainable practices in cryosphere-sensitive regions like promoting responsible tourism and resource extraction.
- **Investing in Adaptation Strategies:** Developing and implementing adaptation strategies to address the unavoidable impacts of cryosphere change, such as coastal protection measures and infrastructure upgrades.

MAINS IN-DETAIL BI-WEEKLY

THE REPRESENTATION OF WOMEN IN POLITICS

With the results of the 18th Lok Sabha elections announced on June 4th, there will be 74 female MPs, which is a tiny decrease from the 78 female MPs elected to the Lower House of Parliament in 2019.

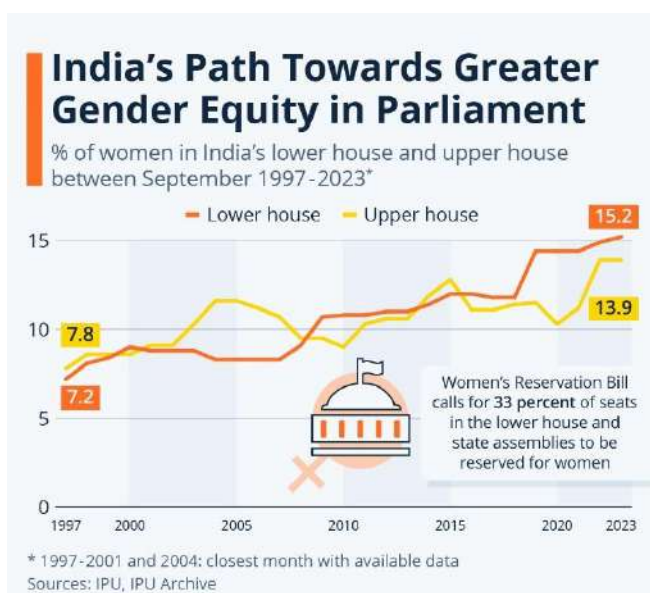
STATUS OF WOMEN IN POLITICS

- **Current Female Heads of State and Government:** As of 10 January 2024, there are 26 countries where 28 women serve as Heads of State and/or Government.
- **Current Lok Sabha Statistics:** Election Commission of India (ECI) data indicates that women will make up 13.6% of the new Lok Sabha in 2024, compared to 14.3% of all members of the 17th Lok Sabha elected in 2019.
- **Prominent Female Leaders:** India has a long history of female leaders, including the nation's first female president, Pratibha Patil, and former prime minister Indira Gandhi.
- **Continued Gender Disparity:** Despite these well-known exceptions, women are still generally underrepresented in Indian politics.

- **Economic Disparities:** Women generally have less access to financial resources, which are crucial for funding political campaigns and engaging in political activities.
- **Policy and Structural Barriers:** The institutions and policies of many political systems make it difficult for women to participate in them.
- **Insufficient Mentorship and Networking Opportunities:** Women often lack access to the same political networks and mentorship opportunities that men have, hindering their political advancement.
- **Systemic Bias within Political Institutions:** Women face systemic bias and discrimination within political institutions, creating significant barriers to their participation and success in politics.

IMPLICATIONS

- **Limited Perspective:** Policies may not fully reflect the needs and concerns of the entire population.
- **Gender Inequality:** The underrepresentation of women in politics contributes to societal gender inequality.
- **Barriers to Female Leadership Development:** The lack of women in politics limits role models and mentors for future female leaders.
- **Weakened Focus on Social Issues:** Critical social issues, such as healthcare, education, and family welfare, may receive less attention and funding.
- **Inadequate Representation of Women's Interests:** Women's specific interests and rights may not be adequately represented or protected in the legislative process.



REASONS

- **Cultural and Societal:** Women only possess 26.1% of parliamentary seats globally, according to the World Economic Forum's Global Gender Gap Report 2023.

STEPS TAKEN

- **Equal Standing Post-Independence:** Men and women were given equal standing in all political, social, and economic domains under the Indian

Constitution after the country gained independence.

- 73rd and 74th Constitutional Amendments: The 73rd and 74th Amendments to the Constitution reserve seats for women in local governing bodies (Panchayats), aimed at reducing gender disparity in Indian politics.
- Constitution (106th Amendment) Act, 2023: This amendment reserves one-third of all seats for women in Lok Sabha, State legislative assemblies, and the Legislative Assembly of Delhi.
- Permanent Commissions and Command Positions: Female army officers are now considered for permanent commissions and command positions in all branches other than combat.
- Rashtriya Mahila Kosh: This initiative provides women with financial resources to promote their living and self-employment, indirectly supporting their political ambitions.

CHALLENGES STILL FACED


- Deep-Rooted Gender Stereotypes: Traditional gender roles and societal expectations continue to discourage women from entering politics.
- Financial Constraints: Women often lack access to the financial resources needed to run successful political campaigns, limiting their participation.
- Hostile Political Climate: Women frequently face harassment, discrimination, and violence in political spheres, which can deter their involvement.
- Insufficient Mentorship and Networks: Women have limited access to mentorship and political networks, which are crucial for gaining support and advancing in politics.
- Ineffective Enforcement: Despite the existence of gender quotas, their implementation is often weak, resulting in minimal actual increase in women's political representation.

WAY FORWARD

- Promoting Gender-Equal Policies: In order to guarantee greater representation of women in positions of decision-making, political institutions should enforce gender quotas.
- Enhancing Access to Resources: Providing financial assistance and resources to women candidates to enable them to compete effectively in political campaigns.
- Building Support Networks: Establishing mentorship programs and support networks to provide guidance and networking opportunities for aspiring female politicians.
- Addressing Gender Bias: Implementing measures to address gender bias and discrimination within political institutions and electoral processes.
- Promoting Gender-Responsive Governance: Advocating for policies that address the specific needs and concerns of women, ensuring gender-responsive governance.

Timeline of the Women's Reservation Bill

<p>1971 First committee for women (Status of Women in India) was formed</p> <p>1989 Rajiv Gandhi first introduced Constitution Amendment Bill (women's reservation) in panchayats, municipal corporations - it failed in Rajya Sabha</p> <p>1992 72nd Constitutional Amendment Act was passed</p> <p>1993 73rd Constitutional Amendment Act was passed</p> <p>1996 81st Amendment Bill was introduced in Lok Sabha by HD Deve Gowda - failed to get passed</p>	<p>1998 Atal Bihari Vajpayee-led NDA government introduced the Bill in 12th Lok Sabha - did not receive support</p> <p>1999, 2002, 2003 It was reintroduced by the Vajpayee government but failed again</p> <p>2008 Bill was introduced in Rajya Sabha by Manmohan Singh-led UPA government; it was sent to the Parliamentary Standing Committee</p> <p>2009 Standing committee presented its report</p> <p>2010 Women Reservation's Bill received the Union Cabinet's approval</p>
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Though the Bill passed in the Rajya Sabha in 2010, it was never taken up for consideration in the Lok Sabha. It is still active

HORTICULTURE SECTOR IN INDIA

The Department of Agriculture and Farmers Welfare has published the Second Advance Estimates for the 2023-24 area and production of various horticultural crops.

HIGHLIGHTS OF 2023-24 (SECOND ADVANCE ESTIMATES)

- The horticulture production in the country in 2023-24 (Second Advance Estimates) is estimated to be about 352.23 Million Tonnes, a decrease of about 32.51 Lakh Tonnes (0.91%) over 2022-23 (Final Estimates).
- Increase in production of Fruits, Honey, Flowers, Plantation Crops, Spices and Aromatics & Medicinal Plants is seen over 2023-24 (Final Estimates) whereas decrease in Vegetables.

Year	Sector-wise share in GVA at current prices (in %)			Sector-wise growth in GVA at constant (2011-12) prices (in %)				Aggregate GVA (₹ in lakh crore)	
	Primary	Secondary	Tertiary	Primary	Secondary	Tertiary	All	Current	Constant
2011-12	21.7	29.3	49.0					81.1	81.1
2012-13	21.3	28.7	50.0	1.4	3.6	8.3	5.4	92.0	85.5
2013-14	21.4	27.9	50.6	4.8	4.2	7.7	6.1	103.6	90.6
2014-15	20.9	27.3	51.8	1.2	6.7	9.8	7.2	115.0	97.1
2015-16	20.1	27.6	52.3	2.1	9.5	9.4	8.0	125.7	104.9
2016-17	20.4	27.0	52.6	7.3	7.5	8.5	8.0	139.7	113.3
2017-18	20.4	27.0	52.5	-4.5	7.1	6.3	6.2	155.1	120.3
2018-19	19.8	26.9	53.3	1.6	5.9	7.2	5.8	171.8	127.3
2019-20	20.3	25.0	54.8	-4.8	-1.3	6.4	3.9	183.8	132.4
2020-21*	22.1	25.6	52.3	2.3	0.2	-8.4	-4.1	182.1	126.9
2021-22*	21.0	26.8	52.2	-4.8	12.7	9.2	9.4	216.4	138.8
2022-23 [†]	20.2	25.6	54.2	4.4	2.1	10.0	6.7	246.6	148.0

HORTICULTURE SECTOR

- Horticulture is a branch of agriculture focused on intensively cultivated plants used directly by humans for food, medicinal purposes, and aesthetic enjoyment.
- It involves the cultivation, production, and sale of vegetables, fruits, flowers, herbs, and ornamental or exotic plants.
- India is the second-largest producer of fruits and vegetables globally.
- The horticulture sector significantly contributes to the Indian economy, accounting for about 33% of the agricultural Gross Value Added (GVA).
- The productivity of horticulture crops is significantly higher than that of food grains, with 12.49 tons per hectare compared to 2.23 tons per hectare.
- Between 2004-05 and 2021-22, the productivity of horticulture crops increased by about 38.5%.
- According to the Food and Agricultural Organization (FAO), India leads in the production

of certain vegetables such as ginger and okra, and fruits like bananas, mangoes, and papayas.

- India ranks 14th in vegetable exports and 23rd in fruit exports, with a mere 1% share in the global horticultural market.
- Around 15-20% of fruits and vegetables in India are wasted along the supply chain or at the consumer level, contributing to greenhouse gas emissions (GHGs).

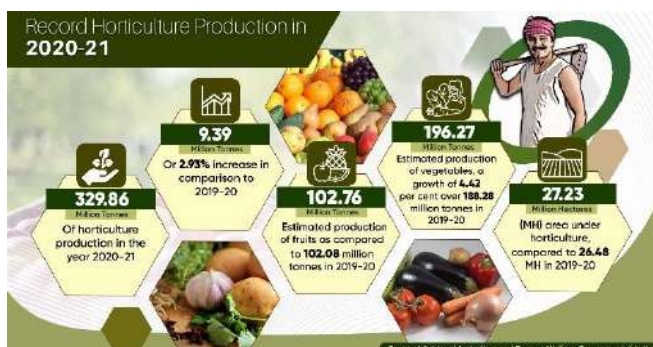
CHALLENGES FACED

- Climate Change Vulnerability**
 - Changing temperatures, irregular rainfall, and unpredictable weather reduce crop yields and cause losses.
 - More frequent and severe droughts, floods, and cyclones disrupt production and lower crop quality.
- Water Management Issues**
 - Limited irrigation water and poor water management hinder crop growth, especially in dry areas.
 - Excessive groundwater use and inefficient irrigation worsen water shortages.
- Pests and Diseases**
 - Pests and diseases are becoming resistant to common pesticides, needing new management practices.
 - New pests and diseases, like desert locusts, threaten crops and require careful monitoring.
- Post-Harvest Losses and Infrastructure Constraints**
 - Lack of proper storage leads to significant losses after harvest, reducing produce quality and value.
 - Insufficient cold storage and poor transport networks cause spoilage and waste of perishable goods.

GOVERNMENT INITIATIVES

Mission for Integrated Development of Horticulture (MIDH)

- Overview: MIDH is a national scheme aimed at the overall growth of the horticulture sector, including fruits, vegetables, spices, flowers, and more.
- Ministry: Implemented by the Ministry of Agriculture and Farmers Welfare since 2014-15 under Green Revolution - Krishonnati Yojana.
- Funding: The central government provides 60% of the funding, with states contributing 40%. For North Eastern and Himalayan states, the central government covers 90%.
- Sub-Schemes:
 - National Horticulture Mission (NHM): Implemented in selected districts of 18 states and 6 Union Territories.
 - Horticulture Mission for North East & Himalayan States (HMNEH): Focuses on horticulture development in these regions.
 - Central Institute for Horticulture (CIH): Established in Nagaland for training and capacity building in the North East.



Horticulture Cluster Development Programme

- Overview: A central programme aimed at developing horticulture clusters to enhance their global competitiveness.
- Implementation: Managed by the National Horticulture Board (NHB) of the Ministry of Agriculture and Farmers' Welfare, targeting 55 clusters.

- Objectives:
 - Increase exports of targeted crops by 20%.
 - Create cluster-specific brands.
 - Address issues across the horticulture value chain, from production to marketing.
 - Integrate with other government initiatives like the Agriculture Infrastructure Fund.

WAY FORWARD

- Develop Climate-Resilient Crops: Invest in research to develop crop varieties that can withstand extreme weather conditions.
- Adopt Climate-Smart Agriculture: Implement practices such as mulching, drip irrigation, and rainwater harvesting to enhance resilience to climate change.
- Integrated Pest Management (IPM): Implement IPM practices to manage pest resistance and reduce reliance on chemical pesticides.
- Cold Chain Logistics: Develop an efficient cold chain infrastructure to ensure fresh produce reaches markets without spoilage.
- Farmer Cooperatives: Encourage the formation of cooperatives to help farmers gain better access to markets and negotiate fair prices.
- Subsidies and Incentives: Provide subsidies for adopting advanced technologies and practices in horticulture.
- Credit Facilities: Ensure easy access to affordable credit for small and marginal farmers to invest in modern horticulture practices.
- Organic Farming: Promote organic farming practices to enhance soil health and reduce environmental impact.

To achieve demand-driven production, higher productivity, better credit and risk management, and stronger market connections, it is essential to build partnerships among farmers, government, consumers, industry, and academia. As India aims to become a global leader in fruits and vegetables, this journey will rely on collaborative efforts and a shared commitment to improving the incomes and livelihoods of the country's small-scale farmers.

GREEN WASTE TECHNOLOGIES

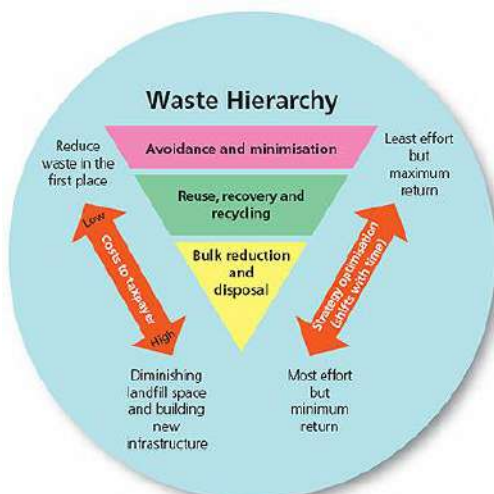
Green technology plays a crucial role in creating a sustainable future. It includes innovations designed to improve the environment and use resources more efficiently, which is essential for combating climate change and resource shortages.

CURRENT STATUS OF GREEN TECHNOLOGY

- **Energy Sector:** Embracing renewable energy sources like solar, wind, and bioenergy, with initiatives such as the National Solar Mission and National Green Hydrogen Mission.
- **Building Sector:** Implementing green building designs focused on energy efficiency and sustainable materials.
- **Transport Sector:** Expanding the use of electric vehicles (EVs) and sustainable public transport systems.
- **Water and Waste Management:** Developing advanced waste management technologies and sustainable water usage practices.

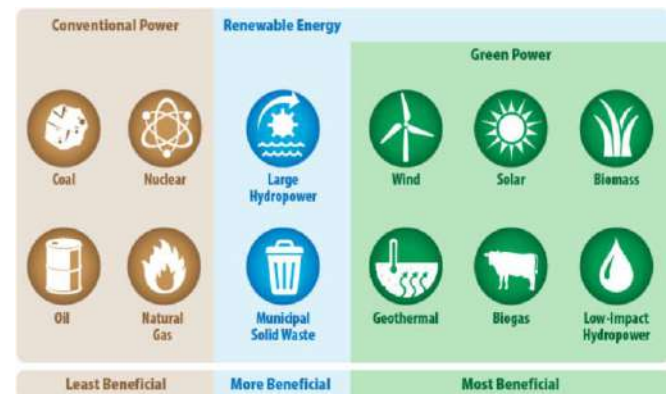
GREEN TECHNOLOGY AND WASTE MANAGEMENT

Rural India faces major challenges in waste management, leading to environmental damage and socioeconomic disparities. Embracing green waste technologies offers a solution to empower rural communities and reduce environmental impacts. Bridging urban-rural socioeconomic gaps and ensuring equitable resource distribution are crucial for a circular economy and achieving the Net Zero Targets of 2070.



Current State of Waste Management in Rural Regions

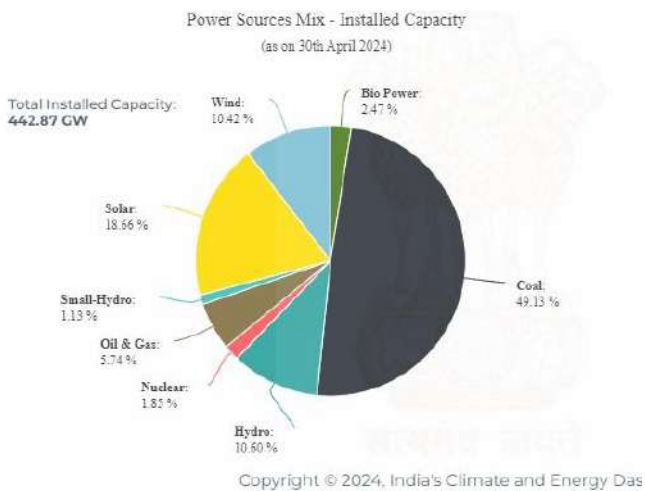
- **Overview:** Rural waste management in India is underdeveloped, causing environmental harm. Common practices include open dumping, ewaste burning, river dumping, and plastic pollution. Lack of formal systems exacerbates the problem.
- **Types of Waste:** Includes solid waste (agricultural residues, wet waste), plastic waste, biomedical waste, and construction and demolition (C&D) waste.



TECHNOLOGIES AND THEIR BENEFITS

- **Renewable Energy:** Technologies like MicroHydro Power (MHP) can drive rural development and alleviate poverty.
- **Waste Conversion Processes:** Includes thermal conversions (incineration, pyrolysis, gasification), biochemical conversions (composting, anaerobic digestion), and chemical conversions (transesterification for biodiesel).
- **Successful Implementations:** Gasification in Japan, USA, and Europe reduces waste and greenhouse gas emissions. Waste to energy solutions decrease reliance on fossil fuels.
- **Empowering Rural Communities:** Promotes environmental conservation and socioeconomic development.

- **Environmental Sustainability:** Composting and biogas generation enhance soil fertility and reduce emissions.
- **Economic Opportunities:** Selling compost and biogas fosters rural entrepreneurship.
- **Climate Resilience:** Proper waste management mitigates climate change impacts.
- **Community Engagement:** Knowledge and skills development foster community ownership and responsibility.



Identification of Barriers

- **Pollution:** Open burning of agricultural residues, e-waste, and plastics exacerbates air pollution and climate change.
- **Infrastructure:** Limited infrastructure and resources hinder effective waste management.
- **Awareness:** Lack of awareness about proper disposal practices leads to harmful consequences.



POTENTIAL SOLUTIONS AND INNOVATIONS

- **Smart Waste Management Systems (SWM):** Integration of IoT, optimized logistics, and solar-powered sensors.
- **Best Practices:** National programs like the National Biogas and Manure Management Program (NBMMP) and Swachh Bharat Mission, and community-driven initiatives.
- **Social Inclusion of Waste Pickers:** Recognizing and integrating their contributions into local economies.
- **Digital Monitoring:** Using IoT, mobile apps, and data analytics to streamline waste collection and disposal.
- **Education and Awareness Programs:** Enhancing community knowledge on waste management practices.
- **Policy Recommendations:** Replicating local best practices, fostering rural entrepreneurship, implementing policies to address environmental injustice, and promoting cohesion between urban and periurban areas.



Supportive policy frameworks, financial incentives, and technical assistance are essential for adopting green waste technologies. Public-private partnerships can facilitate technology transfer, fostering innovation and entrepreneurship in rural areas. Promoting the adoption and scaling up of green waste technologies can pave the way towards a greener and more inclusive future for India's rural population.

ANDHRA PRADESH-TELANGANA RELATIONS

Andhra Pradesh recently celebrated the 10th anniversary of its bifurcation, which led to the creation of two states: Andhra Pradesh and Telangana. This milestone offers a chance to reflect on the political, economic, and historical ramifications of this division for the Telugu-speaking population.

LINGUISTIC DIVISION OF ANDHRA PRADESH

- In December 1920, the Indian National Congress, during its Nagpur session, decided to reorganize the Provincial Congress Committees based on linguistic lines.
- Aimed to address the needs and interests of different linguistic groups, fueling the demand for states organized by language.
- The agitation for linguistic reorganization gained significant traction in post-independence India, driven by a desire among Telugu speakers to preserve and promote their cultural and linguistic identity.

AGITATION FOR A LINGUISTIC STATE

- A key figure in this movement was Potti Sreeramulu, a Gandhian and social activist.
- He began a hunger strike on October 19, 1952, to demand a separate state for Telugu-speaking people.
- His death after 56 days of fasting intensified the agitation, compelling the Indian government to reevaluate its stance on linguistic reorganization.

POTTI SREERAMULU

Potti Sreeramulu, was an Indian revolutionary. He undertook a hunger strike for 58 days in support of the formation of Andhra Pradesh for the Telugu-speaking population of Madras Presidency. He lost his life in the process.



Constitutional Provision for Formation of New State

- Article 2: Parliament may by law admit into the Union, or establish, new States on such terms and conditions as it thinks fit.
- Article 3: Formation of new States and alteration of areas, boundaries or names of existing States:
 - Form a new State by separation of territory from any State or by uniting two or more States or parts of States or by uniting any territory to a part of any State
 - Increase the area of any State
 - Diminish the area of any State
 - Alter the boundaries of any State
 - Alter the name of any State



COMMISSIONS FOR LINGUISTIC REORGANIZATION

Several commissions were established by the Central Government of India to examine and recommend the reorganization of states on a linguistic basis:

Dar Commission (1948)

- Purpose: To assess the feasibility of reorganizing states based on language.
- Outcome: Headed by S.K. Dar, the commission opposed linguistic reorganization, emphasizing administrative efficiency over linguistic unity.

JVP Committee (1948-1949)

- Members: Jawaharlal Nehru, Vallabhbhai Patel, and Pattabhi Sitaramayya.
- Purpose: To review linguistic state demands post-Dar Commission.
- Outcome: Recommended against linguistic reorganization, citing potential administrative and national unity challenges.

Fazal Ali Commission (States Reorganisation Commission) (1953-1955)

- Members: Fazal Ali (Chairman), K.M. Panikkar, and H.N. Kunzru.
- Purpose: To examine the reorganization of states based on linguistic and other factors.
- Outcome: Recommended creating linguistic states with reservations to ensure national integration and administrative convenience, leading to the formation of several states based on language.

STATES REORGANISATION ACT (1956)

Based on the Fazal Ali Commission's recommendations, the act led to a significant redrawing of state boundaries across India. It merged the Telugu-speaking areas of Hyderabad state with Andhra state to form the enlarged Andhra Pradesh.

Formation of Andhra State

- Following Potti Sreeramulu's death and the subsequent public uproar, the Indian government, influenced by various committee recommendations, decided to create a separate state on linguistic grounds.
- Thus, the first linguistic state of India, Andhra, was formed by separating the Telugu-speaking regions from the Madras state.

- On June 2, 2014, the northwestern part of Andhra Pradesh was separated, creating the 29th state, Telangana, through the Andhra Pradesh Reorganisation Act, 2014.

SPECIAL CATEGORY STATUS (SCS) FOR ANDHRA PRADESH

Overview

The issue of granting Special Category Status (SCS) to Andhra Pradesh has been a significant and contentious topic since the state's bifurcation in 2014.

What is Special Category Status (SCS)?

SCS is a classification granted by the Central Government to assist certain states in development, considering their geographical and socio-economic disadvantages. Introduced in 1969 based on the Fifth Finance Commission's recommendations, SCS considers factors such as:

- Hilly and difficult terrain
- Low population density and/or significant tribal population
- Strategic location along international borders
- Economic and infrastructural backwardness
- Non-viable state finances

The 14th Finance Commission, however, discontinued 'special category status' for states, except for the Northeastern and three hill states.

States with Special Status

Currently, states with special status include Arunachal Pradesh, Assam, Himachal Pradesh, Jammu and Kashmir, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, Tripura, and Uttarakhand.

PLASTIC POLLUTION IN INDIA

As discussions still continue for an international legally binding treaty on plastic pollution (ie the Global Plastic Treaty), it becomes crucial to consider how it can support a fair transition for individuals who collect and recycle plastic waste informally.

GLOBAL PLASTICS TREATY

- The Global Plastics Treaty is an ambitious initiative involving over 175 UN member nations aimed at eliminating plastics.
- By the end of 2024, the aim is to create a legal document setting out deadlines for countries to decrease plastic production, cut out unnecessary uses, prohibit specific chemicals, and set recycling goals.
- Recently, the fourth session of the Intergovernmental Negotiating Committee (INC-4) of the United Nations Environment Agency (UNEA) was held in Ottawa, Canada attracting participation from over 170 member states.
- The INC-4 for a global plastics treaty failed to reach an agreement. Negotiators aim to reach a consensus by the end of 2024 at INC-5 which is scheduled for November 2024 in South Korea.

End Plastic Pollution: Looking forward

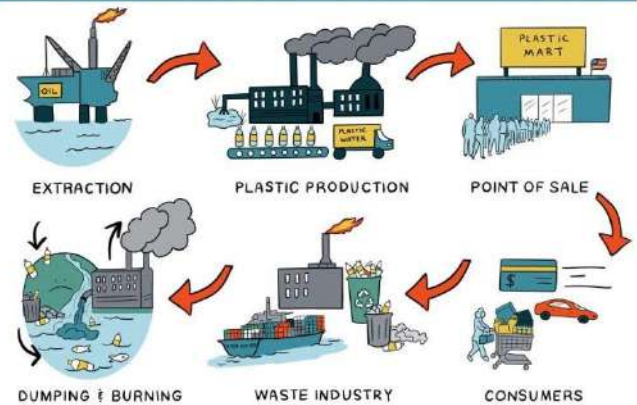


PLASTIC WASTE POLLUTION

- Plastic waste refers to discarded plastic materials that have reached the end of their useful life and are no longer needed. It includes items such as plastic bottles, bags, packaging, and single-use items.
- Plastic waste is a significant environmental concern due to its non-biodegradable nature, leading to long-lasting pollution.
- Improper disposal of plastic waste, such as littering or inadequate recycling, can result in the contamination of ecosystems, marine pollution,

harm to wildlife, and negative impacts on human health.

PLASTIC POLLUTION LIFECYCLE



CONSEQUENCES OF PLASTIC POLLUTION

- **Environmental Degradation:** Plastic waste contributes to significant environmental degradation, contaminating natural habitats such as oceans, rivers, and forests.
- **Marine Life Threat:** Marine animals often ingest plastic debris, leading to injury, poisoning, and death, disrupting the marine ecosystem.
- **Human Health Risks:** Microplastics enter the food chain through marine life, posing health risks to humans, including potential toxic effects and contamination of food sources.
- **Economic Impact:** Plastic pollution affects tourism, fishing, and shipping industries, leading to economic losses and increased costs for cleanup and waste management.
- **Soil Contamination:** Plastic waste degrades soil quality, affecting agricultural productivity and leading to potential contamination of crops.
- **Climate Change Contribution:** The production and disposal of plastic contribute to greenhouse gas emissions, exacerbating climate change and its associated impacts.

- **Wildlife Endangerment:** Land animals can also ingest or become entangled in plastic waste, leading to injury, death, and disruption of terrestrial ecosystems.

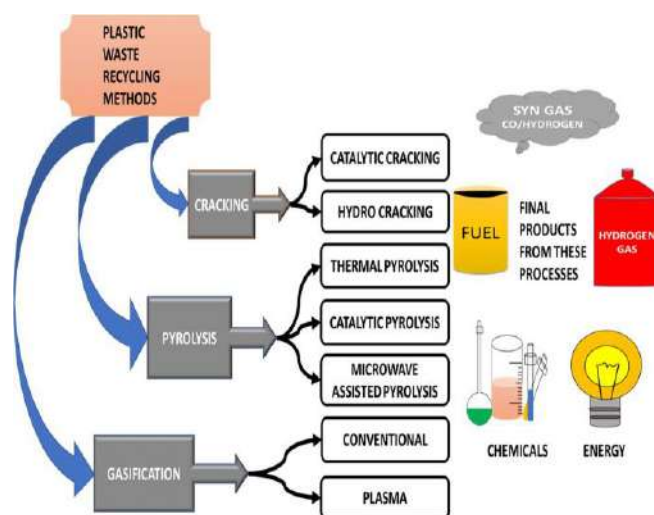
GOVERNMENT AND GLOBAL INITIATIVES

- India has announced its commitment to eliminate single-use plastic by 2022 at Confederation of Indian Industry's (CII) Sustainability Summit in New Delhi.
- India piloted a resolution on combating pollution caused by single-use plastic products at the fourth United Nations Environment Assembly in 2019.
- India has received international praise for its "Beat Plastic Pollution" resolution, which was announced on World Environment Day last year and committed to eliminate single-use plastic by 2022.
- Project REPLAN (stands for REducing PLastic in Nature) launched by Khadi and Village Industries Commission (KVIC) aims to reduce consumption of plastic bags by providing a more sustainable alternative.
- The Group of 20 (G20) environment ministers, agreed to adopt a new implementation framework for actions to tackle the issue of marine plastic

Plastic Waste Management Rules Amendment, 2021

- **Prohibition:** The manufacture, import, stocking, distribution, sale and use of following single-use plastic, including polystyrene and expanded polystyrene, commodities shall be prohibited with effect from the 1st of July 2022.
- **Compostable plastic:** The provisions will not apply to commodities made of compostable plastic.
- **Timeline:** The government has given industry ten years from the date of notification to comply with any future bans on plastic commodities other than those included in this notification.
- **Thickness of plastic bags:** The allowable thickness of plastic bags will be increased from 50 mm to 75 microns on September 30, 2021, and to 120 microns on December 31, 2022.

- **Monitoring agency:** The Central Pollution Control Board, along with state pollution bodies, will monitor the ban, identify violations, and impose penalties already prescribed under the Environmental Protection Act, 1986.
- **Extended Producer Responsibility (EPR):** According to the Plastic Waste Management Rules, 2016, the plastic packaging waste that is not covered under the phase out of identified single-use plastic items must be collected and managed in an environmentally sustainable manner through the Extended Producer Responsibility (EPR) of the Producer, Importer, and Brand Owner (PIBO).



WAY FORWARD

- **Effective waste management:** India lacks a well-organized system for managing plastic trash, resulting in widespread littering. To strengthen processing, there is a need to invest extensively in increasing waste source segregation and supporting end-to-end waste segregation.
- **Sustainable products:** The government should put money into fostering the formation of businesses that supply sustainable products as an alternative to non-recyclable ones.
- **Need for a new international legally binding agreement** that addresses the entire life cycle of plastics, from extraction of raw materials to legacy plastic pollution.
- **Chemical recycling and upcycling of polymers:** Hitherto management of plastic waste was focused on mechanical recycling of plastic waste.

PRELIMS IN-BRIEF BI-WEEKLY

HISTORY

Bajau Laut

- The Bajau, often known as the Sea Gypsies or Sea Nomads are a semi Nomadic ethnic group who live in the Pacific Ocean regions around Southern Philippines, Indonesia and Coastal Borneo.
- Originating from Mindanao in Southern Philippines the Bajau have taken refuge on the seas around Sulawesi, Indonesia and the islands of the coast of Borneo where they are known as the Bajau Laut.
- The Regatta Lepa is a popular annual festival celebrating their wonderful customs and traditions.
- Malaysian security forces have destroyed nearly 140 houses belonging to an indigenous sea-dwelling community off Borneo island.

Satnamis

- Recently, a violent conflict occurred between members of Satnamis Sect and Police personnel in Baloda Bazar in Chhattisgarh.
- **Origin:** The term "Satnam" (true name) popularized by 15th-century Bhakti poet Kabir.
- **Founding:** In 1657, Birbhan, inspired by Kabir, founded a Satnami community in Narnaul, Haryana.
- **Beliefs:** Rejected idolatry, caste distinctions, and superstition, promoting the worship of an immanent, formless Absolute.
- **Revival:** Community revived in Chhattisgarh under Guru Ghasidas in the mid-18th century.

GEOGRAPHY

Mahua Flower

- The flowers of the Mahua tree (*Madhuca longifolia*) are fermented to produce an alcoholic drink known as Mahua.
- This traditional liquor is crafted by tribal men and women across various parts of India, including West Bengal, Odisha, Chhattisgarh, Jharkhand,

Bihar, northern and central regions, Maharashtra, Gujarat, Telangana, Tamil Nadu, and Kerala.

- Mahua holds a sacred place among the tribal communities of India.

Koya tribal group

- They live in forests, plains, and valleys along the Godavari River in Andhra Pradesh, Telangana, Chhattisgarh, and Odisha.
- They are believed to have migrated from Bastar in northern India to central India.
- The Koya speak Koyi, a Dravidian language related to Gondi and influenced by Telugu.
- Originally, the Koya were pastoralists and practiced shifting cultivation.
- They grow crops like Jowar, Ragi, Bajra, and other millets.
- Their main festivals are Vijji Pandum (seed sowing festival) and Kondala Kolupu (festival for the hill deities).
- They perform a lively and colorful dance called Permakok (Bison horn dance) during festivals.

Tonga Volcano

- Hunga Tonga–Hunga Ha’apai is a volcanic island in Tonga.
- It is located about 30 km south of the submarine volcano of Fonuafo’ou and 65 km north of Tongatapu, the country's main island.
- The volcano is part of the highly active Tonga–Kermadec Islands volcanic arc, a subduction zone extending from New Zealand north-northeast to Fiji.
- The island arc is formed at the convergent boundary where the Pacific Plate subducts under the Indo-Australian Plate.
- It is along with the caldera rim of a much larger submarine edifice in the western South Pacific Ocean.
- It has erupted regularly over the past few decades.

Mount Kanlaon

- At least 2,800 people have moved into emergency centres after a volcano Mount Kanlaon erupted in the central Philippines.

- Mount Kanlaon is the highest point in Negros Island in Philippines, as well as the whole Visayas region, with an elevation of 2,465 metres above sea level.
- Mount Kanlaon ranks as the 42nd-highest peak of an island in the world.
- It is an active andesitic stratovolcano. Andesite is a volcanic rock of intermediate composition. In a general sense, it is the intermediate type between silica-poor basalt and silica-rich rhyolite.

Periyar River

- The latest fish kill reported in the Periyar has brought to light uncontrolled pollution of the river.
- The Periyar River originates from the Sivagiri hills of the Western Ghats, located in Tamil Nadu. It flows into Vembanad Lake and finally into Arabian Sea.
- Periyar is the longest river and the river with the largest discharge potential in the Indian state of Kerala.
- It generates a significant proportion of Kerala's electrical power via the Idukki Dam and flows along a region of industrial and commercial activity.
- The main tributaries of the Periyar River include Muthirapuzha, Mullayar, Cheruthoni and Perinjankutti.

SCIENCE & TECHNOLOGY

Coal Gasification

- Coal gasification is the process of converting coal into syngas, a mixture mainly composed of carbon monoxide (CO), hydrogen (H₂), carbon dioxide (CO₂), methane (CH₄), and water vapor (H₂O).
- This is achieved using coal, water, air, and/or oxygen.
- **Process:**
 - During gasification, coal is exposed to oxygen and steam under high pressure and heat.
 - The oxygen and water molecules oxidize the coal, producing syngas.
- **Advantages:**

- **Pollution Reduction:** Helps address local pollution problems by being a cleaner alternative to traditional coal burning.
- **Energy Independence:** Reduces reliance on imports of natural gas, methanol, ammonia, and other essential products.
- **Environmental Benefits:** Has the potential to lower carbon emissions and promote sustainable practices, supporting India's commitments to a greener future.

JWST Advanced Deep Extragalactic Survey (JADES) Program

- NASA'S James Webb Space Telescope (JWST) has spotted the earliest-known galaxy, named JADES-GS-z14-0.
- JADES is the largest program in JWST Cycle 1. It is a collaboration of the Near-Infrared Camera (NIRCam) and Near-Infrared Spectrograph (NIRSpec) instrument development team of NASA.
- JADES is conducting an ambitious program of deep infrared imaging and multi-object spectroscopy, using three JWST instruments, in the two most famous deep fields on the sky: the Hubble Deep Field (GOODS-N) and Hubble Ultra Deep Field (GOODS-S).

Nipah

- Nipah Virus is an airborne transmission infection and can affect those who come in direct contact with contaminated bodies such as pigs or bats carrying the virus.
- The virus was first identified in Kampung Sungai Nipah in Malaysia and in Singapore in 1998. At that time, it was primarily caused in pigs and through them got transferred to the humans.
- Nipah Virus is usually associated with inflammation of the brain due to which several days of fever can often lead to a state of confusion, disorientation and even persistent drowsiness.
- So far, no vaccine has been developed for curing the infection in both humans and animals.

Rim of the Pacific Exercises (RIMPAC)

- RIMPAC 2024 is the 29th exercise in the series that began in 1971 and was held annually until 1974, when it became a biennial exercise due to its increasing scale.

- India first participated in RIMPAC in 2014 when the indigenously built Shivalik class stealth frigate INS Sahyadri took part in the exercise.
- Indian Navy is deploying the indigenous stealth frigate INS Shivalik for Ex RIMPAC 2024.

PraVaHa

- The Indian Space Research Organisation (ISRO) has developed Computational Fluid Dynamics (CFD) software named Parallel RANS Solver for Aerospace Vehicle Aero-thermo-dynamic Analysis (PraVaHa).
- Parallel RANS Solver for Aerospace Vehicle Aero-thermo-dynamic Analysis” (PraVaHa) is developed in VSSC to simulate external and internal flows on launch vehicles, winged & nonwinged re-entry vehicles.
- PraVaHa has been used extensively in the Gaganyaan program for aerodynamic analysis of human-rated launch vehicles, viz, HLVM3, Crew Escape System [CES], and Crew Module [CM]. It is designed to make use of CPU as well as GPU architecture of available and upcoming supercomputing facilities.

Sickle Cell Diseases

- The Indian Council of Medical Research (ICMR) has invited Expressions of Interest (EoI) from eligible organisations for the “joint development and commercialisation” of hydroxyurea to treat Sickle Cell Diseases (SCD).
- SCD is an inherited blood disorder caused by a genetic mutation affecting red blood cells (RBCs).
- Red Blood Cells:
 - Normal RBCs are round and flexible, allowing for easy movement through blood vessels.
 - In SCD, RBCs become sickle-shaped (crescent-shaped) and rigid due to the mutation.
- Consequences of Sickle-Shaped RBCs: Difficulty flowing through blood vessels, Reduced oxygen delivery to tissues.
- Complications: Anemia (fatigue, weakness, paleness), Painful episodes (sudden, severe pain in bones, chest, back, etc.), Delayed growth and puberty, Organ damage. Shortened lifespan
- High-Risk Groups: Marginalized tribal populations
- Symptoms: Chronic anemia, Painful episodes (sickle cell crisis), Delayed growth and puberty

- Treatment Options: Blood transfusions (reduce anemia and pain crisis risk), Hydroxyurea medication (reduces pain episode frequency and prevents complications), Gene therapy, Bone marrow or stem cell transplantation (using methods like CRISPR).

Genes tgrB1 and tgrC1

- A recent study demonstrated the logic that green-beard genes use to produce altruism plus the corresponding ability to keep altruistic amoebae from being exploited by greedy ones.
- The tgrB1 and tgrC1 genes are located next to each other.
- They contain information for cells to make two cell surface proteins called TgrB1 and TgrC1. The TgrB1 protein on one cell binds to the TgrC1 protein on another. If the binding is strong, the TgrB1 protein is activated, and confers altruistic behaviour.
- The binding between the TgrB1 and the TgrC1 proteins of cells of the same strain is strong, and leads to self-recognition and cell-cell cooperation. Pure cultures of cells that lack the tgrB1 and tgrC1 genes fail to develop because they are unable to recognise each other as being alike.

Sukhoi 30MKI

- An SU-30MKI fighter jet of the Indian Air Force (IAF) crashed in Nashik.
- The Sukhoi Su-30MKI is a two-seater, twinjet multirole air superiority fighter.
- It is developed by Russian aircraft manufacturer Sukhoi and built under license by India's Hindustan Aeronautics Limited (HAL) for the Indian Air Force (IAF).
- A variant of the Sukhoi Su-30, it is a heavy, all-weather, long-range fighter.
- The Su-30MKI is a highly integrated twin-finned aircraft.
- The Su-30MKI has a range of 3,000 km with internal fuel which ensures a 3.75 hour combat mission.

Bacteriophages

- Columbia University researchers suggest that when Klebsiella pneumoniae bacteria are infected by bacteriophages, they take the help of reverse

transcriptase to create a specific protein called Neo.

- Bacteriophages, or phages, are viruses that infect only bacterial cells. They are abundant and diverse in size and structure.
- They consist of genetic material encased in a protein shell. Phages use Brownian motion to reach their targets since they are not motile.
- Bacteriophages play a significant role in the human microbiome, serving as essential facilitators of genetic exchange between pathogenic and non-pathogenic bacteria.
- Phages can be engineered to introduce genes into specific bacteria for clinical purposes.

White Phosphorous

- The Human Rights Watch (HRW) accused Israel of using white phosphorus incendiary shells on residential buildings in conflict-hit southern Lebanon.
- White phosphorus is a waxy chemical that ranges from yellowish to clear and has a strong, garlic-like smell.
- It is highly flammable and ignites rapidly when exposed to air, producing a bright, intense flame.
- Militaries use it in incendiary weapons for purposes such as lighting up targets at night or causing damage to enemies.
- Burning at 800°C and spontaneously igniting at temperatures up to 1,300°C in the presence of oxygen, it generates dense white smoke, which is used to create smokescreens in sensitive areas.
- White phosphorus can cause fast-spreading fires and is very difficult to extinguish once ignited, as it adheres to various surfaces, including skin and clothing.

Milgromian dynamics (MOND)

- Proposed by Israeli physicist Mordehai Milgrom in 1983 as an alternative to Newtonian dynamics and general relativity.
- The main postulate of MOND is that gravity starts behaving differently to what Newton expected when it becomes very weak, as at the edges of galaxies.
- MOND is an alternative to the idea of dark matter, which is invisible matter scientists think exists to explain why galaxies spin so fast.

- But MOND is still being debated by scientists, and it's not yet widely accepted.

Aditya-L1 Mission

- Aditya-L1 is India's first space-based solar mission to study the Sun.
- It was launched on September 2, 2023, by the Indian Space Research Organisation (ISRO) into a halo orbit around the Sun-Earth Lagrange point 1 (L1).
- Aditya-L1 would provide an uninterrupted view of the Sun for prolonged periods, overcoming the limitations of Low Earth Orbits where the view is frequently blocked by the Earth itself.
- Aditya-L1 launched using a PSLV XL launch vehicle from the Satish Dhawan Space Centre.
- It carries seven payloads to examine the Sun's properties using visible and X-ray spectrometers, a coronagraph, analysers for solar winds and energetic particles, and magnetometers.

Atomic Clocks

- Researchers have built a portable optical atomic clock that can be used onboard ships.
- An atomic clock is a clock that measures time by monitoring the resonant frequency of atoms (usually cesium or rubidium) to keep time with extreme accuracy.
- Atomic clocks measure time using atoms like Cs-133, which absorb microwave radiation at a specific frequency (9,192,631,770 Hz) to define a second.
- Atomic clocks are crucial for the Global Positioning System (GPS), aiding navigation, emergency responses, and military operations.
- Despite their accuracy, traditional atomic clocks are bulky, power-intensive, fragile, and expensive, limiting their use to large research facilities.

Alzheimer Disease

- Alzheimer's is a neurodegenerative and progressive disease that slowly destroys memory and other functions related to memory. It happens when plaques containing amyloid-beta peptides continue to accumulate in the brain.
- Memory loss or Dementia is the key symptom of Alzheimer's disease. Inability to recall recent events or discussions is the early symptom of the illness.

Japan – India Maritime Exercise 2024 (JIMEX 24)

- It is being conducted between India and Japan.
- This is the eighth edition of JIMEX, since its inception in 2012.
- The Indian Navy is being represented by INS Shivalik and the JMSDF is being represented by the Guided Missile Destroyer JS Yugiri. Integral helicopters from both navies will also participate in the joint exercise.

Atal Tinkering Labs (ATL)

- NITI Aayog announced the commencement of applications for the prestigious ‘ATL Tinkerpreneur 2024’- a flagship summer boot camp under AIM’s Atal Tinkering Labs program.
- Atal Tinkering Labs (ATL) is a sub-mission under the Atal Innovation Mission to nurture an innovative mindset amongst high school students.
- This is an important government scheme administered under the NITI Aayog.
- AIM establishes ATLs in schools across the country with a vision to ‘Cultivate one Million children in India as Neoteric Innovators’.

Nitrous Oxide

- India is the world’s second largest source of nitrous oxide (N₂O), a greenhouse gas that heats up the atmosphere far more than carbon dioxide.
- Nitrous oxide is an oxide of nitrogen with a chemical formula N₂O. This organic compound is colourless and non-flammable at room temperature. It is also known as nitrous or laughing gas.
- Nitrous Oxide (N₂O) is the third most significant greenhouse gas after carbon dioxide and methane and is 273 times more potent than CO₂ over 100 years.
- Nearly 11% of such global man-made emissions in 2020 were from India, topped only by China at 16%.
- N₂O emissions from human activities have increased by 40% (three million metric tonnes of N₂O per year) in the past four decades, with growth rates between 2020 and 2022 higher than in any previous period since 1980.

POLITY

Official Secrets Act (OSA), 1923

- A session court awarded life imprisonment to a former engineer of BrahMos Aerospace Pvt Ltd, arrested on the charge of spying for Pakistan intelligence agency ISI under Official Secret Act.
- The Official Secrets Act 1923 is India’s anti-espionage act held over from the British colonial period. It states clearly that actions which involve helping an enemy state against India are strongly condemned.
- Punishments under the Act range from three year to life imprisonment (if the intent is to declare war against India – section 5).
- A person prosecuted under this Act can be charged with the crime even if the action was unintentional and not intended to endanger the security of the state.

CPGRAMS

- Department of Administrative reforms & Public Grievances (DARPG) Secretary presents “CPGRAMS: A Foundation for SMART Government” to the representatives of US Government, and key stakeholders at a meeting convened by IBM Centre for The Business of Government.
- Centralised Public Grievance Redress and Monitoring System (CPGRAMS) is an online platform available to the citizens 24x7 to lodge their grievances to the public authorities on any subject related to service delivery.
- It is a single portal connected to all the Ministries/Departments of Government of India and States. Every Ministry and States have role-based access to this system.
- CPGRAMS also provides an appeal facility to the citizens if they are not satisfied with the resolution by the Grievance Officer.

SOCIAL JUSTICE

MPLAD scheme

- The Delhi High Court has held that the Chief Information Commissioner (CIC) has “no

jurisdiction” to comment on the utilisation of Members of Parliament Local Area Development Scheme (MPLADS) funds.

- The scheme was launched in 1993-94, for building important community assets based on local needs, such as drinking water, education, health, sanitation, and roads.
- Each MP constituency gets Rs. 5 crore annually.

Implementation

- Lok Sabha MPs can recommend projects within their constituencies.
- Rajya Sabha MPs can recommend projects in one or more districts in their state.
- Nominated MPs can choose any district in any state for their projects.
- MPs must allocate at least 15% of the funds for Scheduled Caste areas and 7.5% for Scheduled Tribe areas each year.
- MPs can also recommend up to Rs. 25 lakh for projects outside their constituency or state.
- Funds are not given directly to MPs. Instead, the central government transfers Rs. 2.5 crore twice a year to district authorities after project approval.
- MPs only recommend projects and district authorities are responsible for approving, executing, and completing the projects.
- The Ministry of Statistics and Programme Implementation oversees policy, fund release, and monitoring of the scheme.

Common Service Centres (CSC)

- An MoU between CSC SPV and Ministry of Agriculture & Farmers Welfare was signed here today to convert FPOs registered under 'Formation & Promotion of 10,000 FPOs scheme' into CSCs and help them to deliver citizen-centric services.
- Common Services Centre (CSC) programme is an initiative of the Ministry of Electronics & IT (MeitY), Government of India.
- CSCs are the access points for delivery of various electronic services to villages in India, thereby contributing to a digitally and financially inclusive society.
- CSC e-Governance Services India Limited is a Special Purpose Vehicle (CSC SPV) incorporated under the Companies Act, 1956.

- CSCs are more than service delivery points in rural India. They are positioned as change agents, promoting rural entrepreneurship and building rural capacities and livelihoods.

National Health Claim Exchange (NHCE)

- The Health Ministry and IRDAI are launching the National Health Claim Exchange (NHCE), a digital platform which will bring together insurance companies, healthcare sector service providers and government insurance scheme administrators.
- The Health Claim Exchange Specification is a communication protocol that facilitates the exchange of health claim information between payers, providers, beneficiaries, and other relevant entities.
- The NHCE will serve as a gateway for exchanging claims-related information among various stakeholders in the healthcare and health insurance ecosystem.
- The integration with NHCE is expected to enable seamless interoperability of health claims processing, enhancing efficiency and transparency in the insurance industry, benefiting policyholders and patients.

Khadi and Village Industries Commission (KVIC)

- Khadi and Village Industries Commission (KVIC) distributed margin money subsidy of Rs 299.25 crore to 7444 units across the country under the Prime Ministers' Employment Generation Programme.
- The Khadi and Village Industries Commission is a statutory body formed in April 1957 under the Act of Parliament, 'Khadi and Village Industries Commission Act of 1956'.
- The KVIC is charged with the planning, promotion, organisation and implementation of programs for the development of Khadi and other village industries in the rural areas in coordination with other agencies engaged in rural development wherever necessary.
- It is an apex organization under the Ministry of Micro, Small, and Medium Enterprises, with regard to khadi and village industries within India.

Jan Aushadhi Kendras

- After Mauritius, Nepal has approached India to set up Jan Aushadhi Kendras in their country.
- With an objective of making quality generic medicines available at affordable prices to all, Pradhan Mantri Bhartiya Janaushadhi Pariyojana (PMBJP) was launched by the Department of Pharmaceuticals, Ministry of Chemicals & Fertilizers, Government of India in November, 2008.
- Under the scheme, dedicated outlets known as Janaushadhi Kendras are opened to provide generic medicines at affordable prices.
- As on 31.01.2024, 10607 Janaushadhi Kendras are functional across the country. Product basket of PMBJP comprises 1965 drugs and 293 surgical items.
- The Scheme is implemented by a society registered under the Societies Registration Act, viz., Pharma & Medical Bureau of India (PMBI) [erstwhile Bureau of Pharma PSUs of India (BPPI)].

Protection of Children from Sexual Offences (POCSO) Act

- A special court for hearing cases filed under the Protection of Children from Sexual Offences (POCSO) Act, 2012 Thursday issued a non-bailable arrest warrant against a former political leader.
- The Protection of Children from Sexual Offences (POCSO) Act was enacted in 2012 to provide legal protection to children from sexual abuse, exploitation and pornography.
- It defines various forms of sexual offences against children and prescribes stringent punishments for the perpetrators.
- “Children” according to the Act are individuals aged below 18 years. The Act is gender-neutral.
- Sexual assault is deemed to be “aggravated” under certain circumstances such as when the child is mentally ill. Also when the abuse is committed by the person in a position of trust such as a doctor, teacher, policeman, family member.

INTERNATIONAL RELATIONS

World Food Program

- The WFP is a branch of the United Nations dedicated to eradicating hunger and promoting food security globally.
- Located in Rome, Italy established in 1961,
- The WFP's work aligns with Sustainable Development Goal 2, which aims to end hunger, achieve food security, improve nutrition, and promote sustainable agriculture by 2030.
- The WFP operates in over 120 countries, providing food assistance during emergencies and working with communities to enhance nutrition and build resilience.
- It is funded by voluntary donations from governments, corporations, and private donors.
- Awarded the Nobel Peace Prize in 2020.
- The WFP releases the "Global Report on Food Crisis," which details the extent of acute hunger worldwide.

OPEC+

- It is a group of 23 oil-exporting countries, formed in 2016, which meets regularly to decide how much crude oil to sell on the world market.
- These nations aim to work together on adjusting crude oil production to bring stability to the oil market.
- At the core of this group are the 13 members of OPEC (the Organization of the Oil Exporting Countries), which are mainly Middle Eastern and African countries.
- Members: It comprises 13 OPEC countries plus Azerbaijan, Bahrain, Brunei, Kazakhstan, Russia, Mexico, Malaysia, South Sudan, Sudan, and Oman.

G20 Common Framework (CF)

- The extraordinary length of time Zambia's restructuring under G20-led 'Common Framework' architecture has taken has led to criticism of delays and complexity.
- The G20's Common Framework for Debt Treatments beyond the Debt Service Suspension

Initiative (DSSI), known as the Common Framework (CF), was launched in November 2020.

- Its main aim is to strengthen the international debt architecture for the world's poorest countries. The framework provides a support structure for official creditor coordination to facilitate timely, orderly, and durable debt treatment and to forge the principles of fair burden-sharing across official and private sector creditors.
- Only three debtor countries have so far requested treatment under the Common Framework (Chad, Zambia, and Ethiopia).

European Free Trade Association (EFTA)

- The EFTA is an intergovernmental organization made up of Iceland, Liechtenstein, Norway, and Switzerland.
- It was established in 1960 by seven founding member states to promote free trade and economic integration among its members.
- They function alongside the European Union (EU), and all four member states are part of the European Single Market and the Schengen Area. However, they are not members of the European Union Customs Union.
- Under Trade and Economic Partnership Agreement (TEPA) - Trade agreement with EFTA, it has committed to increasing Foreign Direct Investment (FDI) (excluding FPI) in India by \$100 billion and generating 1 million direct jobs in India over the next 15 years.

13th Amendment

- It is an outcome of the Indo-Lanka Accord of July 1987, to resolve Sri Lanka's ethnic conflict that had aggravated into a full-fledged civil war, between the armed forces and the Liberation Tigers of Tamil Eelam, which led the struggle for Tamils' self-determination and sought a separate state.
- It provided for setting up provincial governments across the country — there are nine provincial councils — and made Tamil, too, an official language, and English, a link language.
- It also sought to address the Tamils' right to self-determination which, by the 1980s, had become a raging political call.

International Labour Organisation (ILO)

- The Indian tripartite delegation led by Secretary (Labour & Employment) participated in the 112th session of the International Labour Conference (ILC) of International Labour Organisation (ILO).
- The International Labour Organization (ILO) is a United Nations agency whose mandate is to advance social and economic justice by setting international labour standards.
- It was established by the Treaty of Versailles in 1919.
- It became the first specialised agency of the United Nations (UN) in the year 1946.
- The basis of the ILO is the tripartite principle. The ILO comprises the International Labour Conference, the Governing Body, and the International Labour Office.

G7

- Indian Prime Minister will participate in the G7 summit, being held from 13 to 15 June 2024 at Borgo Egnazia in the city of Fasano in Apulia, Italy.
- The Group of Seven (G7) is a coalition of leading Western nations.
- It focuses on global governance issues, such as economic policy, security, and international development.
- The G7 summit in Fasano, Italy marks the group's 50th anniversary.
- The summit also addresses conflicts between the West and the Sino-Russian alliance.

Schengen Visa

- Schengen visa fee for adults has increased to 90 euros from 80 euros, children between the age of 6 and 12 will now pay 45 euros instead of 40 euros.
- It is an official document mandatory for some non-Europeans to travel to all the 27 countries which are part of the Schengen area.
- Non-European nationals are obliged to obtain a Schengen Visa to visit any of the 27 countries within the Schengen area.
- Once acquired, the Schengen Visa allows the holder to cross borders of other member states

without facing identity checks at each border point.

International Energy Agency

- The world is likely to have a major surplus of oil by 2030 as production is ramped up while clean energy transition tempers demand, the International Energy Agency said recently.
- The International Energy Agency is an International Energy Forum comprising various Industrialised Countries under the Organization For Economic Development And Cooperation (OECD).
- It consists of 31 member countries and eleven association countries.
- The IEA was established in 1974, in the wake of the 1973-1974 oil crisis, to help its members respond to major oil supply disruptions, a role it continues to fulfill today.
- The IEA releases the India Energy Outlook Report.
- India joined this organization in 2017 as an Associate member.

Integrated Check Post (ICP)

- The Manipur government deported 38 Myanmar nationals through the Integrated Check Post (ICP) at Indo-Myanmar border town of Moreh.
- The ICPs are entry and exit points on India's land borders and house various facilities such as customs, immigration, border security, quarantine, among others, within a single facilitation zone.
- Formulated in the early 2000s in the aftermath of the Kargil War (1999) and initiated since 2012, the ICPs have helped streamline cross-border trade and passenger flows through the modernisation of border management infrastructure.
- In 2019-20, 40% of India's total trade with Bangladesh, Nepal, Myanmar, and Pakistan took place through the six ICPs at Agartala, Petrapole, Raxaul, Jogbani, Moreh and Attari.

ECONOMY

Index of Industrial Production (IIP)

- It's a measure of how much industrial products are being made over time.

- The Central Statistical Organization (CSO), Ministry of Statistics and Programme Implementation, publishes monthly reports.
- It tracks the growth rate of industry groups, categorized broadly under Mining, Manufacturing, and Electricity, and by Use-based sectors: Basic Goods, Capital Goods, and Intermediate Goods.
- The base year for IIP calculations is 2011-2012.

Windfall Tax

- Windfall taxes are imposed on profits a company earns from external, often unexpected events, such as the energy price rise due to the Russia-Ukraine conflict.
- These profits are not a result of the company's actions, like investment strategies or business expansions.
- A windfall is defined as an "unearned, unanticipated gain in income through no additional effort or expense."
- Governments usually levy a one-off tax retrospectively, in addition to the normal tax rates, known as a windfall tax.
- Windfall taxes are often discussed in the context of the oil market, where price fluctuations can lead to erratic profits.

Variable Rate Repo

- A Variable Rate Repo (VRR) is a monetary policy tool used by central banks to manage liquidity in the financial system.
- It involves repurchase agreements where the interest rate is determined through an auction process, rather than being fixed.
- Auction-Based variable Rate Repo (VRR): The interest rate is decided through an auction where banks and financial institutions bid for the repo transaction.

Monetary Policy Committee (MPC)

- Origin: Under Section 45ZB of the amended (in 2016) RBI Act, 1934, the central government is empowered to constitute a six-member Monetary Policy Committee (MPC).
- Objective: Section 45ZB also lays down that "the Monetary Policy Committee shall determine the Policy Rate required to achieve the inflation target".

- Composition: Section 45ZB says the MPC shall consist of 6 members:
 - RBI Governor as its ex officio chairperson,
 - Deputy Governor in charge of monetary policy,
 - An officer of the Bank to be nominated by the Central Board,
 - Three persons are to be appointed by the central government.
- One of the key functions of the MPC is to target inflation and maintain price stability in the economy. It aims to keep inflation within a specified range, which is currently set at 4% with a tolerance band of +/- 2%.

India's Export Destination

- The Netherlands has emerged as India's third largest export destination after the U.S. and UAE during 2023-24.
- Significant exports to the Netherlands included petroleum products valued at USD 14.29 billion, along with electrical goods, chemicals, and pharmaceuticals.
- India's trade surplus with the Netherlands has also increased from USD 8 billion in 2021-22 to USD 13 billion in 2022-23.
- The Netherlands has taken over major destinations such as the UK, Hong Kong, Bangladesh and Germany.
- In 2021-22, the Netherlands was the fifth largest destination for Indian exports as against ninth in 2020-21.

High Net Worth Individual (HNWI)

- The number of "high net worth individuals" (HNWI) rose by 5.1% last year to 22.8 million, according to consulting firm Capgemini.
- A high-net-worth individual (HNWI) is an individual who generally has liquid assets of at least \$1 million after accounting for their liabilities.
- Their total wealth reached \$86.8 trillion in 2023, a 4.7% increase from the previous year, according to the annual World Wealth Report.
- The number of HNWIs and their total wealth are the highest since Capgemini began the annual study in 1997.

Purchasing Managers Index

- Activity in India's services sectors slumped to a five month low in May, according to latest PMI data.
- The Purchasing Manager's Index (PMI) is an economic indicator derived from the monthly survey of the private sector companies.
- PMI aims to provide information regarding the current and future conditions of a business to the decision-makers, analysts and investors of the company.
- PMI data for India is released by S&P Global - a global major in financial information and analytics. Earlier PMI data for India was released by IHS Markit before its merger with S&P.
- The PMI is a weighted average of the following five indices: New Orders (30%), Output (25%), Employment (20%), Suppliers' Delivery Times (15%) and Stocks of Purchases (10%).

Bima Sugam

- It is an online platform where customers can choose a suitable scheme from multiple options given by various companies.
- All insurance requirements, including those for life, health, and general insurance (including motor and travel) will be met by Bima Sugam.
- This platform will help in the settlement of claims, whether it is health coverage or death claims, in a paperless manner on the basis of policy numbers.
- Life insurance and general insurance companies will own a 47.5 per cent stake each, while brokers and agent bodies will own 2.5 per cent each.

Credit Default Swaps (CDS)

- Market regulator SEBI will allow mutual funds to sell a new investment product on credit default swaps (CDS).
- A CDS is a credit derivative contract which acts as an insurance against credit default.
- For instance, if a mutual fund invests in a corporate bond yielding 7% per annum, it can sell CDS as an insurance by paying a premium of about 0.50 bps. In case of default in the corporate bond, the buyer of CDS (insurance company) will pay principle with the interest.

UPI Lite

- The Reserve Bank of India (RBI) proposed a facility to allow customers to automatically replenish their UPI Lite wallets, aiming to promote small-value digital payments.
- UPI Lite will be an on-device wallet functionality that will enable offline transactions of smaller values.
- UPI Lite will work via the wallet system.
- Transaction limit- Funds have to be added in the UPI Lite wallet and which can be used to make small payments under Rs 200.
- Wallet limit- There is a Rs 2,000 limit on the amount of money you can have in this UPI Lite wallet.
- The users will not be required to enter their UPI PIN while confirming UPI Lite payments.

Quality Council of India

- The Quality Council of India (QCI) is a national body established for raising the quality and standards related to every aspect of life for the overall development of the nation. It is a non-profit organisation registered under the Societies Registration Act XXI of 1860.
- Quality Council of India was set up in 1997, jointly by the Government of India and the Indian Industry represented by the three premier industry associations i.e. Associated Chambers of Commerce and Industry of India (ASSOCHAM), Confederation of Indian Industry (CII) and Federation of Indian Chambers of Commerce and Industry (FICCI).

Goods and Services Tax (GST) Council

- The Centre has decided to convene a meeting of the Goods and Services Tax (GST) Council on June 22, eight-and-a-half months after its last meeting.
- The GST Council is a constitutional body responsible for making recommendations on issues related to the implementation of the Goods and Services Tax (GST) in India.
- The first meeting of the GST Council was held on September 22-23, 2016, and since then, the Council meets periodically to deliberate and decide on various issues related to GST.
- GST Council takes decisions through a consensus-based approach every decision of the GST Council shall be taken by a majority of not less than three-

fourths of the weighted votes of the members present and voting with a weightage of one-third of the total votes cast to the Centre and a weightage of two-thirds of the total votes cast to the States.

- As per Article 279A of the amended Constitution, the GST Council which will be a joint forum of the Centre and the States, shall consist of the following members: -
 - Union Finance Minister - Chairperson
 - The Union Minister of State, in-charge of Revenue of finance - Member
 - The Minister In-charge of finance or taxation or any other Minister nominated by each State Government – Members

Directorate General of Foreign Trade (DGFT)

- Directorate General of Foreign Trade (DGFT) has concluded that there is merit in continuing the interest equalisation scheme for the export sector.
- The Directorate General of Foreign Trade (DGFT) organisation is an attached office of the Ministry of Commerce and Industry and is headed by the Director General of Foreign Trade.
- This Directorate, with headquarters at New Delhi, is responsible for formulating and implementing the Foreign Trade Policy with the main objective of promoting India's exports.
- The DGFT also issues scripts/authorization to exporters and monitors their corresponding obligations through a network of 24 regional offices.
- Before 1991, DGFT was known as the Chief Controller of Imports & Exports (CCI&E).

Central Consumer Protection Authority (CCPA)

- The Central Consumer Protection Authority (CCPA) imposed a penalty of Rs 3 lakh on an edtech platform for publishing "false and misleading" advertisements.
- Central Consumer Protection Authority is an authority provided by the Consumer Protection Act, 2019.
- It aims to regulate unfair trade practices and false or misleading advertisements which are

prejudicial to the interests of public and consumers and to promote, protect and enforce the rights of consumers as a class.

- CCPA has an investigation wing headed by the Director General for conducting inquiry or investigation under the Consumer Protection Act, 2019.
- It has a Chief Commissioner as head, and only two other commissioners as members one of whom will deal with matters relating to goods while the other will look into cases relating to services.

Infrastructure Investment Trusts (InvITs)

- These are pooled investment vehicles similar to mutual funds which were introduced to make investment in infrastructure assets accessible to private and retail investors.
- InvITs invest in long-term infrastructure projects such as roads, gas pipelines, transmission lines, renewable assets, etc.
- They are regulated by SEBI.
- The minimum subscription limit for InvITs is 1 lakh.
- Apart from institutional investors like Banks, Insurance companies, pension funds and sovereign wealth funds, Retail investors also can invest in InvITs.

ECOLOGY & ENVIRONMENT

Thismia malayana

- It is a newly discovered plant species found in the tropical rainforests of Peninsular Malaysia.
- It belongs to a group of plants known as mycoheterotrophs and do not perform photosynthesis.
- These plants act as parasites, stealing carbon resources from the fungi on their roots.
- Mycorrhizal Symbiosis: Typically, this relationship involves fungi helping trees absorb water and nutrients from the soil, while trees provide fungi with sugars produced through photosynthesis. This mutual benefit is crucial for the health and growth of both organisms.

- It thrives in the low-light conditions of dense forest understories, where it is typically found hidden in leaf litter, near tree roots, or old rotten logs.
- Its highly specialized flowers are pollinated by fungus gnats and other small insects.
- It has been classified as Vulnerable according to the IUCN Red List.

Diadromous Fish

- A research study discovered that marine protected areas (MPAs) designated to safeguard diadromous fish species did not align with their core habitats.
- They migrate between saltwater and freshwater environments.
- Examples include the allis shad (*Alosa alosa*), twaite shad (*Alosa fallax*), Mediterranean twaite shad (*Alosa agone*), and the European eel (*Anguilla anguilla*).

Parengyodontium album

- *Parengyodontium album* has been discovered to break down plastic polyethylene (PE) in the ocean.
- It is a marine fungus capable of breaking down polyethylene (PE), the most common plastic found in the ocean.
- It was discovered by marine microbiologists from the Royal Netherlands Institute for Sea Research (NIOZ).
- In the Bioremediation Process, the carbon from PE is converted into the fungal biomass of *P. album*, serving as its energy source.
- Initial photodegradation of PE by UV sunlight is essential, making the fungus effective in degrading floating oceanic plastic litter.
- Humans produce over 400 billion kilograms of plastic annually, much of which ends up in the ocean.

Greater Adjutant

- With the wetlands of Assam giving way to rapid urbanisation, the endangered greater adjutant storks are finding their survival to be a daily struggle.
- The Greater Adjutant Stork, locally known as "Hargila" in Assam, is an endangered species of stork primarily found in the Indian subcontinent and Southeast Asia.

- In shallow lakes, drying lake beds, and rubbish dumps, the larger adjutants are commonly observed individually or in small groups.
- The greater adjutant is omnivorous. They prey on frogs, giant insects, birds, reptiles, and rodents.
- The loss of nesting and feeding habitat due to wetland disappearance, pollution, hunting and egg harvesting in the past have resulted in a dramatic fall in this species' population.
- In 2008, the global population was believed to be less than 1,000 storks.
- The IUCN Red List of Threatened Species classifies the larger adjutant as 'Endangered.'

Green Ammonia

- Solar Energy Corporation of India (SECI) has issued a Request for Selection (RfS) for Selection of Green Ammonia Producers under Strategic Interventions for Green Hydrogen Transition (SIGHT) Programme of the National Green Hydrogen Mission being implemented.
- It is produced by using hydrogen from water electrolysis and nitrogen separated from the air.
- These are then fed into the Haber process (also known as Haber-Bosch) which is powered by sustainable electricity.
- In the Haber process, hydrogen and nitrogen are reacted together at high temperatures and pressures to produce ammonia, NH₃.

Uses:

- Fuel for engines such as locomotives and shipping, replacing diesel and marine fuel oil
- Fuel source for electricity and power generation
- Building block to make fertilisers for use in agriculture
- Feedstock for industrial and manufacturing applications ranging from water purification through to pharmaceuticals

Red Sanders

- The Red Sanders Anti-Smuggling Task Force personnel seized 107 red sanders logs worth over ₹2 crore.
- It is a flora species that are endemic to a distinct tract of forests in the Eastern Ghats region of Andhra Pradesh.
- Geographical conditions required: It usually grows in rocky, degraded and fallow lands with Red Soil and a hot and dry climate.
- Protection Status:
 - IUCN Red List: Endangered
 - CITES: Appendix II
 - Wildlife (Protection) Act 1972: Schedule IV
- Overharvesting and exploitation are other threats to red sanders. The features of the red sandalwood, like a deep red color and the ability to resist harsh temperature and humidity, make this wood unique and expensive.

SELF EVALUATION BI-WEEKLY

PRELIMS

1. Which of the following statements about the Koya tribal group is true?

- A. They primarily inhabit the Himalayan region in northern India.
- B. Their language, Koyi, is closely related to Sanskrit.
- C. Their main festivals include Diwali and Holi.
- D. They perform a dance called Permakok, which is associated with water deities.

2. Which of the following statements about the World Food Program (WFP) is correct?

- A. The WFP is a branch of the World Health Organization.
- B. It was established in New York City in 1950.
- C. It operates in over 120 countries, providing food assistance during emergencies and working with communities to enhance nutrition and build resilience.
- D. The WFP is funded solely by government donations.

3. Which of the following statements about Variable Rate Repo (VRR) is not correct?

- A. Variable Rate Repo is a tool used by central banks to control liquidity in the banking system.
- B. In a Variable Rate Repo, the interest rate is fixed and determined by the central bank.
- C. Banks bid for funds at different interest rates during a Variable Rate Repo auction.
- D. VRR allows banks to manage short-term liquidity needs more effectively compared to fixed-rate repos.

4. Consider the following statements regarding the Monetary Policy Committee (MPC) of India:

- 1. The MPC is responsible for setting the repo rate, which is the key policy rate in India.
- 2. The committee consists of six members, out of which three are appointed by the Government of India.
- 3. The decisions of the MPC are made by a majority vote, with the Governor of the Reserve Bank of India having a casting vote in case of a tie.
- 4. The MPC meets biannually to review the monetary policy stance.

Which of the statements given above are correct?

- A. 1, 2, and 3 only
- B. 1 and 4 only
- C. 1, 3, and 4 only
- D. 2, 3, and 4 only

5. Recently, James Webb Space Telescope (JWST) has spotted the earliest-known galaxy, named JADES-GS-z14-0. What is the primary reason the JWST is positioned at the second Lagrange point (L2) relative to the Sun and Earth?

- A. To avoid interference from Earth's atmosphere.
- B. To leverage Earth's gravity for deeper space observations.
- C. To capture continuous sunlight for powering the telescope.
- D. To minimize the influence of the Moon's gravitational pull.

6. Recently seen in the news, PraVaHa Software is developed by which of the following organizations?

- A. Indian Space Research Organisation (ISRO)
- B. Defence Research & Development Organisation (DRDO)
- C. Department of Biotechnology (DBT)
- D. Council of Scientific & Industrial Research (CSIR)

7. Consider the following statements regarding “Infrastructure Investment Trusts (InvITs)”:

1. They are regulated by SEBI.
2. The minimum subscription limit for InvITs is 1 lakh.
3. Retail investors can invest in InvITs.

Which of the above given statements is/are correct?

- A. 1 only
- B. 1 and 2 only
- C. 2 and 3 only
- D. 1, 2 and 3

8. Consider the following statements regarding “Official Secrets Act 1923”:

1. The Official Secrets Act 1923 is India’s anti-espionage act held over from the British colonial period.
2. A person prosecuted under this Act can be charged with the crime even if the action was unintentional.

Which of the above given statements is/are correct?

- A. Only 1
- B. Only 2
- C. Both 1 and 2
- D. Neither 1 nor 2

9. Which of the following statements about bacteriophages is correct?

- A. Bacteriophages are a type of bacteria that infect other bacteria.
- B. Bacteriophages are viruses that can infect and replicate within bacterial cells.
- C. Bacteriophages are primarily used in the production of antibiotics.
- D. Bacteriophages are a form of plasmid DNA used in genetic engineering.

10. Which of the following statements is correct regarding the Centralised Public Grievance Redress and Monitoring System (CPGRAMS)?

- A. CPGRAMS is an initiative by the Ministry of Finance to address financial grievances of citizens.
- B. CPGRAMS allows citizens to lodge grievances only related to central government ministries and departments.
- C. CPGRAMS provides an online platform for citizens to lodge grievances and track their status, but it does not facilitate the appeal process.
- D. CPGRAMS is integrated with the performance management system of government officials to ensure accountability and efficient grievance redressal.

11. Which of the following correctly describes the term ‘High Net Worth Individual (HNWI)’?

- A. Individual with liquid assets of at least \$1 million
- B. Individual with liquid assets of at least \$1 billion
- C. Individual with liquid assets of at least \$10 million
- D. Individual with liquid assets of at least \$10 billion

12. Milgromian Dynamics (MOND) is an alternative theory in astrophysics proposed to address discrepancies in the rotation curves of galaxies. Which of the following statements best describes MOND?

- A. MOND suggests that the force of gravity increases at large distances.
- B. MOND proposes the existence of an unseen, additional form of matter called dark matter.
- C. MOND modifies Newton's laws of motion at very low accelerations without invoking dark matter.
- D. MOND is a relativistic theory that unifies electromagnetism and gravity.

13. Which of the following statements are correct regarding *Thismia malayana*?

1. *Thismia malayana* is a newly discovered plant species found in the tropical rainforests of Peninsular Malaysia.
2. It belongs to a group of plants known as mycoheterotrophs that do not perform photosynthesis.
3. Mycorrhizal symbiosis involves *Thismia malayana* providing fungi with sugars produced through photosynthesis.
4. *Thismia malayana* has been classified as Vulnerable according to the IUCN Red List.

Select the correct option:

- A. 1, 2 and 4
- B. 1 and 2
- C. 1, 3, and 4
- D. 2, 3, and 4

14. Which of the following statements correctly describes the "Bima Sugam" initiative in India?

- A. Bima Sugam is a digital platform launched by the Ministry of Finance to provide instant personal loan approval and disbursement to citizens.
- B. Bima Sugam is an online portal developed by the Insurance Regulatory and Development Authority of India (IRDAI) to streamline the purchase and renewal of insurance policies.
- C. Bima Sugam is a government scheme aimed at providing health insurance to senior citizens above the age of 60 at subsidized rates.
- D. Bima Sugam is an initiative by the Reserve Bank of India (RBI) to offer comprehensive financial literacy programs across rural India.

15. Consider the following statements regarding the Periyar River:

1. The Periyar River originates from the Sivagiri hills of the Western Ghats, located in Tamil Nadu.
2. It flows into Vembanad Lake and finally into the Arabian Sea.
3. The Periyar River is the longest river in the Indian state of Kerala.
4. Muthirapuzha is one of the main tributaries of the Periyar River.

How many of the statements given above are correct?

- A. Only 1
- B. Only 2
- C. Only 3
- D. All are correct

16. Consider the following statements regarding UPI Lite:

1. UPI Lite is designed for offline transactions to enhance the reach of digital payments in areas with poor internet connectivity.
2. It allows users to make low-value transactions without the need for a UPI PIN.
3. The maximum limit for a single UPI Lite transaction is set at Rs. 200.
4. UPI Lite transactions are reflected in the user's main bank account statement in real-time.

Which of the statements given above are correct?

- A. 1 and 3 only
- B. 2 and 4 only
- C. 1, 2, and 3 only
- D. 1, 3, and 4 only

17. Common Services Centre (CSC) programme is initiated by which of the following ministries?

- A. Ministry of Agriculture & Farmers Welfare
- B. Ministry of Communications
- C. Ministry of Electronics and Information Technology
- D. Ministry of Rural Development

18. Sometimes seen in the news, 'Bajau Laut' community belongs to which of the following regions?

- A. Southeast Asia
- B. Middle East Region
- C. Latin America
- D. Central Africa

19. The National Health Claim Exchange (NHCX) is a digital platform launched by the Government of India to:

- A. Provide cashless health insurance coverage to all citizens under Ayushman Bharat.
- B. Facilitate the exchange of medical records between patients and healthcare providers.
- C. Standardize and streamline the processing of health insurance claims across different providers.
- D. Enable online appointment booking and telemedicine consultations for public healthcare facilities.

20. Which of the following statements correctly describes the Greater Adjutant stork?

- 1. The Greater Adjutant is classified as a **Critically Endangered species by the IUCN.**
- 2. Its primary habitats include wetlands, marshes, and agricultural fields.
- 3. The largest breeding population of the Greater Adjutant is found in Assam, India.
- 4. It is known for its distinctive large bill and prominent neck pouch used for storing food.

Select the correct option using the code given below:

- A. 1 and 3 only
- B. 2 and 4 only
- C. 2, 3, and 4 only
- D. 1, 2, 3, and 4

21. Which of the following statements about Aditya-L1 is correct?

- A. Aditya-L1 is a lunar mission by ISRO aimed at studying the moon's surface composition.
- B. Aditya-L1 is India's first solar mission designed to study the Sun from the Lagrange point 1 (L1).
- C. Aditya-L1 aims to study the Martian atmosphere and its seasonal variations.
- D. Aditya-L1 is a collaborative mission between ISRO and NASA focused on studying black holes.

22. Sometimes mentioned in the news, '13th Amendment' is related to which of the following countries?

- A. Maldives
- B. Bangladesh
- C. Nepal
- D. Sri Lanka

23. Which of the following statements about the Quality Council of India (QCI) is correct?

- A. The Quality Council of India (QCI) is an autonomous body under the Ministry of Commerce and Industry, responsible for establishing and operating a national accreditation structure in India.
- B. QCI primarily focuses on the standardization of agricultural products and works directly under the Ministry of Agriculture and Farmers' Welfare.
- C. The Quality Council of India (QCI) was established to promote healthcare standards exclusively and does not engage in other sectors.
- D. QCI does not collaborate with international organizations and operates solely within the national framework of India.

24. Consider the following statements regarding the Schengen Area:

1. The Schengen Area comprises all member countries of the European Union (EU).
2. Citizens of Schengen member countries can travel without passports within the area.
3. The United Kingdom is part of the Schengen Area.
4. The Schengen Area allows for the implementation of a common visa policy for non-EU citizens.

Which of the statements given above are correct?

- A. 2 and 4 only
- B. 1, 2, and 3 only
- C. 2, 3, and 4 only
- D. 1, 3, and 4 only

25. Consider the following statements regarding the Khadi and Village Industries Commission (KVIC):

1. KVIC is a statutory body under the Ministry of Commerce and Industry.
2. The primary objective of KVIC is to promote and develop khadi and village industries in rural areas.
3. KVIC is responsible for the implementation of the Prime Minister's Employment Generation Programme (PMEGP).
4. KVIC provides financial assistance to artisans and entrepreneurs through subsidies and loans.

How many of the statements given above are correct?

- A. Only 1
- B. Only 2
- C. Only 3
- D. All are correct

MAINS

1. Critically analyze the effectiveness of legislative measures, such as reservation quotas, in enhancing the representation of women in Indian politics. What additional steps can be taken to ensure meaningful participation of women in political processes?

2. Discuss the role of horticulture in enhancing agricultural diversification and rural income in India. What are the major challenges faced by the horticulture sector, and how can policy interventions address these challenges?

3. The concept of Special Category Status (SCS) for states in India has been a subject of much debate. Critically evaluate the rationale behind granting SCS and analyze its impact on both the beneficiary states

and the national economy. Suggest alternative development strategies that could address regional disparities without resorting to SCS.

4. Discuss the potential of green waste technologies in mitigating the environmental impact of Rural-Urban waste management. What are the challenges and opportunities in integrating these technologies into existing waste management systems in India?

5. The effectiveness of the Global Plastic Treaty will depend on strong enforcement mechanisms and international cooperation. Discuss the potential challenges in ensuring compliance with the treaty, particularly for developing countries like India.

SOLVED ESSAY BI-WEEKLY

YOU CANNOT STEP IN THE SAME RIVER TWICE

Imagine yourself standing on the banks of the Ganges, a river revered by millions for its spiritual significance. The water flows incessantly, carrying with it sediments from distant mountains, nourishing the land on its banks. Can you truly capture the essence of the river at any single moment? Even as you dip your foot in, the water that touches you has already moved on, replaced by fresh currents. This is the essence of Greek philosopher Heraclitus's metaphor "You cannot step twice in the same river." Life, like the river, is a constant process of becoming, not a static state of being.

The statement "You cannot step twice in the same river" has profound philosophical implications. It challenges the notion of permanence and stability in life. If we accept that everything is in a state of flux, we must also accept that our understanding of reality is fluid. This realization can be both liberating and unsettling.

The first aspect to consider is the ever-changing nature of the external world. The river, with its ever-flowing water, is an apt symbol. Our surroundings – the people we meet, the landscapes we encounter, the experiences we gather – are in a constant state of flux. Cities morph, relationships evolve, and even the natural world undergoes transformations due to seasons and geological processes. Just as the river carries new water with each passing moment, so too does life present us with new circumstances, challenges, and opportunities.

In a personal context, the idea of constant change is closely linked to growth and transformation. Just as the river is ever-changing, so too are we. Our thoughts, beliefs, and behaviors are continuously evolving based on our experiences and interactions. Embracing this change is crucial for personal development. For instance, consider a person who has faced significant hardships. These challenges inevitably shape their perspective and character. The person they become after overcoming these obstacles is different from the person they were before. Each

experience adds depth and complexity to our understanding of ourselves and the world around us.

Heraclitus' observation is also relevant in a societal and cultural context. Societies and cultures are not static; they are dynamic entities that evolve over time. Traditions, norms, and values shift in response to changing circumstances and new ideas. This continuous evolution is necessary for progress and adaptation. Consider the rapid technological advancements of the 21st century. These changes have revolutionized the way we live, work, and interact with one another. Societies that embrace these changes and adapt accordingly thrive, while those that resist are left behind. The fluid nature of culture and society underscores the importance of openness to new ideas and innovation.

The metaphor of the river also draws attention to the natural world and our relationship with it. Rivers, in their constant flow, symbolize the cycles of nature and the interconnectedness of all life. This perspective encourages us to consider the impact of our actions on the environment. The recognition that we cannot step into the same river twice serves as a reminder of the delicate balance within ecosystems. Human activities that disrupt this balance, such as pollution and deforestation, have far-reaching consequences.

This impermanence can be sometimes unsettling. We yearn for stability, for the comfort of familiar shores. We cling to memories of the past, wishing for a return to a bygone era. Yet, clinging to the past is like trying to hold onto a handful of water from the flowing river. It's futile and ultimately leads to frustration. However, impermanence is not a cause for despair. It is an invitation to embrace the present moment. The river, in its constant flow, reminds us that the only real moment we have is now. By consciously engaging with the present, we can savor the beauty of fleeting experiences, learn from stumbles, and actively shape ourselves into who we want to be. This acceptance of impermanence also liberates us from the burden of regrets and anxieties. We cannot change the past, and

the future remains uncertain. What we can control is our present - our choices, actions, and reactions. By focusing on the here and now, we can navigate life's uncertainties with a sense of purpose and clarity.

To navigate the constant flux of life, it is essential to embrace change with a philosophical mindset. Cultivating adaptability allows us to flow with the currents of existence, much like a river that gracefully maneuvers around obstacles. By practicing mindfulness, we can fully immerse ourselves in the present moment, appreciating the transient nature of life and reducing our anxieties about an uncertain future. Continuous learning is a vital aspect of this journey, as it enables us to remain relevant and resilient amidst the ever-shifting landscapes of knowledge and experience. Building resilience, akin to the sturdy banks of a river that withstand the force of flowing water, empowers us to recover from setbacks and embrace the inherent uncertainties of life. Furthermore, fostering openness to new ideas and

perspectives can lead to profound innovation and personal growth, echoing the river's ability to carve new paths over time. Embracing change not only enriches our individual lives but also aligns us with the fundamental nature of existence, allowing us to thrive in an ever-evolving world. Through this acceptance, we find opportunities for growth and transformation, stepping into the river of life with renewed strength and wisdom.

Ultimately, the river of life, though ever-changing, presents us with an incredible journey. By accepting impermanence and focusing on the present, we can navigate its currents with greater grace, wisdom, and a sense of wonder at its ever-unfolding beauty. As we step into the unknown, we carry the lessons learned from our past experiences, shaping who we are becoming with each passing moment. The river continues to flow, and so too does life, offering us a constant opportunity to learn, grow, and create a meaningful existence in the ever-flowing present.



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