

WEEKLY UPDATES

DATE : 9th – 15th September

POLITY & GOVERNANCE

Supreme Court Ruling on Judges' Elevation

Context

- The **Supreme Court of India** has ruled that the elevation of judges must be decided collectively by the **High Court Collegium** and not by an individual Chief Justice.

Key Points of the Ruling

- **Collective Decision-Making:** Elevation of judges should be based on collective deliberation by the **High Court Collegium**, which includes the High Court Chief Justice and two senior judges.
- **Judicial Review Limitations:** The **Supreme Court** clarified that while the “content of consultation” is beyond judicial review, “effective consultation” falls within its scope.

Background of the Case

- The ruling was made in response to a directive for the **Himachal Pradesh High Court Collegium** to reconsider the promotion of District Judges **Chirag Bhanu Singh** and **Arvind Malhotra**. The Court emphasized the need for collective decision-making, rather than decisions made solely by the High Court Chief Justice.

About the Collegium System

- **Definition:** The **Collegium system** is responsible for recommending appointments and transfers of judges in the **Supreme Court (SC)** and **High Courts (HC)** of India.
- **Structure:**
 - **Supreme Court Collegium:** Comprises the **Chief Justice of India (CJI)** and the four senior-most SC judges.
 - **High Court Collegium:** Includes the **Chief Justice of the High Court** and two senior-most judges of that High Court.
 - **Appointments:** Made by the **President of India** under **Articles 124** and **217** of the Constitution.

Parliamentary Committee on Official Language (PCOL)

Context: Amit Shah's Re-election

- **Union Home Minister Amit Shah** has been unanimously re-elected as the **Chairperson of the Parliamentary Committee on Official Language (PCOL)**.
- **Focus:** Emphasized the need for Hindi to complement, not compete with, regional languages, aiming for all government systems to operate in Indian languages by **2047**.

About Official Languages

- **Eighth Schedule of the Constitution:**
 - Includes **22 languages:** Assamese, Bengali, Gujarati, Hindi, Kannada, Kashmiri, Konkani, Malayalam, Manipuri, Marathi, Nepali, Oriya, Punjabi, Sanskrit, Sindhi, Tamil, Telugu, Urdu, Bodo, Santhali, Maithili, and Dogri.
 - Initially listed **14 languages**; others were added through subsequent amendments:
 - **Sindhi** by the **21st Amendment Act (1967)**
 - **Konkani, Manipuri, Nepali** by the **71st Amendment Act (1992)**
 - **Bodo, Dogri, Maithili, Santhali** by the **92nd Amendment Act (2003)**, effective from 2004.

About PCOL

- **Constitution:** Established in **1976** under Section 4 of the **Official Languages Act, 1963**.
- **Membership:** Comprises **30 members** (20 from Lok Sabha, 10 from Rajya Sabha), elected via **proportional representation** by a single transferable vote.
 - **Functions:** Monitors the progress of Hindi usage for official purposes and submits recommendations to the President.

Public Accounts Committee (PAC) and Its Role in Financial Oversight

Context: Recent Developments with the Public Accounts Committee (PAC)

The newly reconstituted **Public Accounts Committee (PAC)**, chaired by **Congress MP K.C. Venugopal**, has taken an active stance by selecting **161 subjects** for review, focusing on critical areas such as **banking reforms** and **energy transition**. These topics have been chosen primarily based on the findings of the **Comptroller and Auditor General (CAG) reports**. The PAC aims to go beyond mere formalities and scrutinize the government's expenditure with an emphasis on effectiveness and integrity, amidst concerns over **crony capitalism** and the lack of accountability.

Understanding the Public Accounts Committee (PAC)

- **Role:** The PAC is responsible for auditing the government's revenue and expenditure by examining the **Comptroller and Auditor General (C&AG) audit reports** presented in Parliament.
- **Assistance:** The PAC works closely with the **Comptroller and Auditor General (C&AG)**, who provides support in investigating and scrutinizing financial matters.
- **Function:** Ensures that government spending is carried out within the framework approved by Parliament.
- **Genesis:** The PAC was established in **1921** and became a formal Parliamentary Committee under the control of the Speaker in **1950**.
- **Membership:** Consists of **22 members** (15 from Lok Sabha and 7 from Rajya Sabha), elected annually.
- **Chairperson:** The Chairperson is appointed from the **Lok Sabha** and is traditionally from the **Opposition** since **1967-68**.
- **Exclusions:** Ministers are not eligible for membership; if a committee member is appointed as a Minister, they must resign from the PAC.
- **Key Functions:**
 1. Scrutinizes government accounts and **C&AG reports**.
 2. Reviews the legality, authority, and prudence of government expenditure.
- **Examination Focus:** Ensures that all appropriations are spent for the purposes approved by Parliament and adheres to the principles of authority, economy, and efficiency.

PAC's Role in Financial Accountability: Key Functions and Concerns

Examination of CAG Reports

- The PAC is tasked with examining the **annual audit reports** prepared by the **Comptroller and Auditor General (CAG)**, which are presented to Parliament by the President.
- **Objective:** To ensure all government expenditures comply with the authority granted by Parliament, and to identify and address irregularities, wasteful spending, and corruption.

Scrutiny of Expenses

- The PAC reviews public expenditure not just for technical compliance, but also to assess:
 - **Economy:** Ensuring that resources are used efficiently and waste is minimized.
 - **Prudence:** Ensuring careful and responsible management of public funds.
 - **Propriety:** Ensuring expenditures are appropriate and lawful.
- The committee highlights issues of waste, loss, corruption, and inefficiency within government operations.

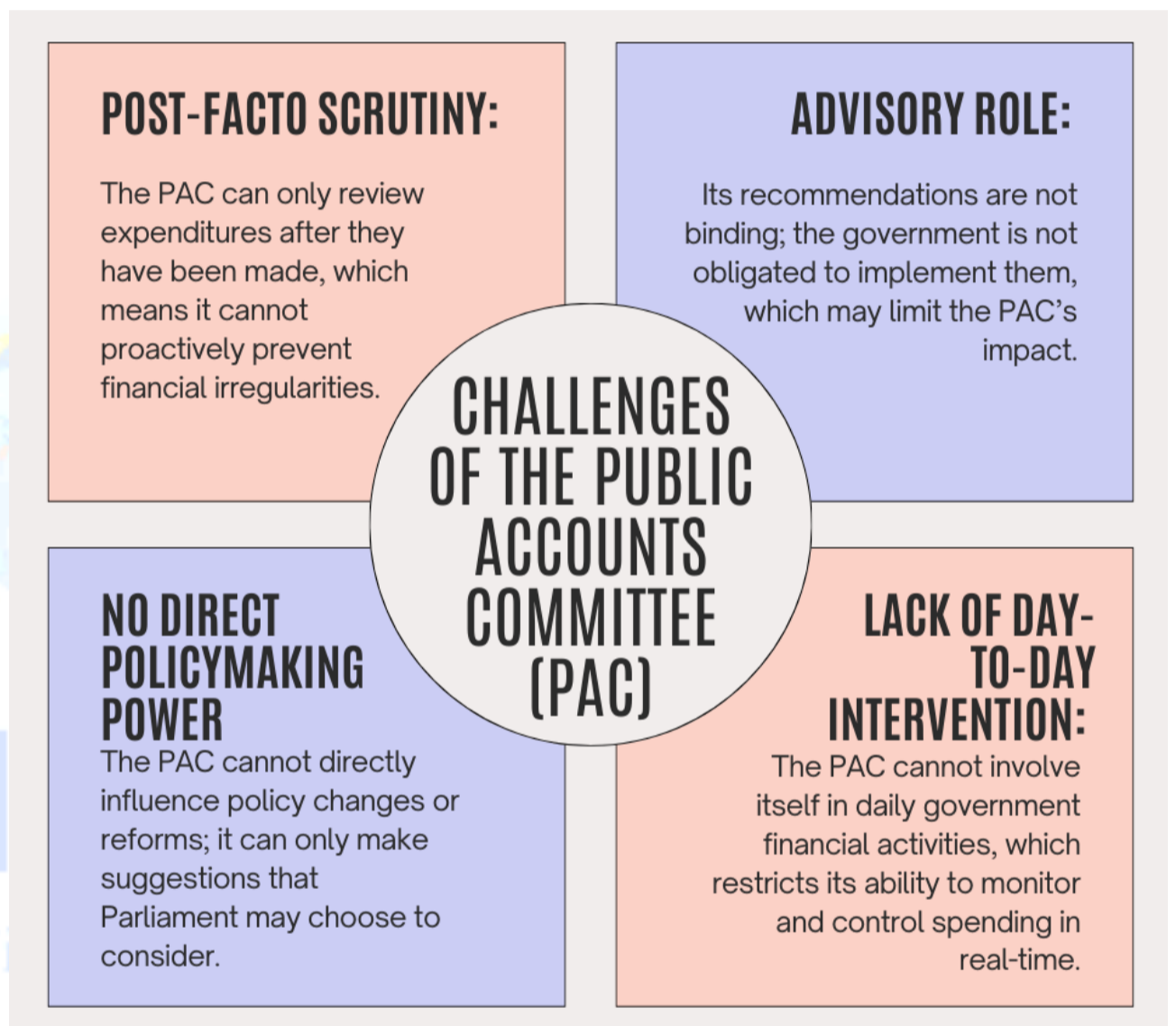
- **Limitations:** The PAC performs a **post-mortem review** of expenses, which means it examines financial transactions only after they have occurred, limiting its ability to prevent financial misconduct in advance.

Streamlining Government Activities

- The PAC collaborates with the **Public Estimates Committee** and the **Public Undertakings Committee** to oversee government expenditures and promote efficiency and financial propriety.
- **Limitations:** While the PAC provides oversight and makes recommendations, it lacks the authority for day-to-day intervention in government financial activities. Its recommendations are advisory, not binding, and their implementation depends on the government's discretion.

Need-Based Policy-Making

- The PAC offers constructive suggestions for the optimal use of resources and passive improvements in government policies.
- It encourages transparency and accountability by bringing financial issues to light and prompting discussions in Parliament.
- **Limitations:** The PAC does not have a direct role in policymaking, nor can



it issue enforceable orders. Decisions on its findings and recommendations are left to Parliament.

financial activities, which restricts its ability to monitor and control spending in real-time.

Health Coverage for Senior Citizens Aged 70 and Above: A New Initiative Under AB PM-JAY

Context: Union Cabinet's Approval for Health Coverage for Senior Citizens

The Union Cabinet has approved a new initiative under the **Ayushman Bharat Pradhan Mantri Jan Arogya Yojana (AB PM-JAY)** to provide comprehensive health coverage for all senior citizens aged **70 and above**.

Details of the Health Coverage for Senior Citizens Under AB PM-JAY

- **Eligibility Criteria:** All senior citizens aged **70 and above** are eligible, regardless of their income.

- **Beneficiaries:** Approximately **6 crore** senior citizens will benefit from this initiative.
- **Benefits Offered:**
 - A **family-based cover of Rs 5 lakh** annually.
 - An additional top-up of **Rs 5 lakh** annually for those already covered by AB PM-JAY.
- **Ease of Access:**
 - Eligible seniors will receive a distinct **AB PM-JAY card**.
 - Seniors can choose between existing public health schemes or AB PM-JAY.
- **Other Eligible Groups:** Senior citizens currently under private health insurance or **Employees' State Insurance** schemes.

About AB PM-JAY Scheme

- **Ministry:** Ministry of Health & Family Welfare
- **Type:** Centrally Sponsored Scheme under the **Ayushman Bharat Mission**
- **Target:** Covers **12 crore families** (approximately **55 crore beneficiaries**)
- **Purpose:** Aims to achieve **Universal Health Coverage (UHC)**
- **Benefits:**
 - Health cover of **Rs 5 lakh/family/year** for secondary and tertiary care.
 - Includes up to **3 days pre-hospitalization** and **15 days post-hospitalization** expenses.
- **Significance:** Recognized as the world's largest publicly funded health assurance scheme.

Other Schemes for Senior Citizens

1. **Atal Vayo Abhyuday Yojana:** Improves the quality of life of senior citizens.
2. **SAGE Initiative:** Promotes senior care products and services.
3. **SACRED Portal:** Connects senior citizens with job providers in the private sector.

Health Care Concerns for Senior Citizens in India

1. **Rise in Chronic Illness:** 1 in 5 elderly persons has mental health issues, and **75%** suffer from chronic diseases (LASI, 2021).
2. **Need for Geriatric Care:** Increased expenses for treating non-communicable diseases and conditions like cataracts and hearing loss create financial challenges.
3. **Low AB PM-JAY Penetration:** Limited reach in smaller cities and towns hampers universal health coverage.
4. **Lack of Outpatient Care:** No coverage for outpatient services and medicines, despite high spending by the elderly on chronic diseases.

5. **Limited to Hospitalization:** The scheme focuses on secondary and tertiary care, with inadequate provision for primary health care.
6. **Functional Issues:** Misinformation, overburdened staff, and limited roles of **Arogyamitras** affect the effectiveness of AB PM-JAY.
7. **Insurance Model Limitations:** Over-reliance on insurance schemes may lead to higher costs, unlike models that emphasize primary care.

Measures to Rejuvenate India's Insurance Sector

1. **Parametric Insurance:** Utilize data analytics and IoT for quick payouts based on specific triggers like rainfall for crop insurance.
2. **Employer-Driven Group Insurance:** Promote group insurance for informal sectors, similar to Germany's **Bismarck Model**.
3. **Public-Private Partnerships (PPPs):** Collaborate with government agencies to provide affordable, need-based insurance in underserved areas.
4. **Awareness Campaigns:** Launch large-scale efforts to improve insurance literacy and dispel myths.
5. **Improve AB PM-JAY:** Empower **Arogya Mitras** to provide better claim support.
6. **Expand Healthcare Infrastructure:** Increase health centers to reduce the doctor-patient imbalance.
7. **Strengthen Primary Care:** Enhance primary and secondary care to reduce the load on tertiary hospitals.

Other Suggested Measures for Elderly Care

1. **Comprehensive Social Security Systems:**
 - Examples like the **Kalaigal Magalir Urimai Thittam** in Tamil Nadu, which provides financial support to eligible women recognized as heads of families.
 - **Karnataka Gruha Lakshmi Scheme** supports women heads of families by providing eligible women with financial assistance of **₹2000 per month**.
2. **Intergenerational Programs:** Programs that promote bonding across generations, such as mentorship and community service projects.
3. **Access to Healthcare:** Improve access to healthcare services, including geriatric care, preventive screenings, and mental health support.
4. **Social Inclusion:** Promote the social inclusion and active participation of senior citizens through community-based programs, intergenerational activities, and support networks.
5. **Civil Society Engagement:** Encourage community-based initiatives and civil society engagement through senior citizen clubs and programs to prevent social isolation.

6. **Demographic Stability:** Focus on policies addressing population aging, women's empowerment, and intergenerational solidarity.
7. **Community-Based Care Systems for Elders:** Utilize programs like **ASHA** to build a community-based workforce that supports the diverse health and social care needs of the elderly.
8. **Age-Friendly Cities:** Design cities to be accessible for all, including elderly citizens, with age-friendly infrastructure and public spaces.

Government Schemes for Old Age Support

1. **National Social Assistance Programme (NSAP):** Offers non-contributory pensions for the elderly, widowed women, and disabled individuals, administered by the Ministry of Rural Development.
2. **Pradhan Mantri Vaya Vandana Yojana (PMVVY):** An exclusive pension scheme for senior citizens aged 60 and above, extended up to 2023.
3. **Integrated Program for Older Persons (IPOP):** Enhances the quality of life for senior citizens by providing basic amenities such as food, shelter, and medical care.
4. **Rashtriya Vayoshree Yojana:** Provides aids and assistive living devices to elderly BPL individuals with age-related disabilities.
5. **SAMPANN Project:** An online pension processing system for Department of Telecommunications pensioners, launched in 2018.
6. **SACRED Portal for Elderly:** Allows citizens above 60 to register for jobs and access information and guidance.
7. **Elder Line: Toll-Free Number for Elderly:** Provides information, guidance, emotional support, and immediate assistance on issues like pension, medical, and legal matters.
8. **SAGE (Seniorcare Ageing Growth Engine) Initiative:** A platform offering elderly care products and services by credible start-ups, promoting entrepreneurship in elderly care.

INTERNATIONAL RELATIONS

Taliban's New 114-Page "Morality Law"

Context

- The **Taliban** has introduced a new **114-page "morality law,"** enforced by the **Ministry of Propagation of Virtue and Prevention of Vice** in Afghanistan.
- The law imposes severe restrictions on **Afghan women**, formalizing measures that were informally enforced earlier.

Key Provisions of the Law

- **Full-Body Veiling:** Women are required to wear a full-body veil, with face coverings deemed essential to prevent “temptation.”
- **Ban on Women’s Voices in Public:** A woman’s voice is considered “intimate” and is banned from public singing or reciting.
- **Restrictions on Social Interaction:** Men and women who are not related by blood or marriage are prohibited from interacting.
- **Persecution of LGBTQ People and Religious Minorities:** Intensified discrimination against LGBTQ individuals and religious minorities.
- **Atmosphere of Fear and Surveillance:** Citizens are encouraged to report “violations,” creating a climate of fear.
- **Powers for Morality Inspectors:** Morality inspectors have been granted extensive authority to enforce these laws.

Ethical Issues with the Law

Gender Apartheid:	1	Systematic discrimination and repression of women, limiting their freedom and rights.
Suppression of Women’s Voices	2	Women are banned from speaking, singing, or reading in public. <ul style="list-style-type: none"> • Forced Veiling: Mandatory full-body veiling, including face coverings.
Restriction of Social Interaction	3	Prohibiting men and women from interacting unless related.
Targeting of Vulnerable Groups	4	Increased persecution of LGBTQ individuals and religious minorities.
Use of Fear and Surveillance	5	Encouragement of citizens to report on others, fostering an atmosphere of fear.
Arbitrary Detention and Punishment	6	Morality inspectors have extensive powers to arbitrarily detain and punish individuals.

India-UAE Relations: A Multifaceted Partnership

Context: Recent Developments in India-UAE Relations

During the **Crown Prince of Abu Dhabi’s official visit** to India, the two nations signed four significant agreements in the **energy sector**, reflecting the ongoing deepening of their strategic partnership.

New Agreements in the Energy Sector

1. **LNG Supply Agreement:** The **Abu Dhabi National Oil Company (ADNOC)** will supply **1 million metric tonnes of LNG** annually to **Indian Oil Corporation Ltd** to secure India’s energy needs.

2. **Crude Oil Storage:** **ADNOC** and **India Strategic Petroleum Reserve Ltd (ISPRL)** will explore new opportunities for crude storage in India and renew existing agreements, enhancing India’s energy security.

3. **Nuclear Energy Cooperation:** **Emirates Nuclear Energy Company (ENEC)** and **Nuclear Power Corporation**



of India Ltd (NPCIL) will collaborate on the operations of nuclear power plants and explore mutual investments in the sector.

4. **Oil Production Concession:** **Urja Bharat**, an Indian entity, secured a concession for **Abu Dhabi Onshore Block One**, contributing to India's energy security.

Additionally, the **Gujarat government** and **Abu Dhabi Developmental Holding** signed an **MoU** to develop food parks in India, reflecting their cooperation in food security.

Various Dimensions of the India-UAE Relationship

1. Diplomatic Relations:

- Established in **1972** with reciprocal embassies in each other's countries.
- The relationship was elevated to a **strategic partnership in 2015**, strengthening ties across various domains.

2. Economic and Commercial Relations:

- Bilateral trade valued at **US\$ 72 billion** in FY 2021-22, making the UAE India's **third-largest trade partner** and **second-largest export destination**.
- The UAE is among the **Top 10 destinations for FDI** in India.
- **India-UAE Comprehensive Economic Partnership Agreement (CEPA)** was signed to boost bilateral trade and investment.

3. Food Security:

- India is a major food producer, and the UAE is a significant importer of Indian food products.
- The **Dubai Multi Commodities Centre** launched **Agriota**, a platform connecting Indian farmers with UAE food companies.
- In 2022, the UAE committed **\$2 billion** to construct food parks in India and establish a food security corridor under the **I2U2 framework**.

4. Cultural Relations:

- Plans for a **BAPS Hindu temple** in the UAE.
- Indian cinema, TV, and radio channels are widely available in the UAE.
- Annual celebrations of **International Day of Yoga** highlight cultural affinity.

5. Technology Partnerships:

- Collaboration between **ISRO** and **UAESA** for the **Red Moon mission**.
- Partnerships in **digital innovation** and **technology** to foster mutual growth.

6. Defence and Security Cooperation:

- Regular **I2U2 summits** and annual defence dialogues.

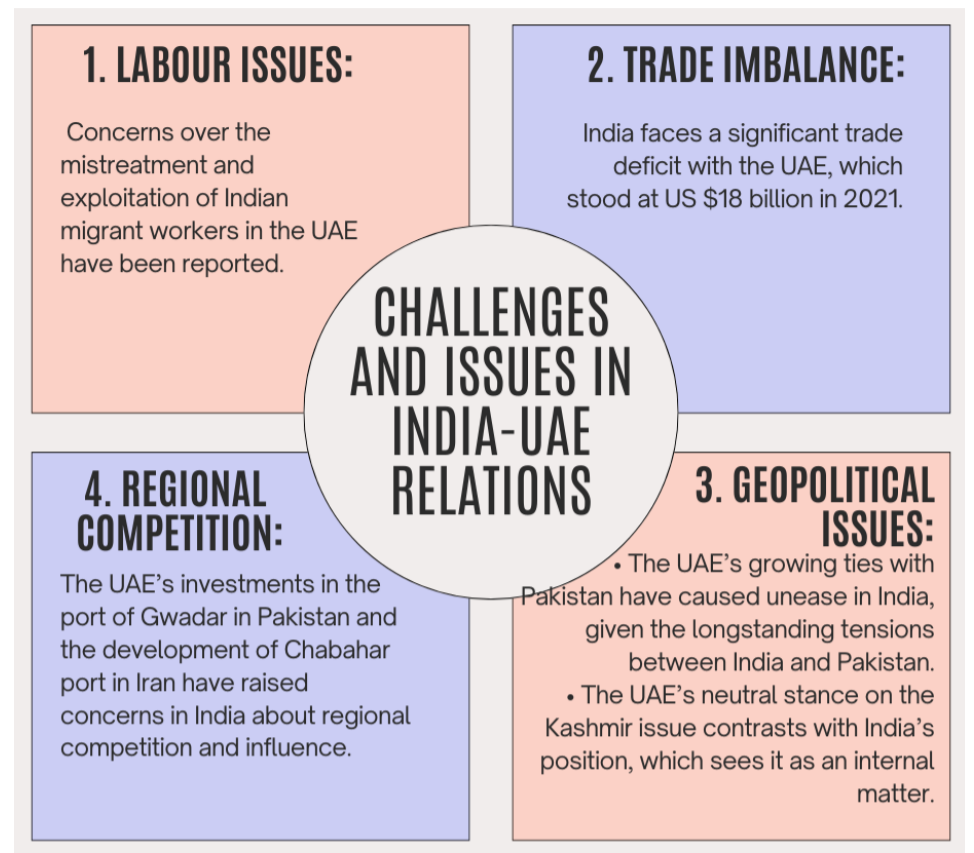
- Bilateral defence exercises like **Exercise Desert Flag**, **Desert Eagle-II**, and **IN-UAE BILAT** demonstrate strong defence ties.
- UAE's strategic role in **Indian Ocean Region** dialogue.

7. Mediation Efforts:

- The UAE has played a mediating role in India-Pakistan relations, facilitating meetings between interlocutors, including India's NSA Ajit Doval and Pakistan military officials.

8. Indian Community in the UAE:

- The Indian expatriate community is approximately **3.4 million**, making it the largest ethnic community in the UAE, constituting about **35%** of the country's population.



DEFENCE & SECURITY

Joint Doctrine for Amphibious Operations Released

Context: New Military Doctrine

- Chief of Defence Staff (CDS) General Anil Chauhan released the **Joint Doctrine for Amphibious Operations** on **9th September 2024** in New Delhi.

What are Amphibious Operations?

- **Definition:** Military operations involving coordinated efforts between land and naval forces to project power from the sea onto land.

Details of the Doctrine

- **Purpose:** Provides guidance to commanders for conducting amphibious operations in complex military environments.
- **Objective:** Enhances the Armed Forces' capability for various operations in the **Indian Ocean Region** during both war and peace.
- **Emphasis:** Focuses on jointness and integration among the Armed Forces.

About the Chief of Defence Staff (CDS)

- **Post Created:** In **2019**, based on Lt Gen **DB Shekatkar's** committee recommendations.
- **First CDS:** General **Bipin Rawat**, appointed on **December 31, 2019**.

ECONOMY

The Viability of Universal Basic Income (UBI) in India: Prospects and Challenges

Context: Growing Interest in Universal Basic Income (UBI) Amidst Global Economic Shifts

With **automation** and **artificial intelligence (AI)** reducing job growth, the concept of **Universal Basic Income (UBI)** is gaining momentum globally, including in India. While UBI has been proposed as a solution to address demand deficits and rising inequality, some argue that India should focus on expanding its social safety nets rather than implementing a full-scale UBI.

What is Universal Basic Income (UBI)?

- **Definition:** UBI is a social welfare scheme that provides a fixed, unconditional cash transfer to all eligible individuals or households, regardless of their income or employment status.
- **Conceptual Appeal in India:** The idea of UBI was discussed in the **2016-17 Economic Survey**, but the current Chief Economic Advisor (CEA), **V Anantha Nageswaran**, has dismissed it as unnecessary for the country.

Economic Impact and Challenges of Implementing UBI in India

1. Cost and Fiscal Sustainability:

- Implementing UBI would require substantial financial resources, potentially leading to higher taxes, spending cuts, or increased debt.
- It may also lead to inflationary pressures and hinder economic growth.
- The **2016-17 Economic Survey** estimated that a UBI of Rs **7,620 per year** for every Indian would cost about **4.9% of GDP**.

2. Perverse Incentives:

- UBI could reduce motivation to work, productivity, and engagement in skill development, fostering a culture of dependency.
- Some may choose to rely on the basic income instead of pursuing employment opportunities or training.

3. **Inflationary Pressures:** A widespread distribution of fixed income might drive up prices for goods and services, as businesses adjust pricing to capture the increased market income.

4. **Potential for Dependency:** There is a risk of fostering dependence on government support, potentially leading to complacency and reduced motivation for personal and professional growth.

5. Implementation Challenges:

- India faces challenges in public service delivery, such as identification, targeting, monitoring, and accountability.
- Implementing UBI would require reliable data, robust technology, and strong institutions to prevent corruption, leaks, and exclusion errors.
- **Incomplete Aadhaar enrollment** complicates beneficiary identification and targeted service delivery.

Alternatives to Universal Basic Income for Poverty Alleviation in India

1. Targeted Cash Transfer Programs:

- Focus on vulnerable groups, such as through **Direct Benefit Transfer (DBT)** for LPG subsidies, ensuring that aid reaches those most in need.

2. Expand Employment Guarantee Schemes:

- Strengthen programs like **MGNREGA**, which provide guaranteed employment to rural households, thereby increasing income and reducing poverty in these areas.

3. Enhance the Public Distribution System (PDS):

- Improve the distribution of subsidized food grains and essential commodities to ensure food security for low-income families.

4. Invest in Skill Development:

- Provide skill development and vocational training programs to enhance the employability of underprivileged individuals, fostering self-reliance and economic independence.

POTENTIAL OF UNIVERSAL BASIC INCOME (UBI) IN COMBATING POVERTY

1. DIRECT FINANCIAL SUPPORT:

UBI provides direct financial assistance to individuals and families, enabling them to meet basic needs such as food, healthcare, and education.

2. FINANCIAL INCLUSION:

By promoting bank account usage and formal financial transactions, UBI can help expand financial inclusion.

3. ELIMINATION OF TARGETING ERRORS:

Since UBI is universal, it eliminates targeting errors, reduces administrative costs, and ensures that all eligible individuals are covered.

4. MORE AUTONOMY:

Studies, such as one by SEWA Bharat, have found that cash transfers provide women in rural India with greater autonomy in decision-making, empowering recipients to spend according to their priorities, including investments in livelihoods and education.

5. SOCIAL INCLUSION:

UBI fosters social inclusion by providing financial support to marginalized groups, helping them integrate more fully into society.

6. COUNTER-CYCLICAL EFFECT:

The unconditional nature of UBI makes it counter-cyclical, automatically providing a safety net during economic downturns or periods of job loss and economic hardship.

7. HUMAN DIGNITY:

UBI recognizes the intrinsic value of each individual, providing them with the means to lead a dignified life and make choices aligned with their aspirations and needs.

5. Promote Microfinance and Microcredit:

- Support small businesses through microloans, particularly targeting women entrepreneurs, to encourage income generation. Examples include **Self-Help Groups (SHGs)** like **Kudumbashree** in Kerala and **Jeevika** in Bihar.

Delayed Census Government Dissolves Standing Committee on Statistics (SCoS)

Context: Government Dissolves Standing Committee on Statistics (SCoS)

- The government has dissolved the **14-member Standing Committee on Statistics (SCoS)**, which was responsible for overseeing statistical surveys. The dissolution comes amid concerns over delays in conducting the national census, which was last conducted in **2011** and due in **2021**.
- **Reason for Dissolution:** The **Ministry of Statistics and Programme Implementation (MoSPI)** cited an overlap between the work of the SCoS and the newly established **Steering Committee for National Sample Surveys**.

Key Committees Related to Statistics in India

1. Standing Committee on Economic Statistics (SCES)

- **Established:** 2019 by MoSPI.
- **Nature:** Temporary committee created to address critical statistical issues.
- **Funding:** Provided by the **Government of India** through MoSPI.
- **Objectives:**
 - Advise on **survey methodology** (sampling, design, instruments).
 - Finalize **survey tabulation plans**.

2. Steering Committee for National Sample Surveys (NSS)

- **Established:** July 2023.
- **Objective:** Oversee survey-related matters of the **National Sample Survey Office (NSSO)** based on recommendations from the **National Statistical Commission (NSC)**.

India's First Silicon Carbide Manufacturing Facility

Context: Silicon Carbide (SiC) Production in India

- India's first **Silicon Carbide (SiC)** manufacturing facility will be set up in **Odisha** with an investment of **Rs 620 crore** by **RIR Power Electronics Limited**.

About Silicon Carbide (SiC)

- **Definition:** A hard, synthetic crystalline compound made of **silicon and carbon**.

- **Properties:** High thermal conductivity, mechanical strength, and resistance to wear and oxidation.
 - **Applications:** Used in **semiconductor devices, mechanical seals, structural ceramics, heat exchangers, optical mirrors, and ballistic armor.**

China's Decision to Raise Retirement Ages: Key Reasons and Lessons for India

Context: China's Move to Raise Retirement Ages

China is raising its retirement ages to tackle several pressing issues related to its aging population, pension system deficits, and workforce dynamics.

Reasons for Raising Retirement Ages in China

- 1. Declining Pension Budgets:** China's pension funds are facing significant deficits. By delaying retirement, the government aims to reduce immediate pension payouts and extend the period during which workers contribute to the pension system.
- 2. Increased Burden on Employed Workers:** The ratio of working individuals to retirees is decreasing, placing a heavier financial burden on fewer employed workers to support a growing number of retirees.

- 3. Aging Population and Rising Life Expectancy:** With life expectancy in China now at **78.6 years** and a rapidly growing elderly population, the current retirement age is becoming unsustainable. Raising the retirement age is seen as a necessary adjustment to reflect these demographic changes.

Broader Economic Context

- This policy change is set against a backdrop of **economic challenges**, such as high youth unemployment and concerns over the **exploitation of blue-collar workers.**

Lessons India Can Learn from China's Decision

1. Ensuring Pension System Sustainability:

India should proactively strengthen its pension system to avoid potential future deficits as its population ages. This may include adjusting pension fund structures, increasing contributions, or raising the retirement age.

2. Managing Workforce Imbalances:

Maintaining a balanced ratio of workers to retirees is crucial for economic stability. India needs to consider policies that manage this balance effectively, particularly as the demographic structure evolves.

3. Adapting to Increasing Life Expectancy:

As life expectancy increases, India may also need to consider adjusting retirement ages to ensure the sustainability of pension systems and social security benefits over longer periods.

4. Balancing Employment Opportunities:

Any increase in retirement age should be carefully balanced with strategies to address youth unemployment and create job opportunities. Ensuring a fair distribution of employment across age groups is essential to prevent labor market imbalances.

AGRICULTURE

Government's Promotion of Nano-Fertilizers in India

Context: Promotion of Nano DAP as an Alternative to Granular DAP

The Government of India is promoting **nano di-ammonium phosphate (nano DAP)** as a cost-effective, indigenous alternative to the imported granular form of **di-ammonium phosphate (DAP)**, particularly for **Punjab's Rabi season crops**.

What is Nano DAP?

- **Description:** Nano DAP is a liquid form of DAP that is cheaper and easier to transport than the traditional granular version. A 500 ml bottle of nano DAP costs **Rs 600** and can cover one acre, compared to the granular DAP, which costs around **Rs 1,350** per 50 kg bag.
- **Concerns:** While nano DAP is being promoted as a viable alternative, **Punjab Agricultural University (PAU)** scientists have raised concerns, noting lower wheat yields when using nano DAP alone. The **Indian Farmers Fertiliser Cooperative (IFFCO)**, which developed nano DAP, recommends using it alongside granular DAP for optimal results.

What are Nano-Fertilizers?

- **Definition:** Nano-fertilizers are advanced fertilizers engineered using nanotechnology to enhance nutrient delivery to plants. They contain nutrients in nano-sized particles, which improves absorption, efficiency, and reduces environmental impact compared to conventional fertilizers.
- **Examples:** Nano-fertilizers can include nanoparticles of **nitrogen, phosphorus, and potassium**, as well as combinations with other elements like **iron** or **zinc**.

Benefits of Nano-Fertilizers

1. To Farmers:

- **Reduction in Input Costs:** A 500 ml bottle of nano DAP costs around **Rs 600**, which is significantly cheaper than a 50 kg bag of traditional DAP priced at **Rs 1,350-1,400**.
- **Higher Crop Yields:** Nano-fertilizers have been shown to increase crop yields by around **8%**, improving crop quality through better nutrient delivery, as per IFFCO.
- **Increase in Farmer Income:** Lower costs and improved yields can lead to better income for farmers.

2. To the Environment:

- **Better Nutrient Use Efficiency (NUE):** Nano-fertilizers have over **85% efficiency**, allowing plants to absorb nutrients more effectively due to their nano-sized particles.

- **Less Environmental Impact:** Reduces pollution of soil, water, and air by minimizing nutrient waste and cutting fertilizer use by up to **50%**.

3. To the Government:

- **Lower Subsidy Burden:** Promotes cost savings by reducing subsidies on non-urea fertilizers.
- **Decreasing Imports:** Increased production of nano urea is expected to reduce India's dependence on urea imports, with a planned production equivalent to **20 million tonnes** of urea by FY25.

Current Limitations and Challenges of Nano-Fertilizers

1. **Not a Complete Replacement:** Nano urea only replaces the **top dressing** of fertilizers, not the **basal application**, limiting the potential benefits of efficiency.
2. **Concerns Over Yield:** The predicted yield increase of **3-16%** may not always be realized, potentially diminishing the expected income benefits.
3. **Costing Issues:** Nano urea does not currently receive subsidy support, raising concerns about its pricing in comparison to conventional urea.
4. **Potential Toxicity:** The introduction of nanoparticles into agriculture may harm soil organisms and pose risks to human health due to their size and reactivity.
5. **Uncertain Long-Term Effects:** The long-term impacts of nano-fertilizers on **soil health, microbial activity**, and potential **water contamination** are not fully understood.
6. **Adaptation Challenges for Farmers:** Farmers may need to make significant changes to their current practices to incorporate nano-fertilizers, which could result in additional costs, learning curves, and adjustment periods.

ART & ARCHITECTURE

The Great Stupa of Sanchi

Context: Recent Diplomatic Significance

External Affairs Minister **S. Jaishankar** recently visited a replica of the **East Gate** of Sanchi's **Great Stupa** displayed outside the **Humboldt Forum Museum** in Berlin, highlighting the cultural and diplomatic significance of this ancient monument.



About the Great Stupa of Sanchi

1. Location and Structure:

- The **Great Stupa** is in **Sanchi, India**. It is a large, hemispherical structure believed to house the **relics of the Buddha**.
- The stupa is part of a complex of **Buddhist monuments** that date back up to the **12th century CE**.

2. Historical Background:

- The monument was constructed under the supervision of **Ashoka's wife, Devi**, and was supported by the **mercantile community of Vidisha**.
- Initially built during the reign of **Emperor Ashoka** in the **3rd century BCE**, it has been expanded and embellished over the centuries.

3. The Toranas (Gateways):

- The **Great Stupa** is renowned for its **four toranas** (gateways) positioned in the **cardinal directions** (East, West, North, and South).
- These gateways were added during the **Satavahana dynasty** in the **1st century BCE**.
- The **East Gate** is ornately carved with scenes from the **Jataka Tales** (stories of the previous lives of the Buddha) and **Buddhist iconography**.

4. Artistic and Cultural Significance:

- While the stupa itself is a simple structure, the **toranas** are celebrated for their intricate carvings and artistic beauty.
- The carvings on these gateways showcase **Buddhist and cultural motifs**, reflecting the artistic excellence and spiritual significance of the time.

GEOGRAPHY & DISASTER MANAGEMENT

Mapping: Typhoon Yagi in Vietnam

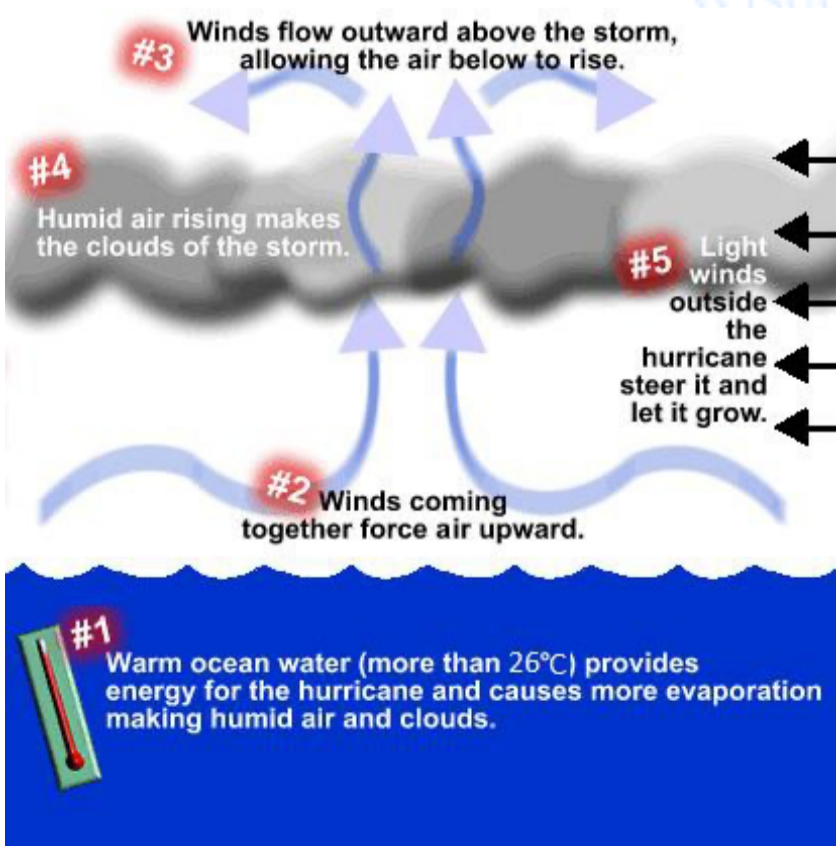
Context: Recent Typhoon Impact

- **Typhoon Yagi** has claimed **143 lives** in northern Vietnam, with **58 still missing**.
- **Strength:** The strongest typhoon to hit Vietnam in decades, with winds reaching **149 kph**.

Why Vietnam and the Philippines are Prone to Typhoons

- **Geographic Location:**
 - Located in the **Western Pacific**, one of the most active typhoon basins.
 - Positioned along the **Pacific typhoon belt** where warm ocean waters and favorable atmospheric conditions promote strong tropical storm formation.
- **Vulnerability:**
 - Long coastlines and low-lying areas increase vulnerability to **storm surges, flooding, and landslides**.
 - Seasonal monsoons intensify these weather systems, particularly from **June to November**.

Super Typhoon Yagi



How Typhoons are Formed:

1. **Warm Ocean Waters:** Typhoons need sea surface temperatures of at least **26.5°C (80°F)** to provide the energy necessary for their development.
2. **High Humidity:** Moisture in the atmosphere fuels the storm's convection, maintaining its strength.
3. **Low Wind Shear:** Minimal variation in wind speed and direction with height allows the storm to grow vertically without being disrupted.
4. **Coriolis Effect:** The Earth's rotation causes the storm to spin, which is essential for typhoon formation, typically occurring at least **5 degrees latitude** from the equator.

5. **Pre-existing Disturbance:** An initial weather disturbance, like a cluster of thunderstorms, serves as a seed for the typhoon.
6. **Stages of Formation:**
 - **Tropical Disturbance:** Cluster of thunderstorms forms.
 - **Tropical Depression:** Develops a circular pattern with wind speeds up to **38 mph (61 km/h)**.
 - **Tropical Storm:** Winds reach **39-73 mph (63-118 km/h)**, and the storm gets a name.
 - **Typhoon:** Winds exceed **74 mph (119 km/h)**, and the storm develops a clear eye and intense thunderstorms.
7. **Dissipation:** Typhoons weaken over cooler waters, land, or areas with high wind shear, losing their organized structure and intensity.

About Vietnam

- **Location:** Southeast Asia, covering **331,000 square kilometers** with a population of over **100 million**.
- **Borders:** Shares borders with **China, Laos, Cambodia**, and maritime borders in the **South China Sea**.
- **Capital:** Hanoi; largest city: **Ho Chi Minh City**.



The Impact of Polar Ice Melt on Indian Monsoon Patterns and Global Economy

Context: Arctic Ice Melt and Its Effect on Indian Monsoons

A recent study reveals that the **declining Arctic sea ice** significantly influences **Indian monsoon patterns** through changes in atmospheric circulation.

How Does Arctic Sea Ice Affect Indian Monsoon Patterns?

- **Central Arctic Ice Reduction:**
 - **Impact:** Declining sea ice leads to increased heat transfer from the ocean to the atmosphere, strengthening **Rossby waves** (high-altitude air currents).
 - **Effects:**
 - Creates high pressure over northwest India and low pressure over the Mediterranean.
 - Shifts the Asian jet stream, resulting in **more rainfall** in northern and central India but **less** in western and peninsular regions.

• Barents-Kara Sea Ice Reduction:

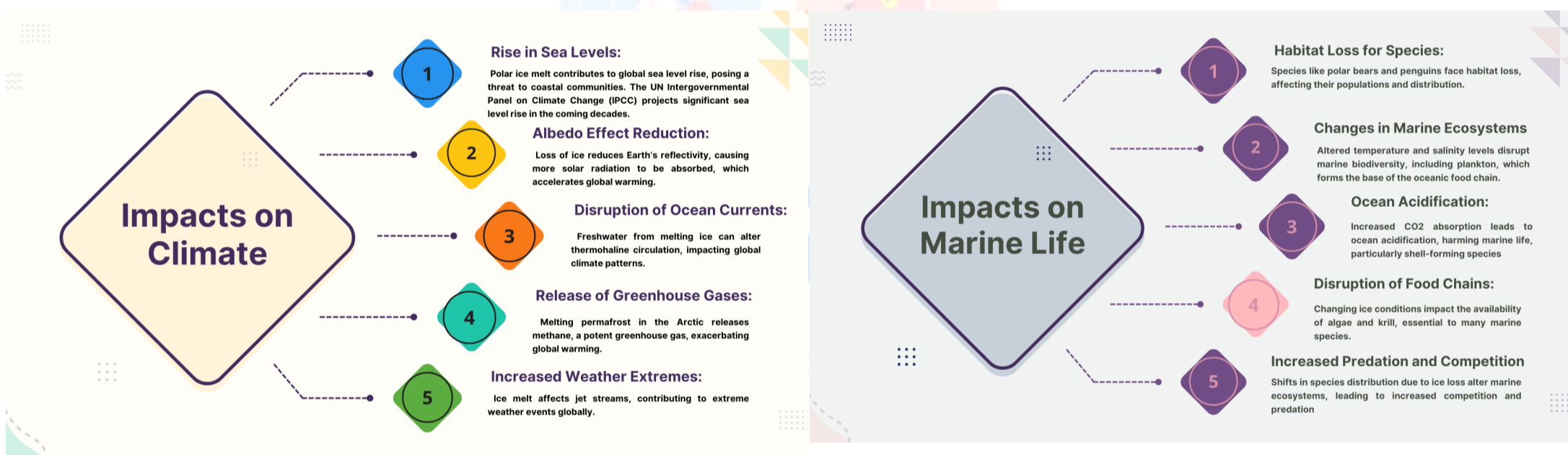
- **Impact:** Reduced sea ice in this region leads to higher pressure over northwest Europe and alters atmospheric stability over Asia.
- **Effects:**
 - Increases rainfall in northeastern India.
 - Reduces rainfall in central and northwest India due to shifts in the subtropical easterly jet and elevated surface temperatures in the Arabian Sea.

About Melting of Arctic and Antarctic Ice

• Significance:

- Melting polar ice is both an **indicator** and a **driver** of climate change with extensive impacts on global climate, marine ecosystems, and economies.
- Rapid ice loss, accelerated by global warming, has complex, interconnected implications that extend beyond the polar regions.

Impacts of Arctic and Antarctic Ice Melting



Impacts on Global Economy

1. **Coastal Infrastructure and Housing:** Rising sea levels threaten coastal infrastructure, requiring substantial investments in adaptation measures.
2. **Impact on Fisheries:** Changes in marine ecosystems affect fish stocks, impacting global fisheries and economies dependent on fishing.
3. **Increased Insurance Costs:** Extreme weather events lead to higher insurance costs for businesses and governments.
4. **New Shipping Routes:** Melting ice opens new **shipping routes in the Arctic**, altering global trade patterns.

5. **Agricultural Changes:** Altered weather patterns influence agricultural productivity, affecting food prices and security.

MHA's New Fund Norms for Recovery and Reconstruction (R&R) in Disaster Management

Context: New Guidelines for Recovery and Reconstruction (R&R) Funds

- The **Ministry of Home Affairs (MHA)** has introduced new guidelines for the creation and management of **recovery and reconstruction (R&R) funds**, following recommendations from the **15th Finance Commission**.

What is Recovery and Reconstruction (R&R)?

- **Definition:**
 - **Recovery:** Involves actions to restore affected communities to normalcy after a disaster, including repairing homes, restoring services, and addressing immediate needs.
 - **Reconstruction:** Focuses on rebuilding damaged or destroyed infrastructure such as roads, schools, and hospitals, and enhancing resilience to future disasters.

New Guidelines for R&R Funding

- **Aim:** To address funding gaps for states affected by natural disasters by reallocating existing disaster relief resources to better support recovery and reconstruction efforts.
- **Origin:** Based on recommendations from the **15th Finance Commission**.
- **Distribution of Funds:** Funds are allocated under **National Disaster Response Fund (NDRF)** and **State Disaster Response Fund (SDRF)** for:
 - **Response and Relief**
 - **Recovery and Reconstruction**
 - **Preparedness and Capacity Building**
- **Purpose:** Provides additional funds when state resources are insufficient for recovery needs.
- **Funding Details:**
 - **NDRF** will allocate **30%** of its funds for recovery and reconstruction, with the remaining for response, relief, preparedness, and capacity building.
 - States can use **10%** of their annual SDRF allocation for non-notified disasters.
- **Nodal Agency:** **State Disaster Management Authority (SDMA)**
- **Covered Calamities:** Cyclone, drought, earthquake, fire, flood, tsunami, hailstorm, landslide, avalanche, cloud burst, pest attack, frost, and cold wave.

- **Supported Activities:** Housing, education, infrastructure, and other essential sectors.

Disaster Management (Amendment) Bill, 2024: Key Features and Enhancements

The Disaster Management (Amendment) Bill, 2024 has been introduced in the Lok Sabha to amend the existing Disaster Management Act, 2005.

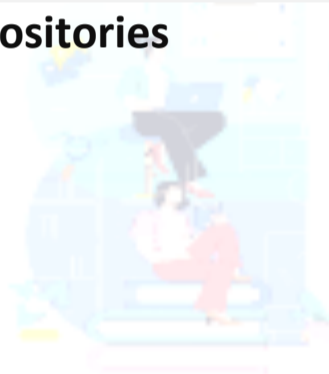
Key Features

Preparation of Disaster Management Plans

How it Enhances Disaster Preparedness

The Bill shifts responsibility for disaster management plans directly to the **National Disaster Management Authority (NDMA)** and **State Disaster Management Authorities (SDMAs)**, bypassing the **National Executive Committee (NEC)** and **State Executive Committees (SECs)**. This streamlined approach aims to enhance responsiveness, particularly in disaster-prone regions like Odisha.

National and State-Level Data Repositories



Mandates the creation of disaster databases at both national and state levels, containing information on disaster assessments, fund allocation, expenditures, preparedness plans, and risk registers. This will help states like Uttarakhand, which require timely data for effective response to frequent floods and landslides.

Enhanced Autonomy in Staffing NDMA

NDMA will specify its staffing needs and appoint experts with central government approval, boosting operational efficiency, especially in earthquake-prone areas like the Northeast.

Creation of Urban Disaster Management Authorities (UDMA)

Establishes new UDAs for state capitals and major cities (except Delhi and Chandigarh), led by municipal commissioners and district collectors, to handle urban-specific disaster management challenges. Cities like Mumbai, facing regular monsoon flooding, will benefit from this focused approach.

Formation of State Disaster Response Forces (SDRF)

Authorizes state governments to establish SDRFs with defined roles, enhancing local disaster response. For example, Kerala could improve flood and landslide management with tailored SDRFs.

Legal Status for Key Disaster Management Committees

Grants statutory recognition to the **National Crisis Management Committee (NCMC)** and the **High-Level Committee (HLC)**, strengthening their roles in disaster response and financial management. This formalization is crucial for managing large-scale disasters, such as the COVID-19 pandemic.

New Enforcement Provisions and Penalties

Section 60A empowers governments to direct actions to reduce disaster impacts, with penalties up to Rs 10,000 for non-compliance. This can help enforce protective measures in vulnerable areas, like regulating construction in landslide-prone regions.

ENVIRONMENT & ECOLOGY

India's Strategy to Navigate the Global Electric Vehicle (EV) Market Dynamics

Context: GTRI Report on India's Strategy for the EV Market

A recent report by the **Global Trade Research Initiative (GTRI)**, titled "India's Strategy to Avoid Harm in the Global EV Market Shake-Up," emphasizes the need for India to develop its own strategy for the electric vehicle (EV) sector, allowing market forces to guide growth.

Background of the Global EV Market

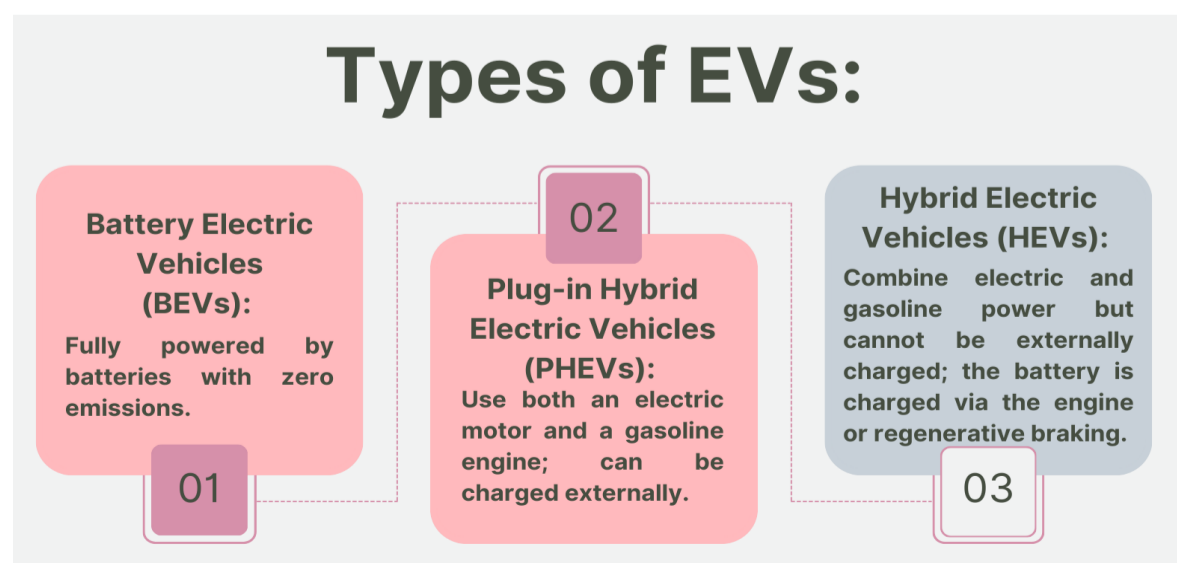
- **China's Dominance in 2023:** China led the global EV market, exporting **1.6 million EVs**. However, due to tariffs imposed by Western countries on Chinese EV imports, China is shifting production to **ASEAN nations and India**.
- **Dependency on Chinese Components:** India's EV production heavily relies on Chinese imports, especially for components like batteries. Over **80% of the cost** of EVs in India is linked to these components.
- **Environmental Impact:** India's reliance on **coal-based electricity** undermines the environmental benefits of EVs. This calls for investment in **clean energy sources** for EV charging and advanced battery technologies, such as **solid-state batteries** and **hydrogen fuel cells**.

Understanding Electric Vehicles (EVs)

- **Definition:** Electric vehicles use electric motors for propulsion instead of traditional internal combustion engines.

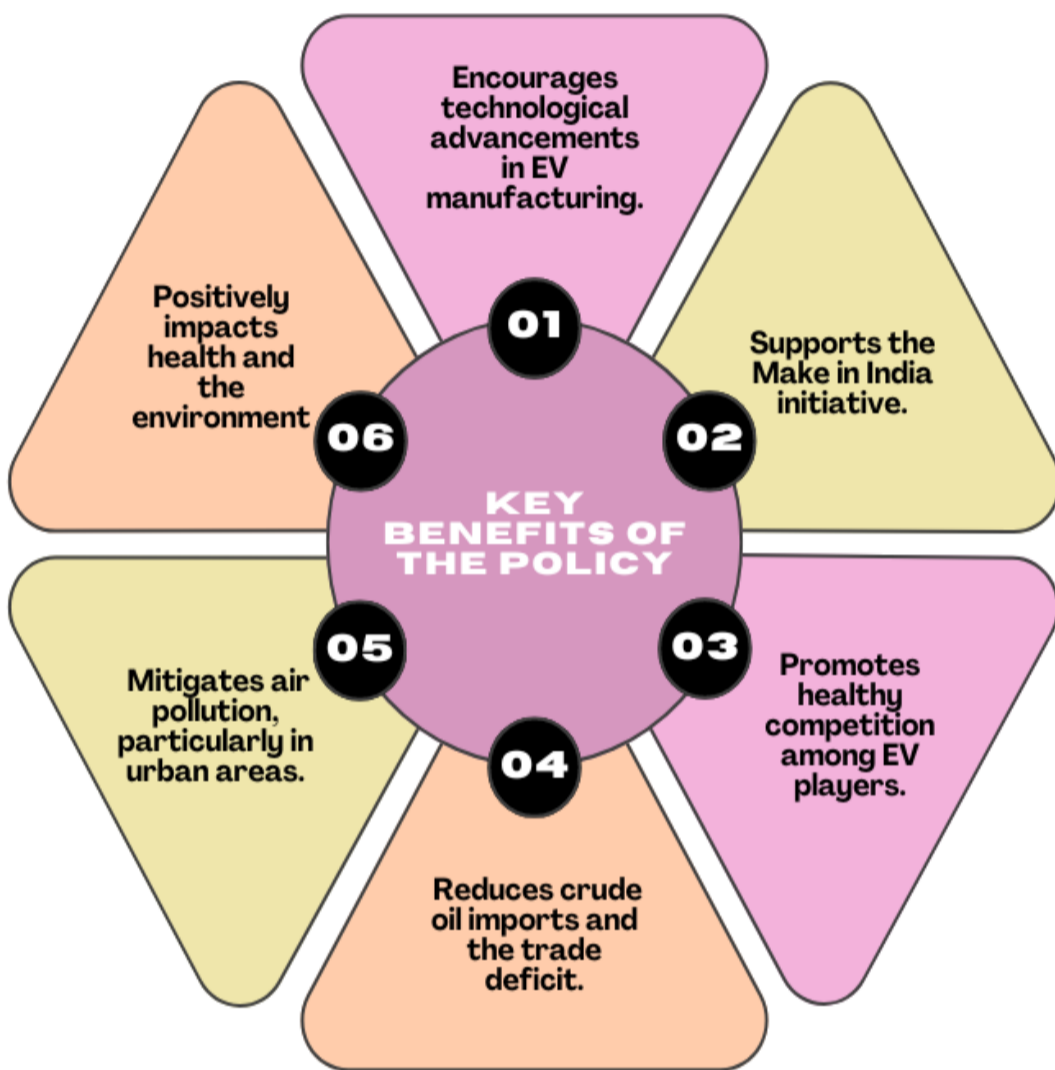
Union Government's E-Vehicle Policy

The Union Government has approved a policy to position India as a **manufacturing hub for electric vehicles (EVs)** with advanced technology.



Key Aspects of the E-Vehicle Policy

- **Policy Objective:** Promote India as a premier destination for manufacturing electric vehicles (EVs) with cutting-edge technology.
- **Implementation:** The **Project Management Agency (PMA)** will provide secretarial, managerial, and implementation support and perform other responsibilities as assigned by the Government of India.



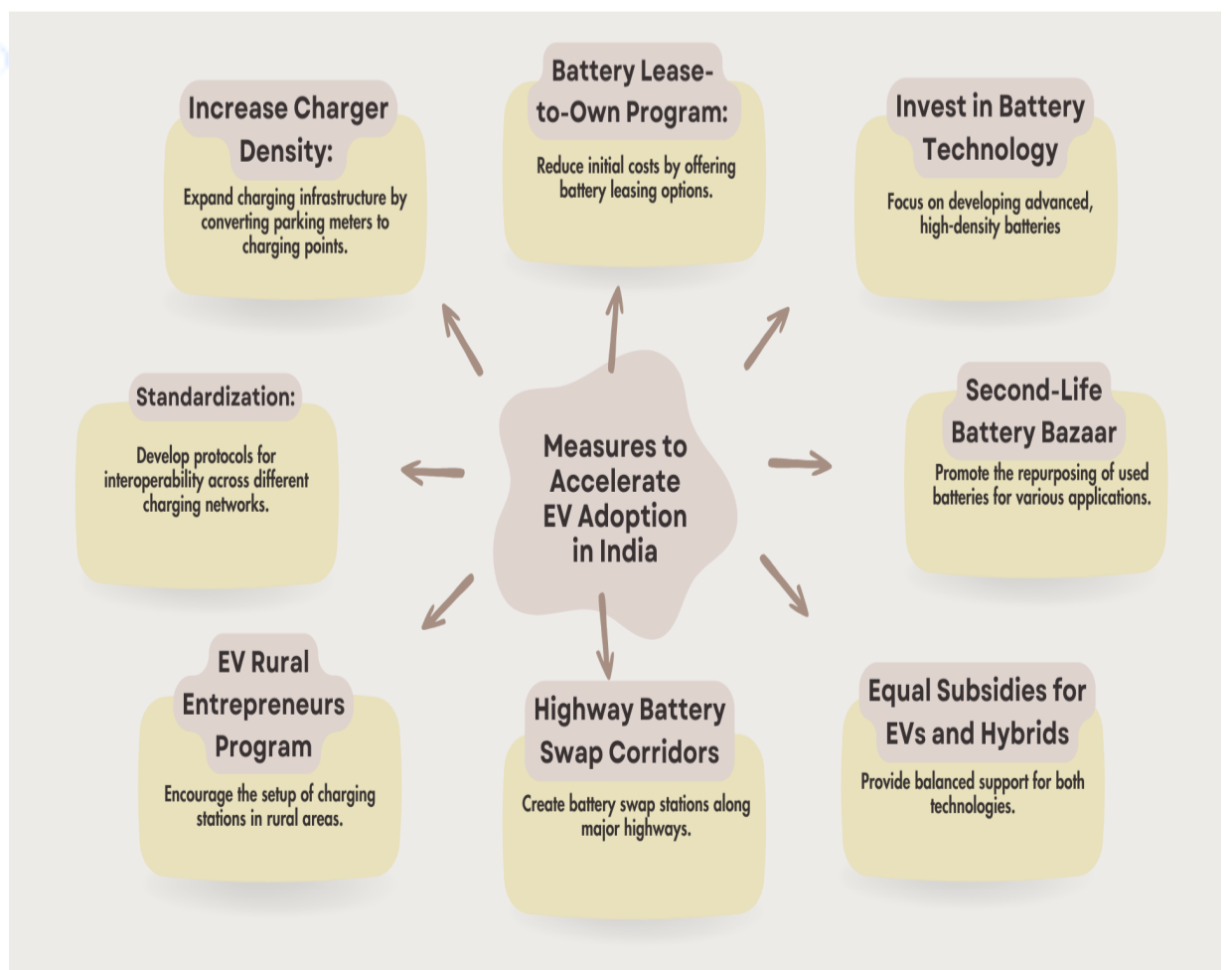
- **Ministry Involved:** Ministry of Heavy Industries.
- **Eligibility Criteria:**
- **Minimum Investment Requirement:** Rs 4,150 crore (approximately USD 500 million).
- **Maximum Investment:** No cap on maximum investment.
- **Manufacturing Timeline:** Manufacturing facilities must be set up within **3 years**.
- **Domestic Value Addition (DVA):** Achieve 25% DVA within **3 years** and 50% within **5 years** from the date of approval by the Ministry of Heavy Industries or PMA.
- **Bank Guarantee Return:** Returned only

when 50% DVA is achieved, an investment of at least Rs 4,150 crore is made, or to the extent of duty foregone in 5 years, whichever is higher.

- **Performance Criteria:** All electric passenger vehicles must meet the performance criteria of the **Production Linked Incentive (PLI) Auto scheme**.
- **Tenure of the Policy:** 5 years or as notified by the Government of India.

Other Initiatives to Promote EV Adoption in India

1. **Faster Adoption and Manufacturing of EVs (FAME) India scheme:**



- **Phase I** launched in **2015**; **Phase II** launched in **2019**.
- 2. **EV 30@30 Initiative**: Aims for at least **30%** of new vehicle sales to be EVs by **2030**.
- 3. **PLI Scheme for Automobile and Automotive Components (PLI-Auto)**: Launched in **2021** to promote domestic manufacturing and attract investments into the automotive value chain.

Lessons from Other Countries

- **Europe**: Financial incentives have boosted EV adoption.
- **China**: Government support and competition have driven market growth.
- **United States**: Innovation and strategic funding have been key to success.

India Tops Global Plastic Emissions: Key Findings and Policy Implications

Context: India as the Largest Emitter of Plastic Waste

- A study published in **Nature** reveals that **India** is the world's largest emitter of plastic waste, accounting for about **20%** of the global total, surpassing **China**, which ranks fourth.

Issues with India's Plastic Waste Management

- **Inadequate Disposal and Utilization**:
 - Leads to pollution of air, water, and soil, affecting human health.
- **Increase in Plastic Waste Generation**:
 - A surge from about **16 lakh tonnes** to **41 lakh tonnes per annum** in India between **2015-2021**.
- **Governance Issues**:
 - Non-compliance with **Plastic Waste Management Rules, 2016**, especially regarding **Extended Producer Responsibility (EPR)**.
 - **Central Pollution Control Board (CPCB)** and **State Pollution Control Boards (SPCBs)** have been lax, allowing plastic units to operate without valid registrations.
 - Lack of mechanisms to assess plastic waste generation.

Key Findings from the Study

- India is the Top Plastic Emitter:**
Contributes 20% of global plastic emissions, exceeding China's emissions.
- Regions with High Plastic Waste:**
Major contributors include Southern Asia, sub-Saharan Africa, and Southeast Asia.
- China's Improved Waste Management:**
Recent advancements have led to a reduction in China's emission rankings.
- Inadequate Waste Management in India:**
A significant portion of plastic waste in India is openly burned or dumped due to poor waste collection systems.
- Distribution of Plastic Waste:**
69% of global plastic waste originates from the top 20 countries, mainly lower and middle-income nations.
- Uncollected Waste:**
A major source of pollution, particularly in lower-income countries.
- Per-Capita Emissions:**
Although India and China rank high in total emissions, they rank lower in per capita emissions.
- Littering in High-Income Countries:**
Still a significant source of plastic pollution.
- Health and Environmental Impact:**
Burning plastic has severe health and ecological consequences.
- Global Policy Framework:**
The study aims to support international policies, such as the UN Plastics Treaty.

- **Additional Issues:**

- Improper collection and segregation of waste.
- Delay in eliminating single-use plastics.
- Poor monitoring by **Urban Local Bodies (ULBs)**.

Impact of Plastic Pollution on Ecosystems and Wildlife

- **Wildlife Harm:** Animals, including marine life and birds, ingest plastic or become entangled, leading to injuries, suffocation, and death.
 - **Microplastics** enter the food chain, potentially impacting human health.
- **Greenhouse Gas Emissions:** Plastic production and disposal generate greenhouse gas emissions throughout its lifecycle.
- **Habitat Destruction:** Extraction of fossil fuels for plastic production leads to habitat loss and biodiversity decline.
- **Marine Pollution:** Plastic waste pollutes oceans, affecting marine life, and disrupting aquatic ecosystems.
- **Soil Contamination:** Improper disposal contaminates soil, affecting fertility and agricultural productivity.
- **Water Pollution:** Plastic waste in water bodies pollutes freshwater sources and poses a threat to aquatic life.
- **Chemical Pollution:** Plastics contain harmful additives that can leach into the environment, causing chemical pollution.

Key Recommendations of the Parliamentary Accounts Committee (PAC) to Mitigate Plastic Pollution

- **Mandatory Reporting:** Require online reporting of data with photo/video proof and GPS location on a national dashboard.
- **Comprehensive Policy Development:** Develop a policy to address all aspects of plastic pollution.
- **Penal Provisions for Non-Compliance:** Penalize **Urban Local Bodies (ULBs)** that fail to establish effective **Plastic Waste Management (PWM)** systems.
- **Involvement of Rag Pickers and Junk Dealers:** Enhance the waste segregation and collection process.
- **Global Collaboration:** Support for legally binding international treaties to control plastic pollution.

Need for a Legally Binding Treaty to End Plastic Pollution

- **Global Coordination:** Plastic pollution is a global issue that affects all parts of the world. A treaty provides a platform for countries to collaborate and share responsibilities.
- **Addressing the Source:** Focuses on reducing plastic production, improving waste management, and promoting sustainable alternatives.

- **Inclusivity:** Ensures all countries, regardless of their development status, participate in efforts to combat plastic pollution.
- **Accountability and Enforcement:** Holds countries accountable for commitments to reduce plastic pollution, with mechanisms for monitoring progress.
- **Coordinated Research and Innovation:** Promotes international collaboration on research and innovation to find new ways to reduce plastic pollution.
- **Protection of Marine Life and Ecosystems:** Sets clear goals to protect oceans and reduce plastic waste in marine environments.

Steps Taken Towards a Legally Binding Treaty to End Plastic Pollution

- **Plastic Pollution Coalition (2009):** Aims to create a world free of plastic pollution and its harmful impacts.
- **United Nations Clean Seas Campaign:** A global initiative to combat marine plastic pollution by raising awareness and promoting solutions.
- **Global Tourism Plastics Initiative:** Unites the tourism sector to address plastic pollution and promote circular economy practices.
- **Proposal for a Global Treaty:** 175 nations have agreed to develop a legally binding agreement on plastic pollution by 2024.
- **MacArthur Foundation's New Plastics Economy Initiative (2016):** Advocates for a circular economy for plastics, aiming to eliminate waste and pollution.
- **Other Initiatives:**
 - **Project REPLAN, Promotion of Circular Economy, EPR Portal for Plastic Packaging, Swachh Bharat Mission, Lifestyle for the Environment (LiFE) Movement**



Initiatives Taken to Tackle Plastic Pollution

Global Initiatives

- Global Partnership on Marine Litter (GPML)
- GloLitter Partnerships Project
- London Convention (1972)



India-Specific Initiatives

- Elimination of Single-Use Plastics
- Plastic Waste Management Rules (2016)
- Un-Plastic Collective
- Kerala: Beat Plastic Pollution Initiative

Challenges Facing Pollution Control Boards

Issues	Details
Inadequate Capacity and Resources	Shortage of personnel, lack of training, inadequate monitoring equipment, and insufficient funds.
Skewed Representation	Predominance of government and industry representatives, limited civil society involvement.
Data Gaps	Many state boards fail to provide necessary data to the CPCB.
Statutory Non-Compliance	Lack of expertise in air quality management, failure to meet statutory requirements.
High Vacancy Rates	Significant staff shortages; some states have vacancy rates up to 84%.
Conflict of Interest	Potential conflicts arise when board members represent polluting entities they are supposed to regulate.
Lack of Transparency	Insufficient sharing of information with the public.
Limited Expertise in Monitoring	Gaps in real-time data collection and calibration errors, despite improvements.

Extended Producer Responsibility (EPR): A Key Policy for Plastic Management

- **Definition:** EPR places the responsibility for the entire lifecycle of a product, including disposal, on the manufacturer, not the consumer.
- **Objective:** Encourages producers to minimize environmental impacts throughout the product's lifecycle.

Key Provisions of the Plastic Waste Management Amendment Rules, 2022

Key Provisions	Details
Extended Producer Responsibility (EPR)	Producers are accountable for collecting and recycling plastic packaging.
Collection Targets	Producers must collect back 35% of plastic waste by 2024 , increasing to 70% by 2025 .
Minimum Recycled Content	Firms required to use 10% recycled plastic in packaging by 2023 , escalating to 20% by 2026 .
Collection Mechanism	Producers must establish collection systems, either individually or collectively.
Cost Attribution	Producers bear the costs associated with the collection and recycling of plastic packaging.

Air Quality Management Exchange Platform (AQMx)

Context: New Initiative for Air Quality Improvement

- The **Climate and Clean Air Coalition (CCAC)** launched the **Air Quality Management Exchange Platform (AQMx)** to enhance global efforts in air quality management.

- **Purpose:** Provides air quality managers with tools and guidance to meet **WHO Air Quality Guidelines** and interim targets.

About CCAC

- **Founded:** 2012 under **UNEP**.
- **Membership:** Partnership of over **160 governments, NGOs, and organizations**. India joined in **2019**.
- **Focus:** Reducing **short-lived climate pollutants** like methane and black carbon.

WHO Air Quality Guidelines (AQG)

- **Provide limits** for pollutants such as PM2.5, O3, NO2, SO2, and CO.
- **Recommendations:**
 - **PM2.5:** 24-hour mean should not exceed **15 $\mu\text{g}/\text{m}^3$** , and the annual mean should not exceed **5 $\mu\text{g}/\text{m}^3$** .
 - Updated significantly from **2005 to 2021**.

India's Vision to Become a Global Hub for Green Hydrogen

Context: Prime Minister's Vision for India as a Green Hydrogen Hub

The Prime Minister has unveiled an ambitious vision to establish India as a global leader in the **production, utilization, and export** of **green hydrogen**. This vision aims to position India at the forefront of the green hydrogen economy and support its goals for sustainable development and energy security.

Vision for India as a Green Hydrogen Hub

1. **Ambitious Plans:** India aims to lead globally in the **production, utilization, and export** of green hydrogen, becoming a major player in this emerging sector.
2. **Government Initiatives:** The government plans to drive the green hydrogen industry through **policies, research, and international collaborations**.
3. **Investment and Job Creation:** The initiative targets an investment of **₹8 lakh crore** and aims to create **6 lakh jobs**.
4. **Production Goals:** By **2030**, India plans to secure a **\$100 billion investment** and achieve the production of **5 million metric tons** of green hydrogen.
5. **National Green Hydrogen Mission:** Focuses on **decarbonizing** sectors such as **refineries, fertilizers, and steel** to reduce their carbon footprints.
6. **Energy Targets:** Aims to achieve **500 GW** of non-fossil energy capacity by **2030** and reach **net-zero emissions** by **2070**.

Definition of Green Hydrogen

- **Green Hydrogen** is produced through **electrolysis**, a process that splits water into hydrogen and oxygen using **renewable energy sources** such as solar or wind power.
- As defined by the **Union Ministry of New & Renewable Energy** (August 2023), green hydrogen must have a **well-to-gate emission** of no more than **2 kg CO₂ equivalent per kg of H₂** produced. In contrast, **grey hydrogen**, produced using fossil fuels, emits around **10 kg of CO₂ per kg of H₂** produced.

Nodal Agency for Green Hydrogen

- The **Bureau of Energy Efficiency (BEE)**, under the **Union Ministry of Power**, is the nodal authority responsible for accrediting agencies to monitor, verify, and certify green hydrogen production projects.

Significance of Green Hydrogen Energy

1. Emission Reduction:

- According to the **International Energy Agency (IEA)**, green hydrogen can save **830 million tonnes of CO₂** emissions annually, which would otherwise be produced by using fossil fuels for hydrogen production.

2. Viable Alternative:

- If production costs fall by **50% by 2030**, green hydrogen could become one of the primary fuels of the future. Its ability to be easily stored makes it versatile for multiple uses beyond immediate production.

3. Energy Security and Independence:

- As a renewable resource, green hydrogen reduces dependency on finite fossil fuels and mitigates risks from global supply fluctuations, promoting energy independence.

4. Creating New Industries and Jobs:

- The **International Renewable Energy Agency (IRENA)** estimates the green sector could employ over **42 million people by 2050**, up from **11 million** in 2018.

5. Decarbonizing Hard-to-Decarbonize Sectors:



- Green hydrogen offers a viable solution for sectors like **heavy industry** and **aviation**, which are difficult to decarbonize using current technologies.

Applications of Green Hydrogen

1. Agriculture Sector:

- Green hydrogen can replace traditional fertilizers by producing **carbon-free ammonia**.
- Powers green hydrogen-based farm machinery, reducing greenhouse gas emissions.

2. Water Management:

- Powers desalination plants, converting saltwater to freshwater for sustainable water management.

3. Transport Sector:

- Hydrogen fuel cells in vehicles produce **zero emissions** and offer longer range and faster refueling compared to battery electric vehicles.

4. Industrial Sector:

- Enables on-site production and storage, reducing dependence on the electricity grid.
- Green hydrogen produced from waste materials can promote sustainability and reduce waste.
- Using green hydrogen to power fuel cells increases energy efficiency compared to traditional combustion engines.

Challenges in Green Hydrogen Production

1. Insufficient Production:

- Green hydrogen constitutes less than **1%** of the world's hydrogen production and usage, according to the **Global Hydrogen Review 2023 by the IEA**.
- Production must significantly increase to meet **Net Zero Emissions** goals.

2. Energy Inefficiency: Around **30%** of renewable energy is lost during hydrogen production.

3. Carbon Emissions: Current production methods often involve fossil fuels, resulting in high carbon emissions.

4. Low Adoption: Adoption of low-emission hydrogen in various sectors is progressing slowly.

5. Economic Sustainability: Green hydrogen must be cost-competitive with conventional fuels and technologies to be viable for transportation fuel cells.

6. Access to Critical Minerals: Limited access to critical minerals like **nickel**, **platinum group metals**, and **rare earth metals** could hinder the scaling up of electrolyser manufacturing capabilities in India.

7. Safety Issues: Green hydrogen is highly flammable, necessitating specialized handling and storage protocols.

Government Initiatives for Bio and Green Hydrogen

1. **Global Biofuel Alliance:** Leading efforts to establish global standards for hydrogen derived from biomass.
2. **National Hydrogen Mission:** Targets production of **5 million metric tonnes (MMT)** by **2030**, meeting **40%** of domestic requirements.
3. **Production Linked Incentive (PLI) Scheme:** A proposed **Rs 15,000-crore** PLI scheme for electrolyzers.
4. **Green Hydrogen Mission:** Development of a production capacity of at least **5 MMT per annum** and renewable energy capacity addition of about **125 GW** by **2030**.
5. **Strategic Interventions for Green Hydrogen Transition (SIGHT):** Funding domestic electrolyser manufacturing and green hydrogen production.
6. **Green Hydrogen Hubs:** Identifying and developing regions for large-scale hydrogen production and utilization.
7. **Strategic Hydrogen Innovation Partnership (SHIP):** A public-private partnership framework for R&D under the mission.
8. **International Collaboration:** Actively partnering with other countries, research institutions, and private entities for expertise and technology development.
9. **Renewable Energy Integration:** Integrating green hydrogen production with India's expanding renewable energy capacity.
10. **Pilot Project for Green Hydrogen Production:**
 - **Funding Allocation:** Rs 496 crore until 2025-26.
 - **Pilot Project Support:** Focus on testing green hydrogen as a vehicle fuel.
 - **Infrastructure Development:** Establishment of hydrogen refueling stations.
 - **Project Execution:** Selected company or consortium as executing agency.
 - **Viability Gap Funding (VGF):** Approval by **MNRE** based on project appraisal.

Way Forward for India as a Green Hydrogen Hub

1. **Reduce Production Cost:** Develop more efficient electrolysis technologies and integrate green hydrogen production with renewable energy sources.
2. **Implement Regulatory Incentives:** Provide tax credits and subsidies to promote green hydrogen adoption.
3. **Improve Infrastructure:** Establish dedicated infrastructure and efficient supply chains for green hydrogen.
4. **Coordinate Among Stakeholders:** Ensure alignment of policies, standards, and regulations to facilitate growth.

5. **Raise Awareness and Capacity:** Educate potential users and producers about the benefits of green hydrogen and demonstrate its safety and feasibility across various sectors.
6. **Develop Skills and Competencies:** Invest in skill development to support the production and utilization of green hydrogen.

SCIENCE & TECHNOLOGY

Planetary Protection and India's Role in Preserving Celestial Environments

What is Planetary Protection?

- **Objective:** Prevents contamination of **Earth's biosphere** and other **planetary bodies** by alien microbial life during space missions.
- **Purpose:** Ensures that space missions to the **Moon, Mars**, or other celestial bodies do not compromise their natural environments or introduce harmful elements.

Legal Framework:

- **Established under Article IX of the 1967 Outer Space Treaty (OST):** Mandates thorough cleaning and sterilization of spacecraft to maintain pristine conditions on celestial bodies.
- **Example: China's Tianwen-3 Mars mission (2028)** will comply with these planetary protection guidelines.

India's Involvement in Planetary Protection

- **Mars Missions: Mars Orbiter Mission (Mangalyaan) - 2014:** Designed with planetary protection measures to prevent contamination of Mars.
- **Policy Adherence: Compliance with the Outer Space Treaty:** India follows planetary protection guidelines to ensure that its space missions adhere to protocols for contamination prevention.
- **Spacecraft Cleaning: Stringent Sterilization:** The Indian Space Research Organisation (**ISRO**) implements rigorous sterilization processes to comply with planetary protection standards.
- **International Collaboration: Global Cooperation:** India collaborates with international space agencies to share best practices and enhance planetary protection measures.

India and the 1967 Outer Space Treaty (OST)

- **Signatory Status:**

- **Ratification:** India ratified the **Outer Space Treaty (OST)** in March 1967, two months after the treaty was opened for signature by the **United States, the Soviet Union**, and 63 other UN members on January 27, 1967.
- **Commitment:** The OST commits countries to the **peaceful exploration and use of outer space**.

- **Other International Space Treaties:**

- **Rescue Agreement (1968):** Ensures the rescue and return of astronauts.
- **Liability Convention (1972):** Outlines liability for damage caused by space objects.
- **Registration Convention (1976):** Requires the registration of space objects launched into Earth orbit or beyond.
- **Moon Agreement (1979):** Governs the activities of states on the Moon and other celestial bodies.

Helium Gas and Its Use in Rocket Propulsion

About Helium

- **Characteristics:** Helium is a **colorless, odorless, non-toxic gas** with an atomic number of **2**. It is the **second most abundant element** in the universe, formed through **nuclear fusion in stars**.
- **Discovery:** First detected in **sunlight in 1868** and later found in **uranium ore**.
- **Applications:**
 - **Cryogenics:** Used in cooling systems due to its low boiling point.
 - **MRI Scanners:** Employed to maintain the low temperatures required for superconducting magnets.
 - **Lifting Gas:** Used in airships and balloons.
- **Rarity on Earth:** Helium is rare on Earth, mainly produced through the **radioactive decay** of elements like **uranium** and extracted from **natural gas**. Once released into the atmosphere, helium escapes into space, making it a **non-renewable resource**.

Why is Helium Used in Rockets?

- **Key Properties:**

- **Inert and Non-Reactive:** Helium is chemically inert, making it safe to use with residual fuel.
- **Low Boiling Point:** At **-268.9°C**, helium remains a gas in extremely cold conditions.
- **Pressurization:** Used to **pressurize fuel tanks**, ensuring smooth fuel flow to rocket engines.
- **Leak Detection:** Helium's small atomic size helps in detecting leaks in rocket systems.
 - **Efficiency:** Despite alternatives like **argon** and **nitrogen**, helium remains the preferred choice due to its **efficiency** in the space industry.

Night-Time Light Pollution and Alzheimer's Disease Risk

Context: A recent study from **Rush University Medical Center** links **night-time light pollution** to an increased risk of **Alzheimer's disease (AD)**.

Key Findings

- **Disruption of Circadian Rhythms:** Artificial light at night disrupts the body's **circadian rhythms**, potentially contributing to cognitive decline.
- **Correlation with Alzheimer's Disease:**
 - Light pollution is identified as an environmental risk factor for AD, particularly **early-onset Alzheimer's**.
 - While less influential than other conditions like **diabetes** or **hypertension**, light pollution shows a notable correlation with cognitive decline.

About Light Pollution

- **Definition:** Excessive outdoor artificial light that affects **stargazing**, **human health**, and **wildlife**.
- **Impact on Health:**
 - **Disruption of Circadian Rhythms:** Affects natural sleep patterns, potentially leading to an increased risk of Alzheimer's disease.
 - **Health Concerns:** Contributes to conditions like insomnia, stress, and potentially cognitive decline.

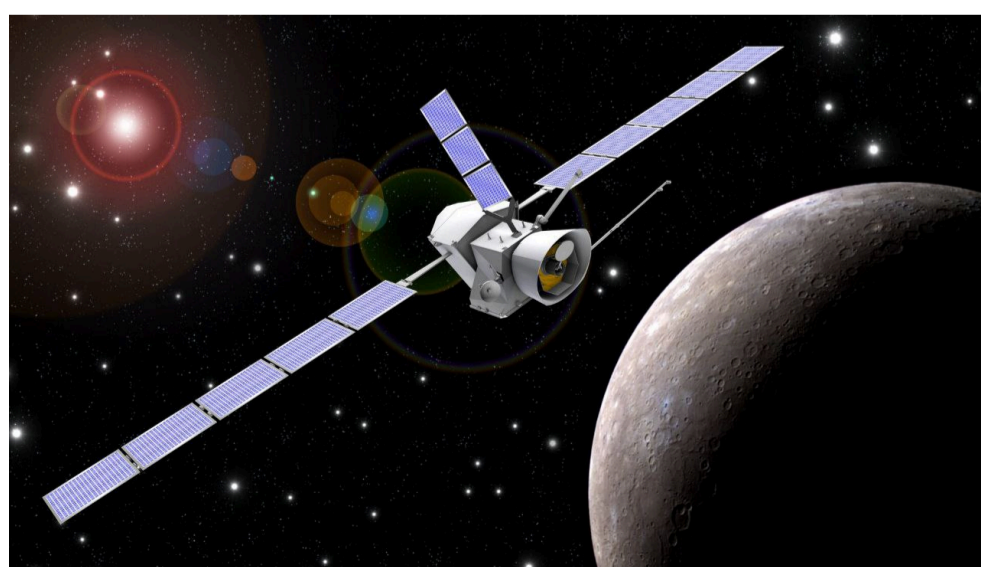
About Alzheimer's Disease (AD)

- **Definition:** A common type of **dementia** that leads to a **progressive decline in memory, thinking, learning, and organizational skills**.
- **Contributing Factors:**
 - **Genetics:** Family history can increase the risk.
 - **Medical Conditions:** Conditions like diabetes and hypertension are known risk factors.
 - **Environmental Stresses:** New research indicates environmental factors like light pollution may also contribute to risk.

BepiColombo's Mission to Mercury

Context: **Closest Flyby of Mercury by BepiColombo**

- **BepiColombo** made its closest flyby of **Mercury**, capturing detailed images of the planet's cratered



surface, including a first clear view of Mercury's south pole and unique crater structures like the **peak ring basins**.

About BepiColombo Mission

- **Type:** Joint mission by the **European Space Agency (ESA)** and **Japan Aerospace Exploration Agency (JAXA)**.
- **Launch Date:** October 20, 2018.
- **Named After:** Italian scientist **Giuseppe "Bepi" Colombo**.

Components:

- **ESA's Mercury Planetary Orbiter (MPO):** Studies Mercury's surface and composition.
- **JAXA's Mercury Magnetospheric Orbiter (MMO):** Investigates Mercury's magnetic field.

Mission Goals:

- Explore **Mercury's geological history, magnetic field, exosphere**, and test principles of **general relativity**.
- **Timeline:** The spacecraft will begin orbiting Mercury in **2026**.

BIOTECHNOLOGY & HEALTH

WHO's Global Framework for Understanding Pathogen Origins

Context and Background

- **WHO Initiative:** The **World Health Organization (WHO)** has introduced its inaugural **Global Framework for Understanding the Origins of New or Re-Emerging Pathogens**. This framework establishes a standardized method for identifying the origins of pathogens to bolster global health preparedness and response.
- **Developed By:** Created by the **Scientific Advisory Group for the Origins of Novel Pathogens (SAGO)**, a group of international experts established by the WHO in 2021.

Framework Overview

- **Purpose:**
 - To offer a cohesive approach for investigating new or re-emerging pathogens.
 - To enhance **global cooperation** in understanding pathogen origins.

- **Objectives:** prevent and contain health crises by enabling **timely and transparent sharing** of findings on pathogen origins.
- **Alignment with Key Principles:**
 - **International Health Regulations (IHR):** A legally binding framework for coordinated global health responses.
 - **One Health Approach:** Integrates human, animal, and ecosystem health to comprehensively manage health threats.

Key Features of the Framework

- **Comprehensive Guidelines:** Focuses on the following areas for pathogen origin investigations:
 1. **Early Investigations:** Identification of sources and collection of samples.
 2. **Human Studies:** Examination of epidemiology, transmission, and clinical characteristics.
 3. **Human/Animal Interface Studies:** Determining reservoirs and hosts.
 4. **Vector Studies:** Identifying insect vectors and environmental sources.
 5. **Genomics and Phylogenetics:** Studying genetic evolution and distribution patterns.
 6. **Biosafety/Biosecurity Studies:** Evaluating potential breaches related to laboratories.
- **Call to Action:** Urges countries to **promptly conduct investigations** and **share results transparently** to promote international collaboration.

Significance and Implications

- **Primary Aim:** To prevent future outbreaks and improve global responses to health crises.
- **Importance:** Crucial for addressing threats from both known and novel pathogens (e.g., Ebola, SARS-CoV-1).
- **Historical Relevance:** Could have enhanced the investigation into COVID-19 origins, reducing controversy and improving effectiveness.

Understanding Pathogens

- **Definition:** Pathogens are microorganisms that cause disease in their hosts, including:
 1. **Bacteria:** Single-celled organisms causing infections (e.g., *Mycobacterium tuberculosis* - Tuberculosis).
 2. **Viruses:** Agents that invade host cells to replicate (e.g., SARS-CoV-2 - COVID-19).
 3. **Fungi:** Single or multicellular organisms causing infections (e.g., *Candida albicans* - Yeast Infections).
 4. **Parasites:** Organisms living on or in a host, deriving nutrients at the host's expense (e.g., *Plasmodium falciparum* - Malaria).

5. **Prions:** Misfolded proteins causing degenerative brain diseases (e.g., Prions - Creutzfeldt-Jakob Disease).

Impact of Different Pathogens on Humans

Pathogen Type	Impact	Example
Bacteria	Cause infections, treatable with antibiotics.	<i>Streptococcus pyogenes</i> (Strep throat)
Viruses	Invade cells to replicate, vaccines can prevent.	Influenza virus (Flu)
Fungi	Cause infections in skin, nails, lungs; antifungal treatments are available.	<i>Candida albicans</i> (Yeast infection)
Parasites	Live in/on host, causing diseases; treated with antiparasitic drugs.	<i>Plasmodium falciparum</i> (Malaria)
Prions	Cause fatal, progressive brain diseases; no known cure.	Prion protein (Mad Cow Disease)

The Pandemic Treaty

- **Definition:** An international agreement aimed at **preventing, preparing for, and responding to pandemics** and global health emergencies.
- **Key Focus Areas:**
 - Strengthening global cooperation.
 - Enhancing health systems and infrastructure.
 - Promoting investment in research and development.
 - Ensuring transparency in information sharing.
 - Establishing a **Pathogen Access and Benefit-Sharing System (PABS)** under WHO.
 - Addressing gender disparities in the healthcare workforce, advocating for equal pay and representation.
- **Deadline:** Scheduled for the **77th World Health Assembly in May 2024**.

What is Disease X?

- **Concept:** Disease X represents a **hypothetical pathogen** or threat that could cause a major future pandemic. It was added to WHO's Blueprint list of priority diseases in 2018.
- **Significance:**
 - Could be up to **20 times deadlier than SARS-CoV-2**, making it a significant threat.
 - WHO initiatives aim to enhance preparedness for such threats, including:
 - **Financial Intermediary Fund for Pandemic Preparedness and Response.**

- mRNA technology transfer hub.
- WHO Hub for Pandemic and Epidemic Intelligence.

IN SHORT NEWS

PM E-Drive Scheme: Boosting Electric Vehicle Adoption

Context: Launch of the PM E-Drive Scheme

- **Objective:** The PM Electric Drive Revolution in Innovative Vehicle Enhancement (PM E-Drive) Scheme aims to promote the adoption of **electric vehicles (EVs)** in India.
- **Implementation:**
 - Led by the **Ministry of Heavy Industries**, the scheme offers subsidies to buyers and manufacturers through a dedicated portal.
 - Provides additional funds to public transport agencies for procuring **14,028 e-buses** with demand aggregation managed by **Convergence Energy Services Limited (CESL)** in nine major cities.
 - Includes funding for **fast chargers, electric trucks**, and modernization of EV testing agencies.

Saarthi App: Enhancing Multilingual Digital Commerce

Context: Launch of the Saarthi App by ONDC

- **Purpose:** The **Saarthi app**, developed by the **Open Network for Digital Commerce (ONDC)** in collaboration with **Bhashini** (an AI-driven language translation tool), aims to create multilingual buyer apps.

Features:

- Supports languages like **Hindi, English, Marathi, Bangla**, and **Tamil** initially, with plans to expand to all 22 languages provided by Bhashini.
- Offers real-time translation, transliteration, and voice recognition to improve accessibility and provide a personalized digital commerce experience.

Impact: Aims to democratize e-commerce by helping businesses overcome language barriers, enhance customer engagement, expand market reach, and boost revenue, particularly in underserved regions.

Mission Mausam: Strengthening Weather and Climate Resilience

Context: Union Cabinet Approves Mission Mausam

- **Objective:** The **Mission Mausam**, a ₹2,000 crore initiative, aims to enhance India's weather and climate forecasting capabilities by **2026**.
- **Led by:** The **Ministry of Earth Sciences (MoES)** to make India "Weather Ready" and "Climate Smart," improving resilience against climate change and extreme weather events.

Key Components:

- Developing advanced weather surveillance technologies and improving atmospheric observations.
- Establishing a network of **50 Doppler Weather Radars, additional observation stations**, and research facilities.
- Focuses on last-mile data dissemination and capacity building to benefit citizens and sectors.
- Led by three institutes under MoES—**IMD, NCMRWF**, and the **Indian Institute of Tropical Meteorology**—with support from other MoES bodies and international collaborations.

Popular Election of Judges in Mexico

Context: Mexico's Groundbreaking Judicial Reform

Mexico has become the first country in the world to allow voters to elect judges at all levels, following a controversial reform initiated by outgoing President **Andres Manuel Lopez Obrador**.

Key Details of the Reform

1. Champion of the Reform:

- The reform was championed by **President Andres Manuel Lopez Obrador**, who criticized the existing judicial system as serving the elite and pushed for more democratic oversight of the judiciary.

2. Scope of the Reform:

- Around **1,600 judges**, including **Supreme Court justices**, will now stand for election. This reform is set to be implemented in **2025 or 2027**.

3. Opposition and Concerns:

- The reform faced significant protests and opposition. Critics argue that electing judges may expose them to criminal influence, particularly given the power of drug cartels in Mexico.
- The **Supreme Court chief justice** also warned against the potential risks, but the reforms were still passed in both the upper and lower houses of the legislature.

Potential Implications

- The decision to elect judges introduces a significant shift in the balance of judicial independence and accountability. While it may democratize the judiciary, concerns about the influence of money, crime, and politics on judicial decisions remain substantial.

Fisheries in India

Context: Launch of the Rangeen Machhli App

The Union Government has launched the ‘**Rangeen Machhli**’ mobile app to support India’s growing **ornamental fisheries** sector.

Key Features of the App

1. **Developed Under PMMSY:** Created by the **ICAR-Central Institute of Freshwater Aquaculture (ICAR-CIFA)** under the **Pradhan Mantri Matsya Sampada Yojana (PMMSY)**.
2. **Multilingual Guidance:** Provides information in eight Indian languages on popular ornamental fish species, making it accessible for both novice and professional fishers.
3. **Educational Modules: “Basics of Aquarium Care”:** Offers guidance on aquarium types, fish care, water filtration, and maintenance.
 - **“Ornamental Aquaculture”:** Focuses on breeding and rearing ornamental fish.
4. **Connectivity to Local Businesses:** Includes a “Find Aquarium Shops” tool to help users connect with local businesses.

Significance: The app aims to enhance knowledge and promote the ornamental fisheries sector, supporting livelihoods and contributing to the sustainable growth of the industry in India.

PLACES IN NEWS

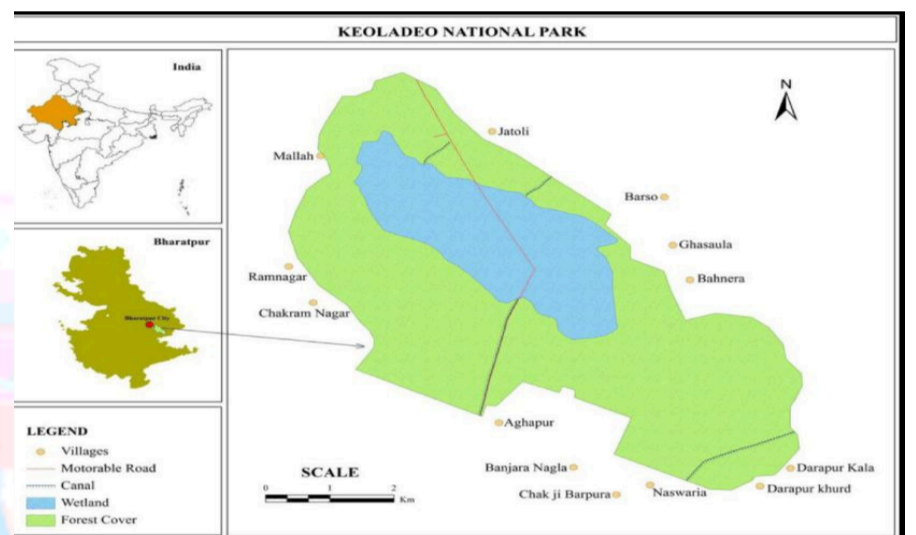
India's First 'Teal Carbon' Study at Keoladeo National Park

Context: Keoladeo National Park and Teal Carbon Study

- India's first 'teal carbon' study has been conducted at **Keoladeo National Park** in Rajasthan, focusing on using freshwater wetlands to address climate adaptation and resilience challenges.

About Teal Carbon

- Definition:** Refers to **carbon stored in non-tidal freshwater wetlands**, including carbon in vegetation, microbial biomass, and organic matter.
- Importance:** Highlights the role of wetlands in **regulating greenhouse gases** and mitigating **climate change**.
- Study Focus:** Led by the **Central University of Rajasthan**, emphasizes reducing **methane emissions** and developing **biochar** for effective wetland conservation



About Keoladeo National Park

Key Points

Location

Significance

Ramsar Recognition

Montreux Record Status

Bird Diversity

Migratory Birds

Fauna

Flora

Rivers

Details

Bharatpur, Rajasthan

UNESCO World Heritage Site; renowned bird-watching area

First Ramsar Site of India (1981) alongside **Chilika Lake**

Currently listed, along with **Loktak Lake (Manipur)**

Home to over **365 bird species**, including rare and threatened species like the **Siberian crane**

Attracts species from the northern hemisphere for breeding

Includes jackals, sambar, nilgai, wild cats, hyenas, wild boar, porcupine, mongoose

Tropical dry deciduous forest with **Acacia nilotica** and dry grassland

Gambhir and Banganga rivers flow through the park

Mumbai's Salt Pan Lands: An Ecological Challenge

Context: Threat to Mumbai's Salt Pans

- **Issue:** The Indian government has approved the transfer of **256 acres** of Mumbai's salt pans to the **Dharavi Redevelopment Project** for housing slum dwellers.

- **Importance of Salt Pans:**

- **Ecological Role:** Mumbai's salt pans, covering **5,378 acres**, act as critical natural ecosystems that help prevent flooding by accumulating rainwater and tidal inflows.



Source: Downtoearth

- **Environmental**

Concerns:

Environmentalists argue that developing these lands will exacerbate flooding in areas like **Vikhroli** and **Kanjurmarg**.

- **Protection Status:** These salt pans are classified under **Coastal Regulation Zone (CRZ)** protections, but there is ongoing pressure to use them for housing.

What are Salt Pan Lands?

- **Definition:** Salt pan lands are flat areas covered with salt and other minerals, typically found in arid and semi-arid regions.
- **Formation:** They form when bodies of water like lakes or ponds evaporate, leaving behind salt deposits.
- **Occurrence:** Salt pans are associated with desert environments but can also occur in coastal areas where seawater evaporates in shallow basins.

Mikania Micrantha: An Invasive Threat to Bhadra Tiger Reserve

Context: Spread of Mikania Micrantha in Bhadra Tiger Reserve

- **Issue:** The **Bhadra Tiger Reserve (BTR)** faces a biodiversity threat due to the rapid spread of the invasive weed **Mikania micrantha**, also known as the "mile-a-minute" vine.

- **Impact:**

- The weed now covers **10%-15%** of the reserve, posing a significant threat to native flora and fauna.
- Similar damage has been observed in other reserves like **Chitwan in Nepal** and **Valmiki in Bihar**.

Discovery of Myristica Swamp Forest near Goa-Maharashtra Border

Context: Discovery of Endangered Myristica Swamp Forest

- **Findings:** Researchers have discovered an endangered **Myristica swamp forest** near the **Goa-Maharashtra border**.
- **Significance:**
 - This rare ecosystem spans **8,200 square meters** and is home to **39 plant species**, including **70 endangered Myristica magnifica** trees.
 - The swamp contributes to **groundwater recharge, carbon sequestration, and flood mitigation**.
 - Highlights the importance of local communities in conserving culturally significant ecosystems, especially in biodiversity-rich areas like the **Western Ghats**.
 - **Conservation Implications:** Calls for stronger conservation efforts to combat climate change and biodiversity loss, emphasizing the ecological importance of preserving such rare ecosystems.

Gaza Strip

Context: Recent Israeli Strike on Khan Younis in Gaza

Israel recently launched a strike on the **Khan Younis** safe zone in the **Gaza Strip**, bringing renewed attention to this geopolitically sensitive region in **West Asia**.

Infographic Map of Gaza Strip

- The **Gaza Strip** is located along the coast of the **Mediterranean Sea** in West Asia.

Political Features of the Gaza Strip

1. **Geographical Size:** Occupies an area of **140 square miles** along the **Mediterranean Sea**, just northeast of the **Sinai Peninsula**.
2. **Bordering Countries:**
 - **Egypt:** To the **Southwest**.
 - **Israel:** To the **East and North**.
3. **Palestinian Territories:** The Gaza Strip is the smaller of the two Palestinian territories, the



other being the **West Bank**, both of which constitute the **State of Palestine**.

4. Historical Context:

- In the **Six-Day War of 1967**, the Gaza Strip was captured by Israel, which occupied the region for the next 25 years.
- In **1994**, Israel began a phased transfer of governmental authority in the Gaza Strip to the **Palestinian Authority** under the terms of the **Oslo Accords**.

Geographical Features of the Gaza Strip

1. **Regional Placement:** Part of the **Levant region**, which is along the eastern shores of the **Mediterranean Sea**.
2. **Climate:** Has a **Mediterranean** climate with characteristics of a **hot semi-arid** environment.
3. **Agricultural Products:** Major crops include **citrus fruits, dates, olives**, and other Mediterranean produce.

Zimbabwe: Overview and Recent Developments

Context: Humanitarian Assistance from India

India has extended **humanitarian assistance** to **Zimbabwe, Malawi, and Zambia** to help mitigate food shortages caused by severe droughts linked to the **El Niño phenomenon**.

Political Features of Zimbabwe

1. Location and Boundaries:

- **Zimbabwe** is a **landlocked country** located in **Southern Africa**.
- **Boundaries:**
 - **South:** South Africa
 - **West and Southwest:** Botswana
 - **North:** Zambia
 - **East and Northeast:** Mozambique



2. Capital: Harare

3. Significant Landmarks:

- **Victoria Falls:** One of the largest and most famous waterfalls in the world, located on the **Zambezi River** between Zimbabwe and Zambia.
- **Great Zimbabwe:** An ancient city that was once the capital of the Kingdom of Zimbabwe during the Late Iron Age.

4. Major Rivers:

- **Zambezi River:** Forms the natural border between **Zimbabwe** and **Zambia**.
- **Limpopo River:** Another major river that flows along Zimbabwe's southern border.

5. National Parks and Natural Reserves:

- **Map** of Zimbabwe would highlight various national parks and reserves, including sites of historical and ecological significance.

Geographical Features of Zimbabwe

1. Key Rivers:

- **Zambezi River:** Flows along the northern border and is the location of **Victoria Falls** and **Lake Kariba**.
- **Limpopo River:** Marks part of the southern boundary with South Africa.

2. Significant Natural Landmarks:

- **Victoria Falls:** Known as "The Smoke That Thunders," it is one of the largest waterfalls in the world.
- **Lake Kariba:** One of the world's largest man-made lakes, located on the Zambezi River between Zimbabwe and Zambia.

3. **Landscapes and Vegetation: Veld Grasslands:** Characterized by open woodland tropical savannah, supporting diverse wildlife and flora.

4. **Natural Resources:** Rich in minerals like **coal, chromium ore, vanadium, lithium, tin, platinum,** and others, contributing significantly to the country's economy.

5. **Highest Peak: Mount Inyangani:** The highest peak in Zimbabwe, standing at **8,504 feet**.

Nigeria: Overview and Recent Developments

Context: Flooding in Northeast Nigeria

Nigeria has experienced severe flooding in its **Northeast** region due to **torrential rains** and the collapse of the **Alau Dam**.

Political Features of Nigeria

1. Geographical Location:

- Situated on the **west coast** of **Africa**, Nigeria is the most populous country on the continent.

2. Boundaries:

- **Territorial Boundaries:**

- **North: Niger**
- **East: Chad and Cameroon**
- **West: Benin**

- **Maritime Boundaries:**

- **South:** Borders the **Gulf of Guinea** in the **Atlantic Ocean**.

3. **Capital: Abuja**

4. **Population:**

- Nigeria holds the title of the most populous country in Africa, contributing significantly to the continent's demographic and cultural diversity.



Geographical Features of Nigeria

1. **Major Relief Features:**

- **Sokoto Plains:** Located in the **northwest** of Nigeria, known for their flat terrain.
- **Borno Plains:** Situated in the **northeast**, part of the region affected by recent flooding.

2. **Highest Point:**

- **Chappal Waddi:** The highest point in Nigeria, also known as the “Mountain of Death,” located in the **Taraba State** near the border with Cameroon.

3. **Major Rivers:**

- **Niger River:** One of the longest rivers in Africa, flows through Nigeria forming the **Niger Delta** and drains into the **Gulf of Guinea**.
- **Sokoto River:** A tributary of the Niger River, flowing through the **northwestern** part of the country.

4. **Major Lake:**

- **Lake Chad:** A large, shallow **freshwater lake** situated at the conjunction of **Chad, Cameroon, Nigeria,** and **Niger**. It is crucial for the livelihoods of millions in the region but has been shrinking due to climate change and human activities.