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Current Affairs (CONSOLIDATION)

JUNE 2024
(PART – I)

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Polity and Governance

Highlights

- Bihar's Demand for Special Category Status
- Greater Authority to Panchayats
- Role of the Speaker
- Pradhan Mantri Awas Yojana
- Proportional Representation
- Agnipath Scheme
- National Testing Agency
- CIC Jurisdiction over MPLADS Funds
- NOTA Option in Indian Elections
- Creation of Andhra Pradesh and Special Category Status
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- Special Marriage Act, 1954
- Personality Rights
- AMRUT (Atal Mission for Rejuvenation and Urban Transformation) Scheme
- Promotion Not a Fundamental Right

Bihar's Demand for Special Category Status

Why in News?

Recently, the Bihar **Chief Minister** reiterated the State's long-standing demand to be granted **special category status** by the Centre, a move that would increase the amount of **tax revenues** that the State gets from the Centre.

Why is Bihar Demanding Special Category Status (SCS)?

- **Historical and Structural Challenges:** Bihar faces significant **economic challenges**, including a lack of **industrial development** and limited **investment opportunities**.
 - The bifurcation of the state resulted in the **shifting of industries** to Jharkhand, exacerbating the employment and economic growth issues in Bihar.
- **Natural Calamities:** The state grapples with **natural calamities** like floods in the northern region and severe droughts in the southern part.
 - These recurring disasters **disrupt agricultural activities**, especially in terms of **irrigation facilities** and the water supply remains inadequate affecting livelihoods and economic stability.

- **Lack of Infrastructure:** Bihar's inadequate infrastructure hampers its overall development, characterised by **poor road networks, limited healthcare access, and challenges in educational facilities**.
 - In 2013, the **Raghuram Rajan Committee** set up by the Centre, placed Bihar in the "**least developed category**".
- **Poverty and Social Development:** Bihar has a **high poverty rate**, with a significant number of families living below the poverty line.
 - A recent survey by NITI Aayog reveals that Bihar is the state with the highest number of poor with **26.59% multidimensionally poor** in 2022-23 which is much higher than the national average of **11.28%**.
 - Per-capita GDP of Bihar is Rs. 60,000 compared to Rs. 1,69,496 as the National average for 2022-23.
 - The state also lags in various **human development indicators** as well.
- **Funding for Development:** Seeking SCS is also a means to secure **substantial financial assistance** from the central government to address long-standing socio-economic challenges.
 - The Bihar government last year estimated that the granting of the special category status will help the State receive an **additional 2.5 lakh crore rupees** over five years to spend on the **welfare of 94 lakh crore poor families**.

Note:

What are the Arguments Against Bihar Getting the SCS?

- However, some critics argue that increased funds might **incentivise poor policies** and penalise well-performing states, as the funds will be diverted to poorer states.
- Historically **poor rule of law** in Bihar has been a major barrier to growth and investment.
- The Centre already **devolves 42% of taxes from earlier 32% to states** as per the 14th Finance Commission. Any **additional strain on the Centre's funds** will potentially impact other national schemes and welfare measures.
- **Bihar is one of the fastest-growing states in India.** In 2022-23, Bihar's GDP grew by 10.6%, higher than the national average of 7.2%.
 - Per capita income in real terms grew by 9.4% in the previous year.
- More funds might offer **short-term relief**, but long-term growth depends on **improving governance** and investment climate.
- Although Bihar meets most of the criteria for the grant of SCS, it does not fulfil the **requirement of hilly terrain and geographically difficult areas**, which is considered to be the primary reason for difficulty in infrastructural development.
- The **Central government** citing the 14th **FC report**, which made a recommendation to the Centre that **no State be accorded the SCS**, has **repeatedly denied the demands**.

Other States Demanding SCS

- Since its bifurcation in 2014, **Andhra Pradesh** has been asking for a grant of SCS on the **grounds of revenue loss** due to Hyderabad going to Telangana.
- Additionally, **Odisha** has also been requesting the SCS, highlighting its vulnerability to **natural calamities** such as **cyclones** and a **large tribal population (nearly 22%)**.

What is a Special Category Status?

- **About:**
 - SCS is a classification given by the Centre **to assist the development of states that face geographical and socio-economic disadvantages**.

- The **Constitution** does **not make a provision** for SCS and this classification was later done on the recommendations of the 5th **Finance Commission** in 1969.
- Status was first accorded to **Jammu and Kashmir, Assam and Nagaland** in 1969. **Telangana** is the newest State of India to be accorded the status.
- **SCS is different from Special status** which imparts enhanced legislative and political rights, while SCS deals with **only economic** and financial aspects.
 - For instance, J&K used to have Special status before **Article 370** was repealed.
- **Parameters (Based on Gadgil Formula):**
 - Hilly Terrain
 - Low Population Density and/or Sizeable **Share of Tribal Population**
 - Strategic **Location along Borders** with Neighbouring Countries
 - Economic and **Infrastructure Backwardness**
 - Nonviable Nature of State Finances
- **Benefits:**
 - The **Centre pays 90%** of the funds required in a **Centrally-Sponsored Scheme** to special category status states as **against 60% or 75% in the case of other states**, while the remaining funds are provided by the state governments.
 - **Unspent money** in a financial year **does not lapse** and is carried forward.
 - Significant concessions are provided to these states in excise and customs duties, income tax and corporate tax.
 - 30% of the Centre's Gross Budget goes to Special Category states.
- **Challenges:**
 - **Resource Allocation:** Granting SCS entails providing additional financial assistance to the state, which can **strain the central government's resources**.
 - **Dependency on Central Assistance:** States with SCS often become **heavily reliant** on central assistance discouraging efforts toward **self-sufficiency** and independent economic growth strategies.

Note:



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- **Implementation Challenges:** Even after the grant of SCS, there might be **challenges in utilising** the funds effectively due to administrative inefficiencies, **corruption**, or lack of proper planning.

Greater Authority to Panchayats

Why in News?

Recently a World Bank working paper, 'Two Hundred and Fifty-Thousand Democracies: A Review of Village Government in India' has called for granting **greater authority** to Panchayats while strengthening **local fiscal capacity** to ensure **effective local governance**.

What is a Panchayati Raj Institution (PRI)?

➤ Historical Background:

- Village government in India has a long, varied and dynamic history. **Kautilya's Arthashastra**, a treatise on governance that dates back to around 200 BCE, describes a decentralised system of government where villages were ruled by village headmen who were called by various names **gramika**, **gramakuta** or **adhyaksha**.
- The **Rig Veda**, a Vedic text which is over 3,000 years old, refers to three types of institutions namely **vidhata**, **sabha**, and **samiti**, which were all assemblies of **adults who gather to voice their views and participate in decision-making**.

➤ Views of Gandhian and Ambedkar on PRI:

- **Dr B R Ambedkar** famously argued in the Indian **Constituent Assembly** against village democracies. He argued that **villages are nothing, but a sink of localism, a den of ignorance, narrow mindedness and communalism**.
- However, for **Gandhi**, the **village formed the bedrock of his idea of a free India**. India, he famously declared, "is to be found not in its few cities but in its 700,000 villages."
 - Gandhi envisioned a village life centred around **three key tenets** namely **self-sufficiency** and **frugality**, **deliberative** and **representative democracy**, and **community-spiritedness**.

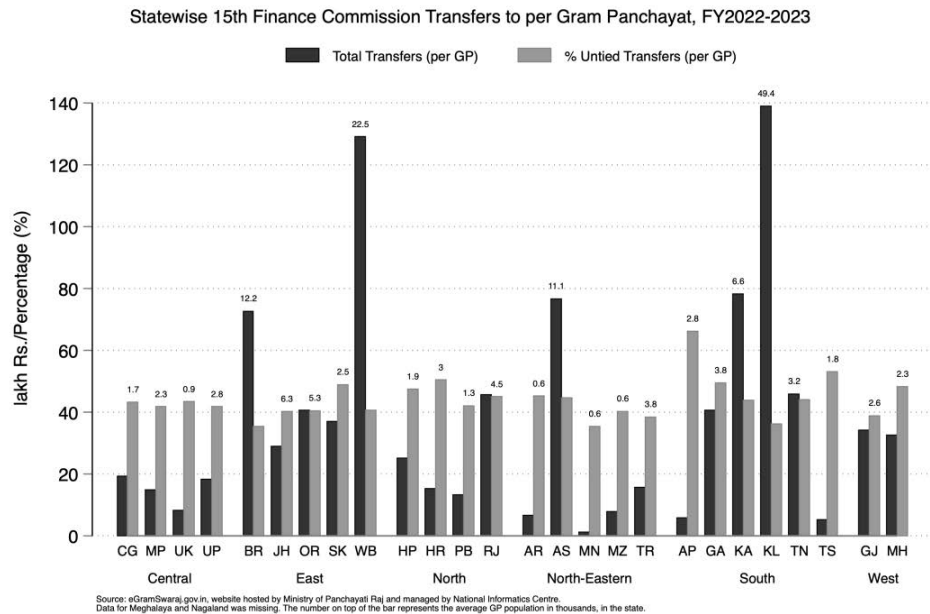
➤ Post Independence:

- The Gandhian idea of **village-led free democratic India** was **rejected** by the principal architects of post-independent India.
- Dr. Ambedkar convinced the **Constituent Assembly** to include **Panchayati Raj Institutions** as **non-mandatory guidelines** in the **Directive Principles**, suggesting but not requiring their creation by regional governments.
- In 1992, the devolution of formal power to **Panchayats** commenced with the passage of the **73rd Amendment act**.

➤ 73rd Constitutional Amendment Act, 1992:

- The **73rd Constitutional Amendment Act, 1992** gave **constitutional status** to the PRIs and established a system of **uniform structure**, elections, reservation of seats for **Scheduled Caste**, **Scheduled Tribes** and **women** and devolution of fund, functions and functionaries to PRIs.
- The amendment mandated a **three-tier system** of local government across states, consisting of village (Gram Panchayat), intermediate (Block Panchayat), and district (Zilla Panchayat) levels.
- Provisions:
 - **Article 243G** of the Constitution of India gives state legislatures the power to provide Panchayats with the authority and powers to function as **self-government institutions**.
 - For the financial empowerment of Panchayats, provisions have been made in terms of Article 243H and Article 243-I of the Constitution.
 - Article 243H gives state legislatures the power to authorize Panchayats to levy, collect, and appropriate taxes, duties, tolls, and fees.
 - **Article 243-I** mandates the formation of **state finance commissions** every five years by the **Governor**.
 - The **Ministry of Panchayati Raj** looks into all matters relating to the Panchayati Raj and Panchayati Raj Institutions. It was created in May 2004.

Note:



Statewise 15th Finance Commission Transfers to per Gram Panchayat, FY2022-2023

Related Initiatives

- **SVAMITVA Scheme:** Survey of Villages and Mapping with Improved Technology in Village Areas (SVAMITVA) scheme was launched on **National Panchayati Raj Day 2020** to enable economic progress of Rural India by providing “**Record of Rights**” to every rural household owner.
- **e-Gram Swaraj e-Financial Management System:** e-Gram Swaraj is a Simplified Work Based Accounting Application for Panchayati Raj.
- **Geo-Tagging of Assets:** The Ministry of Panchayati Raj (MoPR) has developed “**mActionSoft**”, a mobile based solution to help in capturing photos with Geo-Tags (i.e., GPS Coordinates) for the works which have **assets as an output**.
- **Citizen Charter:** In order to focus on the commitment of the PRIs towards its Citizens in respect of Standard of Services, the MoPR has provided a platform to **upload Citizen Charter documents** with the slogan “**Meri Panchayat Mera Adhikaar – Jan SevaayeinHamaareDwaar**”.

What are the Challenges Faced by the Panchayats?

- **Fiscal Decentralisation Issues:** Insufficient **devolution of financial powers** and functions from higher levels of government to panchayats hampers their ability to mobilise resources independently.
 - **Limited fiscal decentralisation** undermines local governance and **community empowerment**.
- **Low Capacity and Utilisation:** PRI's may lack the capacity and **skills to generate their own revenue** from various sources, such as fees, tolls, rents, etc.
 - They also face challenges in utilising the funds efficiently and effectively, due to poor planning, monitoring, and **accountability mechanisms**.
- **Top-down Approach:** Dependence on **external funding** leads to interference from **higher tiers of government** mainly central and state governments.
- **Delay in Funding:** Some regions have also reported **non-receipt of funds** under key schemes, impacting their functioning.
 - The Standing Committee on Rural Development and Panchayati Raj in March, 2023 said that 19 out of 34 State/ UTs did not receive any funds under the **Rashtriya Gram Swaraj Abhiyan scheme** in FY23.

Note:



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What is the Status of PRI Funding?

- As per the **Reserve Bank of India (RBI)** report on the financial dynamics of Panchayati Raj Institutions (PRIs) in India:
 - **Revenue Composition:** Panchayats earn **only 1%** of their revenue **through taxes**.
 - The majority of their revenue **comes from grants** provided by the Centre and the States.
 - Data indicates that 80% of the revenue is from Central government grants, while 15% is from State government grants.
 - **Revenue Per Panchayat:** On average each panchayat earned **just Rs 21,000 from its own tax revenue** and Rs 73,000 from non-tax revenue.
 - Conversely, grants from the **Central government amounted to approximately Rs 17 lakh per panchayat**, with State government grants totalling over Rs 3.25 lakh per panchayat.
 - **State Revenue Share and Inter-State Disparities:** Panchayats' share in their respective State's own revenue **remains minimal**. There are **wide variations among states** regarding average revenue earned per panchayat.
 - **Kerala and West Bengal** lead with average revenues of over **Rs 60 lakh and Rs 57 lakh per panchayat**, respectively. While States like **Andhra Pradesh, Haryana, Mizoram, Punjab, and Uttarakhand** have significantly lower average revenues, **less than Rs 6 lakh per panchayat**.

Role of the Speaker

Why in News?

The upcoming session of the **18th Lok Sabha** underscores the crucial role of the Speaker in the case of **coalition government** not only for the smooth functioning of the house but also for the balance of power between the ruling party and its allies, as well as the opposition.

What are the Key Facts About the Speaker in India?

- **About:**
 - The Speaker is the **constitutional and ceremonial head** of the House.
 - Each House of Parliament has its **own presiding officer**.
 - There is a **Speaker and a Deputy Speaker** for the Lok Sabha and a **Chairman and a Deputy Chairman** for the Rajya Sabha.

- The Speaker is **assisted by the Secretary-General of the Lok Sabha** and senior officers of the Secretariat on parliamentary activities, practice and procedure.
- In the **absence of the Speaker**, the **Deputy Speaker** discharges the functions.
 - A member from the **panel of Chairmen** presides over the House in the absence of both the Speaker and the Deputy Speaker. However, member of the **panel of chairpersons cannot preside** over the house, when the **office of the Speaker or the deputy speaker is vacant**.
- **Election:**
 - The House **elects** its presiding officer by a **simple majority** of members present, who vote in the House.
 - Usually, a **member belonging to the ruling party** is elected as speaker whereas deputy speaker is elected from opposition party.
 - There are also **instances when members not belonging to the ruling party** were elected to the office of the Speaker.
 - **GMC Balayogi and Manohar Joshi** belonging to the **non-ruling party** served as the Speaker in the 12th and 13th Lok Sabha.
 - When the **Lok Sabha is dissolved**, the **Speaker remains in his office till the first meeting** of the new assembly when the new speaker is elected.
- **Removal:**
 - The Constitution has given the Lower House authority to remove the Speaker if needed.
 - The House can remove the Speaker through a resolution with notice of 14 days, passed by an **effective majority** (more than 50% of the **effective strength** (total strength-vacancies) of the house present and voting) as per **Articles 94** of the Indian Constitution.
 - The Speaker can **also be removed** on getting disqualified from **being a Lok Sabha member** under **sections 7 and 8** of the Representation of the People Act, 1951.
 - A speaker can also give his **resignation to a Deputy Speaker**.
- **Sources of Power and Duties:**
 - The Speaker of the Lok Sabha **derives his powers and duties** from three sources:
 - Constitution of India,
 - Rules of Procedure and Conduct of Business of Lok Sabha,
 - Parliamentary Conventions (residuary powers that are unwritten or unspecified in the rules)
- **Provisions to Ensure Independence and Impartiality of Speaker:**

Note:

- He is provided with a **security of tenure**. He can be removed only by a resolution passed by the Lok Sabha by a effective majority.
- His **salaries and allowances** are **charged on the Consolidated Fund of India** and thus are not subject to the annual vote of Parliament.
- His **work and conduct cannot be discussed** and criticised in the Lok Sabha except on a substantive motion.
- His **powers of regulating procedure** or conducting business or maintaining order in the House are **not subject to the jurisdiction of any Court**.
- He cannot vote in the first instance. He can only exercise a **casting vote** in the event of a tie. This makes the position of speaker impartial.
- He is placed at **sixth rank** in the **order of precedence** along with the **Chief Justice of India**.

Pro Tem Speaker

- When the **Speaker of the last Lok Sabha vacates** his office immediately before the first meeting of the newly-elected Lok Sabha, the **President appoints a member** of the Lok Sabha as the Speaker Pro Tem (usually, the **senior most member**).
- The **President himself administers oath** to the Speaker Pro Tem.
- He/She **presides over the first sitting of the newly-elected Lok Sabha** and has all the powers of the Speaker.
- The main responsibility is to **administer oaths to the new members** and to enable the House to elect the new Speaker.
- When the new Speaker is elected by the House, the office of the Speaker Pro Tem ceases to exist.

LOK SABHA SPEAKER



*The **Constitutional/Ceremonial Head** of LS who presides over its day-to-day functioning*

*What **Speaker/Deputy Speaker** is for LS, the **Chairman/Dy Chairman** is for RS*

ORIGIN IN INDIA

- 1921 (GoI Act of 1919) under the name **President and Dy President**

*GoI Act of 1935 changed this nomenclature to **Speaker and Deputy Speaker***

ELECTION (BOTH SPEAKER & DY SPEAKER)

- Article 93, Part V
- By a **simple majority**
- Re-election - Eligible

ELECTION CRITERIA

- Should be a member of LS
- No specific qualifications
- Generally, belongs to the ruling party

TENURE

- **5 years** (till immediately before first meeting of the next LS)

Speaker does not vacate his/her office upon dissolution of LS

POWERS

- Final **interpreter** of Constitutional provisions in LS; his/her **rulings are binding** in nature
- Presides over a **joint sitting** of the two Houses of Parliament
- Can adjourn the House/suspend the meeting in **absence of Quorum**
- Power of **Casting vote** to resolve a deadlock
- Decides:
 - if a bill is (not) a **money bill**
 - **Disqualification** of LS members (under 10th Schedule) (granted via **52nd Amendment 1985**)

REMOVAL (CONDITIONS)

- If s/he **ceases to be a member** of LS
- Written **Resignation** to Dy Speaker
- Removed by **Effective Majority**

Note:

What are the Roles and Responsibilities of the Speaker?

- **Presiding Over House Proceedings:**
 - The Speaker **oversees the sessions** of the Lower House, **ensuring discipline and decorum** among members.
 - The Speaker decides the **agenda for parliamentary meetings** and interprets procedural rules. He/she permits motions such as **adjournments, no-confidence and censure motions**, ensuring orderly conduct.
 - The Speaker is the **final interpreter of the provisions** of (a) the Constitution of India, (b) the Rules of Procedure and Conduct of Business of Lok Sabha, and (c) the parliamentary precedents, within the House.
- **Enforcing Quorum and Disciplinary Action:**
 - In the absence of a **quorum**, the Speaker adjourns or suspends meetings until the required attendance is met.
 - The speaker has the **power to punish unruly behaviour** and even disqualify members on grounds of defection under **10th schedule** of the constitution.
- **Constitution of Committees:**
 - The Committees of the House are **constituted by the speaker** and function under the speaker's overall direction.
 - The Chairmen of all Parliamentary Committees are **nominated by Speaker**.
 - Committees like the **Business Advisory Committee, the General Purposes Committee and the Rules Committee**, work directly under his Chairmanship.
- **Privileges of the House:**
 - The Speaker is the **guardian of the rights and privileges** of the House, its Committees and members.
 - It depends solely on the speaker to refer any question of privilege to the Committee of Privileges for examination, investigation and report.
 - He can allow a **'secret' sitting of the House** at the request of the **Leader of the House**. When the House sits in secret, no stranger can be present in the chamber, lobby or galleries except with the permission of the Speaker.
- **Administrative Authority:**
 - As **head of the Lok Sabha Secretariat**, the Speaker manages administrative affairs and security arrangements within the Parliament Estate. They control alterations and additions to parliamentary infrastructure.

➤ Inter-Parliamentary Relations:

- The Speaker serves as the **ex-officio President** of the **Indian Parliamentary Group**, facilitating inter-parliamentary relations. He/she leads delegations abroad and chairs the Conference of Presiding Officers of Legislative Bodies in India.

Constitutional Provisions Related to Speaker/ Deputy Speaker

- **Article 93/178:** Appointment of the Speaker and Deputy Speaker of the Lok Sabha/ Legislative Assembly.
- **Article 94/179:** Vacation/resignation/removal from the offices of Speaker and Deputy Speaker of the Lok Sabha/ **Legislative Assembly**.
- **Article 95/180:** Power of the Deputy Speaker or other person(s) to perform the duties of the office of or to act as the Speaker of the **Lok Sabha/ Legislative Assembly**.
- **Article 96/181:** The Speaker or the Deputy Speaker not to preside while a resolution for his removal from office is under consideration.
- **Article 97/186:** Salaries and allowances of the Speaker and Deputy Speaker.

Judicial Provisions Related to Speaker/ Deputy Speaker

- In **Kihoto Hollohan versus Zachilhu case, 1993**, the **Supreme Court** declared that the **decision of the presiding officer is not final** and can be questioned in any court. It is **subject to judicial review** on the grounds of malafide, perversity, etc
- Supreme Court in **Keisham Meghachandra Singh vs The Hon'ble Speaker Manipur Legislative Assembly & Ors Case, 2020**, ruled that **Speakers of assemblies and the Parliament must decide disqualification pleas within a period of three months** except in extraordinary circumstances.
- In **Nabam Rebia vs Deputy Speaker Case, 2016**, the SC held that a **speaker will be disabled** from deciding disqualification petitions under the **anti-defection law (10th schedule of the constitution)** if a notice for their removal is pending.
 - In other words, this judgement **stopped a Speaker facing removal notice from deciding disqualification pleas** against members of legislatures under anti-defection law.
- Also, in 2023, the **Supreme Court** in **Subhash Desai v Principal Secretary, Governor of Maharashtra Case, 2023**, directed the **Maharashtra Assembly Speaker**, to set a timeline for deciding pleas for the disqualification of MLAs.

Note:

What are the Issues Associated With the Office of the Speaker?

- **Partisanship Issue:** The Speaker, often belonging to the ruling party, are **accused of bias**. Supreme Court in *KihotoHollohan versus Zachilhu case* highlighted the instances where speakers have allegedly acted in favour of their party.
 - For example, **discretionary powers** of speakers with political affiliations **indeciding money bill and political defection cases** is one such example.
 - In 2017, the **Manipur legislative assembly anti-defection case**, the court gave a reasonable period of four weeks but the **defection complaint was pending for years**.
- **Prioritising Party Interests over National Interest:** Speakers have the power to **restrict debates or discussions** that could potentially affect the agenda of the political parties, if those discussions are crucial for the nation's well-being.
- **Increased Disruptions and Stalling of Proceedings:** A Speaker **perceived as biased** can lead to **frustration and disruptions from the opposition**, ultimately hindering the functioning of Parliament.
- **Bypassing Committees and Scrutiny:** Rushing through bills without proper committee review can lead to **poorly crafted legislation** that hasn't received sufficient deliberation.
 - **Example:** The instance of the **passing of 3 farm laws in 2020** without referring it to parliamentary committee has been **cited as the reason by opposition for widespread protest and later their withdrawal**.

Pradhan Mantri Awas Yojana

Why in News?

Recently, the **Prime Minister** approved aid for building three crore houses under **PMAY**, with two crore under **PMAY-Gramin** and one crore under **PMAY-Urban**.

- The government announced that **additional housing units will be built beyond those planned under PMAY-G and PMAY-U by December 2024**, extending the original target from March 2022.

What is Pradhan Mantri Awas Yojana?

- **Pradhan Mantri Awas Yojana- Gramin (PMAY-G):**
 - **Launch:** To achieve the objective of **"Housing for All" by 2022**, the erstwhile rural housing scheme **Indira**

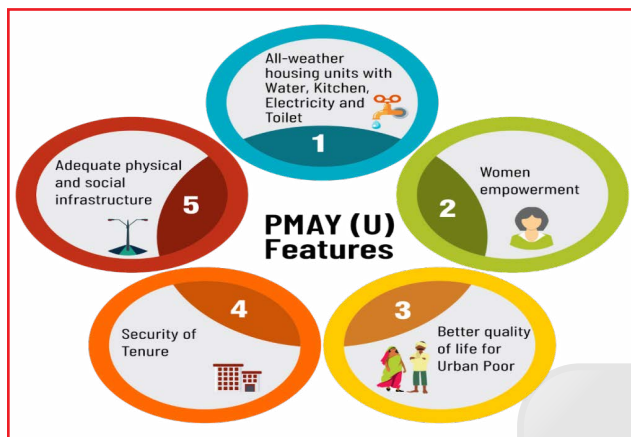
Awaas Yojana (IAY) was restructured to Pradhan Mantri Awas Yojana-Gramin (PMAY-G) from 1st April 2016, as a **centrally sponsored scheme**.

- **Ministry Involved:** Ministry of Rural Development.
- **Status:** States/UTs have **sanctioned 2.85 crore houses to the beneficiaries** and 2.22 crore houses have been completed till March 2023.
- **Aim:** To provide a pucca house with basic amenities to all rural families, who are homeless or living in kutcha or dilapidated houses by the end of March 2022.
 - To help rural people **Below the Poverty Line (BPL)** in the construction of dwelling units and upgradation of existing unserviceable kutcha houses by assisting in the form of a full grant.
- **Beneficiaries:** People belonging to **SCs/STs**, freed bonded labourers and non-SC/ST categories, widows or next-of-kin of defence personnel killed in action, ex-servicemen and retired members of the paramilitary forces, disabled persons and **minorities**.
- **Selection of Beneficiaries:** Through a three-stage validation such as **Socio-Economic Caste Census 2011**, **Gram Sabha**, and **geo-tagging**.
- **Cost Sharing:** The Centre and states share expenses in 60:40 ratio in case of plain areas, and in **90:10 ratio for northeastern states**, two Himalayan states and the UT of Jammu and Kashmir.
 - The Centre bears **100% cost in case of other Union Territories, including the UT of Ladakh**.
- **Pradhan Mantri Awas Yojana – Urban (PMAY-U):**
 - **Launch:** Launched on 25th June 2015 it intends to provide housing for all in urban areas by the year 2022.
 - **Implemented by:** Ministry of Housing and Urban Affairs
 - **Status:** As per the **PMAY (U) dashboard**, 118.64 lakh houses have been sanctioned out of which **83.67 lakh have been completed**.
 - **Features:**
 - Addresses Urban housing shortage among the Urban Poor including the **Slum Dwellers** by ensuring a pucca house for eligible urban poor.
 - The Mission covers the **entire urban area** consisting of Statutory Towns, Notified Planning Areas, Development Authorities, Special

Note:

Area Development Authorities, Industrial Development Authorities or any such authority under State legislation which is entrusted with the functions of urban planning & regulations.

- The Mission promotes **women's empowerment** by providing the ownership of houses in the name of female members or in a joint name.



○ **Scheme Implemented in Four Verticals:**

- **In-situ Rehabilitation** of existing slum dwellers using land as a resource through private participation.
- **Credit Linked Subsidy:** People from **Economically Weaker Section** (EWS), Low Income Group (LIG), and Middle Income Groups (MIG-I and MIG-II) can get **interest subsidies** of 6.5%, 4%, and 3% on housing loans up to Rs. 6 lakh, Rs. 9 lakh, and Rs. 12 lakh respectively **for buying or building houses**.
- **Affordable Housing in Partnership (AHP):** Under AHP, Central Assistance of Rs. 1.5 Lakh per EWS house is provided by the Government of India.
- **Beneficiary-led Individual House Construction/ Enhancement:** Central Assistance upto Rs. 1.5 lakh per EWS house is provided to eligible families belonging to EWS categories for individual house construction/ enhancement.

Other Initiatives

- **Affordable Rental Housing Complexes (ARHCs)**
- **ANGIKAAR Campaign**
- **GHTC India**
- **PM-JANMAN**
- **Global Housing Technology Challenge**

What are the Challenges to Pradhan Mantri Awas Yojana?

- **Delay in Implementation:** The government initially set a deadline of constructing 29.5 million housing units under PMAY-G and 12 million under PMAY-U programmes by March 2022.
 - However, the **government missed this target** and in August 2022 extended the deadline to ensure “housing for all” **to December 2024**.
- **Improper Execution:** Some states **delay their contributions** which drastically affects progress. In 2020, nine states had delayed the payment of 2,915.21 crores to the beneficiaries.
- **Access to Finance:** The disbursed amount of **1.2/1.3 lakh subsidy is not enough to build a house in rural areas** therefore households need more funds from financial institutions to cover the shortfall.
- **Quality of Housing:** The **CAG report** found poor quality housing in PMAY-G due to lack of supervision, with beneficiaries unaware of construction standards and no mechanism ensuring the effectiveness of provided prototypes.
- **Convergence:** The PMAY scheme aims to coordinate with other government initiatives like **Swachh Bharat Mission, MGNREGA, Jal Jeevan Mission**, and **Ujjwala Yojana** for providing basic amenities during house construction, but reports highlight shortcomings in scheme coordination, such as incomplete toilets in Rajasthan leading to false claims of **‘Open Defecation Free’ status**.
- **Lack of Awareness:** Many rural residents are **unaware of PMAY or lack the needed documents**, with illiteracy, poor awareness campaigns, and complex documentation hindering access to housing subsidies and loans.

Other Policy Related Issues in PMAY

- **Kitchen:** PMAY-G provided kitchens, but many prefer extra rooms instead, often cooking outside and using kitchen space as living rooms, which partly explains the **limited uptake of PMUY (LPG gas)**.
- **Cooking Fuel:** Despite efforts, many PMAY-G households don't use LPG cylinders due to **outdoor cooking habits** and the cost of refills, hindering the PMAY and PMUY program integration.
- **Toilet Use:** 10% of toilets built with PMAY-G houses are **unused**. However it's unclear if this is due to **community habits** or poor installation and needs investigation.

Note:

- **Drinking Water:** The **National Rural Drinking Water Programme (NRDWP)** aims to provide piped water to most rural homes by 2022, but PMAY-G houses mainly rely on shared water points and lack proper waste collection, drainage, and street lighting.
- **Source of Borrowing:** Most PMAY-G beneficiaries take loans from private sources rather than banks to cover additional house construction costs, despite being aware of bank loan options, indicating a policy issue with bank loan accessibility.

What are the Steps Needed to strengthen PMAY?

- **Timely Release of Funds:** Some states face delays in receiving central government funds, with a reported deficit of 200 crores in 2020, prompting the need for timely release of state contributions and **direct benefit transfers** akin to **MGNREGA**.
- **Formal Credit Facility:** Progress of credit disbursal is slow as major banks like SBI don't have **Economically weaker Section (EWS)**-specific products due to high risk and low profits, needing government intervention for stable financing for 'Housing for All'.
- **More Inclusive:** The need of the hour is to **acknowledge the limitations** of the existing scheme and to devise an intervention solely intended to solve the housing problem of the landless rural population.
- **Quality Assurance:** It is recommended that the government strengthen the quality monitoring mechanisms. Measures like **social audits** can be considered.
- **Awas Bandhu:** Awas Bandhu (PMAY-G Local Motivators) are effectively speeding up progress in places like **West Bengal and Odisha**. With proper training, they can be an important instrument to enhance convergence possibilities.

Proportional Representation

Why in News?

Recently, there is a growing consensus among a broad cross-section of citizens and political parties in India that the current **First-Past-The-Post (FPTP)** electoral system must be replaced with a **Proportional Representation (PR)** electoral system as one viable alternative.

What is the First-Past-The-Post (FPTP) Electoral System?

- **About:**
 - It is an electoral system in which voters cast a vote for a single candidate, and the candidate with the most votes wins the election.
 - Also known as the **simple majority system** or **plurality system**.
 - One of the **simplest and oldest electoral systems**, used in countries such as the **UK, the US, Canada, and India**.
- **Features:**
 - Voters are **presented with a list of candidates nominated** by different political parties or running as independents.
 - Voters choose **one candidate** by marking their ballot paper or **electronic voting machine**.
 - The candidate who receives the **most votes in a constituency** is declared the winner.
 - The **winner does not need to get a majority (more than 50%) of the votes**, but only a plurality (the largest number) of the votes.
 - This system frequently leads to **disproportionate outcomes** when selecting members of an assembly, like a **Parliament**, as political parties may not receive representation in line with their proportion of the overall vote.
- **Advantages:**
 - **Simplicity:** It is a straightforward system that is **easy for voters to understand and for officials to administer**. This makes it **cost-effective and efficient**.
 - **Clear and Decisive Winners:** It provides **results with a definitive winner**, which can **contribute to stability and credibility** in the electoral system.
 - **Accountability:** Candidates in elections directly **represent constituents**, allowing for better accountability compared to **Proportional Representation systems where candidates may not be as well known**.
 - **Candidate Selection:** It allows **voters to choose between parties** and specific candidates, while the **PR system requires voters to select a party** and the representatives are elected based on party lists.

Note:



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- **Coalition-Building:** It encourages **different social groups to unite** locally, promoting broader unity and preventing fragmentation into numerous community-based parties.

What is Proportional Representation (PR) Systems?

➤ About:

- It is an electoral system where the political parties get **representation (number of seats) in the legislature in proportion to the share of votes they get** in the elections.

➤ Features:

- It **fairly represents political parties** based on their share of the vote.
- It ensures that **every vote counts towards allocating seats** in Parliament or other elected bodies.

➤ Types:

- Single Transferable Vote (STV):
 - It allows a **voter to rank his/her candidate in order of preference**, i.e., by providing backup references and **casting only one vote**.
 - **Proportional Representation (PR) By Single Transferable Vote (STV)** enables voters to choose the **most preferred candidate of the party** and vote for independent candidates.
 - The **President** of India is elected through the **PR system** with a STV, where a secret ballot system is used to elect the President.
 - The electoral college, which consists of the Legislative Assemblies of the States, Council of States, and members of **Rajya Sabha** and **Lok Sabha**, elects the Indian president through a PR system utilizing an STV.
- Party-List PR:
 - Here **voters vote for the party (and not individual candidates)** and then the parties get seats in proportion to their vote share.
 - There is usually a **minimum threshold of 3-5% vote share** for a party to be eligible for a seat.
- Mixed-Member Proportional Representation (MMP):
 - It is a system that aims to achieve a **balance between stability and proportionate representation** in a country's political system.
 - Under this system, **one candidate is elected through the First-Past-the-Post (FPTP) system** from each territorial constituency. In addition to these representatives, **there are also additional**

seats allocated to various parties based on their percentage of votes nationwide.

- This allows for a **more diverse representation in government** while still maintaining the stability of having individual representatives from specific geographical areas.
- **New Zealand, South Korea, and Germany** are examples of countries where MMP is operational.

➤ Advantages:

- Ensures Every Vote Counts:
 - In **PR every vote is counted towards allocating seats in Parliament**. This means that voters have a greater sense of participation in the democratic process.
- Diverse and Representative Government:
 - Smaller parties and **minority groups are more likely to be represented** under a PR system, which can lead to a more diverse range of perspectives and ideas in Parliament.
- Reduces Gerrymandering:
 - PR systems are **less susceptible to gerrymandering**, as distribution of seats is determined by the proportion of votes a party receives rather than by **manipulating district boundaries**.
 - As a result, parties cannot **unfairly manipulate the electoral map to their advantage**, as is sometimes seen in systems with arbitrary constituency boundaries.

➤ Disadvantages:

- **Unstable Governments:** PR can lead to unstable governments as smaller parties and **minority groups are more likely to be represented** which can be difficult to form stable coalitions and govern effectively.
- **More Complex:** PR systems can be **more complex than FPTP systems**, making them more **difficult for voters to understand** and for governments to implement.
- **Expensive:** PR systems are **expensive to operate**, as a **significant amount** of resources and funds are required to conduct elections.
- **Neglect of Local Needs:** PR can lead to leaders **prioritising party agendas** over local needs, as multiple representatives share a constituency.
 - This diffusion of accountability **may result in selfish political behaviour** and neglect of specific constituency concerns.

Note:



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Why there is Need to Shift From FPTP System to the PR System?

- **Over or Under Representation:** The FPTP system may lead to over or under representation of political parties (in terms of seats they win) when **compared to their vote-share they get**.
 - Eg: In the first three elections after independence, the Congress party won close to **75% of seats** in the then Lok Sabha with just **45-47% vote share**.
 - In the 2019 Lok Sabha Elections, Bharatiya Janata Party (BJP) received just **37.36% of the vote** and won **55% of the seats** in Lok Sabha.

Table 2: If the PR system is applied for the 2024 election

Political formation	% of votes	Actual number of seats	Seats as per PR
National Democratic Alliance (NDA)	43.3%	293*	243
INDIA bloc	41.6%	234	225
Others/independents	15.1%	16	75
Total	100%	543	543

- **Lack of Representation for Minority Groups:** In a 2-party FPTP system, a party with a small percentage of votes may not win any seats which can result in a significant portion of the population being **unrepresented** in the government.
 - Countries like the UK and Canada also use FPTP, but their **Member of Parliaments (MPs)** have more accountability to their local constituencies.
- **Strategic Voting:** Voters may feel pressure to vote for a candidate they do not truly support to prevent a candidate they dislike from winning the election. This can lead to a situation where **voters feel like they are not truly expressing their preferences**.
- **Disadvantage for Smaller Parties:** Smaller parties struggle to win in the FPTP system and often have to align with national parties, **undermining local self-government and federalism**.

Other Alternative Electoral Systems

- **Ranked Voting Systems:** These are systems that **allow voters to rank candidates in order of preference**, rather than choosing one candidate.
- **Score Voting Systems:** These are systems that allow **voters to score candidates on a numerical scale**, rather than choosing one candidate or ranking them.

International Practices

- **Presidential democracies** (like **Brazil** and **Argentina**), as well as **parliamentary democracies** (like **South Africa**, the **Netherlands**, **Belgium**, **Spain**, **Germany**, and **New Zealand**), have different **proportional representation (PR) systems**.
 - In Germany, the **Mixed Member Proportional Representation (MMPR)** system is used (50% of the 598 seats in the Bundestag are filled from constituencies under **FPTP system**, and the remaining 50% are filled by apportioning them amongst parties securing at least 5% of the votes).
 - In **New Zealand**, **60% of the total 120 seats** in the House of Representatives are **filled through the FPTP system** from territorial constituencies, while the remaining **40% are allotted to parties securing at least 5% of the votes**.

Note:



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Agnipath Scheme

Why in News?

The ruling-party government's ambitious **Agnipath scheme**, announced in June 2022, has been facing opposition from various political parties and Armed Forces veterans.

- Ongoing concerns highlight the scheme's impact on military recruitment and the welfare of soldiers.

What is Agnipath Scheme?

- **About:**
 - The term "Agniveer" translates to "Fire-Warriors" and is a **new military rank**.
 - It is a scheme of **recruiting army personnel below officer ranks** such as **soldiers, airmen, and sailors** who are not commissioned officers to the **Indian Armed Forces**.
 - They are recruited for a period of **4 years**, after which, **upto 25%** of these recruits (called Agniveers), can join the services on a **permanent commission** (another 15 years), subject to merit and organisational requirements.
 - At present, **all sailors, airmen, and soldiers**, except the technical cadre of the medical branch, are recruited to the services under this scheme.
- **Eligibility Criteria:**
 - Candidates between the age of **17.5 years to 23 years** are eligible to apply (the upper age limit was increased from 21).
 - **Girls under the given age limit are open for the agnipath entry**, while there is no such reservation for women under this scheme.
- **Pay & Benefits:**
 - **Death on Duty:** The family gets a combined sum of **Rs 1 crore**, which includes both the **Seva Nidhi package** and the soldier's unserved salary.
 - **Disability:** An Agniveer can receive compensation up to **Rs 44 lakh** depending on the severity of the disability. This amount is provided **only if the disability is caused** by or worsened due to military service.

- **Pensions:** Agniveers won't receive a regular pension after their 4-year service, unlike soldiers in the traditional system.

- **Only the 25%** who get selected for permanent commission will be eligible for a pension.

➤ Goal of Agnipath:

- This scheme is designed to **keep the armed forces young and bring down the number of permanent soldiers in the military**, leading to a significant reduction in the government's pension spending on defense forces.

Why was the Agnipath Scheme Introduced?

- **Younger, Fitter Force:** The government believes Agnipath will create a **more agile fighting force** due to the emphasis on younger recruits, translating to faster response times and better adaptation on the battlefield.
 - The average age in the Armed Forces, currently **32 years**, will be reduced to **26 years** with Agnipath's implementation.
- **Reduce Pension Bill:** It also aims to **lessen the burden of the ever-growing defense pension bill**. The **Parliamentary Standing Committee on Defence report** in 2022 projected the Indian Armed Forces' pension bill to reach a staggering **Rs 2.5 lakh crore** by 2025.
 - Agnipath, with **its shorter service** duration for most recruits, could potentially help manage this expenditure.
- **Technological Integration:** The scheme aims to **leverage the tech-savviness of younger recruits** to better integrate emerging technologies into the Armed Forces.
- **Skilled Workforce for Civilian Sector:** The government envisions Agniveers transitioning to the civilian workforce with **valuable skills and discipline gained during their service**.
 - This could potentially contribute to a more skilled national workforce and economic growth.

Note:

- **More Employment Opportunities:** It will increase employment opportunities and because of the skills and experience **acquired during the four-year service such soldiers** will get employment in various fields.

Similar Programmes in Other Nations

- **Voluntary Tour of Duty:** Depending on the requirements of the military and the branch of service, **tours of voluntary duty in the US** can last anywhere from 6 to 9 months to a full year.
- **Required Military Service (Conscription):** Israel, Norway, North Korea, Singapore and Sweden are among the nations that use this practice.

What are the Issues Associated with Agnipath Scheme?

- **Lack of Retirement Benefits:** The scheme provides a one-time payment of **Rs 11.71 lakh** on completion of 4-year tenure, **but no gratuity or pension.**
 - This has caused **widespread discontent among aspirants** who were seeking job security and pension benefits.
- **Short Service Duration:** The **4-year term is seen as inadequate**, with concerns that recruits may **lack the same motivation and training as permanent soldiers.**
 - Also, this duration is **insufficient to train and skill soldiers in the long term** as it may lead to **skill and experience deficit** in armed forces.
- **Age Limit Issues:** The current upper age limit of **23 years** has **excluded many youth** who could not apply due to lack of recruitment during the pandemic.
- **Unemployment Concerns:** With **limited permanent absorption (only 25%)**, the scheme is seen as **exacerbating the already high youth unemployment** in the country.
 - This comes amidst wider economic challenges like rising inflation and inequalities.
- **Perceived Political Motives:** Experts believe the **scheme was rushed through without adequate consultation**, possibly as a political move ahead of elections. The lack of endorsement from defense forces also raises doubts.
- **Pension Bill Reduction:** The scheme is seen as a way for the government to reduce its rising defense pension expenditure, **prioritizing financial savings over long-term force building.**

National Testing Agency

Why in News?

Recently, the **National Testing Agency (NTA)** released the **NEET UG results**, drawing attention to the unusually **high number of candidates** scoring a perfect 720/720 and the controversial near-perfect scores of 718 or 719.

- The **National Medical Commission (NMC)** is responsible for laying down policies for maintaining **high quality and high standards** in medical education and making necessary regulations on this behalf.

What is the National Testing Agency?

➤ About:

- The **National Testing Agency (NTA)** was established as a Society registered under the **Indian Societies Registration Act, of 1860.**
- It is an **autonomous** and self-sustained testing organisation to conduct entrance examinations for admission in higher educational institutions.

➤ Governance:

- NTA is chaired by an eminent educationist appointed by the **Ministry of Human Resource Development.**
- The **Chief Executive Officer (CEO)** will be the Director-General to be appointed by the Government.
- There will be a **Board of Governors** comprising members from user institutions.

➤ Functions:

- To identify **partner institutions** with adequate **infrastructure** from the existing schools and higher education institutions that would facilitate the conduct of **online examinations** without adversely impacting their academic routine.
- To create a **question bank** for all subjects using modern techniques.
- To establish a **strong R&D culture** as well as a pool of experts in different aspects of testing.
- To collaborate with international organisations like **ETS (Educational Testing Services).**
- To undertake any other examination that is entrusted to it by the Ministries/Departments of Government of India/State Governments.

Note:



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National Medical Commission (NMC)

- NMC is the **apex regulatory body** for medical education and practice in India.
- NMC was **established in 2020** by the **National Medical Commission Act, 2019**, replacing the **Medical Council of India (MCI)**.
- NMC consists of **four autonomous boards**: the Undergraduate Medical Education Board, the Post-Graduate Medical Education Board, the Medical Assessment and Rating Board, and the Ethics and Medical Registration Board.
- NMC also has a **Medical Advisory Council**, which advises the commission on matters related to medical education and practice.
- NMC also **regulates the standards and quality of medical education** and training, the registration and ethics of medical practitioners, and the assessment and rating of medical institutions.
- NMC has also achieved the prestigious **World Federation for Medical Education (WFME)** recognition, which means that the **medical degrees awarded by the NMC are recognized globally**.

Read more: [State of Medical Education in India](#)

CIC Jurisdiction over MPLADS Funds

Why in News?

Recently, the Delhi **High Court** has ruled that the **Central Information Commission (CIC)** has **no jurisdiction** to comment on the utilisation of funds under the **Members of Parliament Local Area Development Scheme (MPLADS)**.

What is the Background of the Court's Ruling?

- **Key Events:**
 - In 2018, an order by the **Central Information Commission (CIC)** raised concerns about some MPs strategically saving their MPLADS funds until the last year of their term. The CIC suspected this tactic was used to gain an unfair advantage during elections.
 - It had suggested to the **Ministry of Statistics and Programme Implementation (MoSPI)** that this "abuse" of the funds be prevented and guidelines be implemented for **distributing the money equally for each year of the five-year term**.

- The **Ministry of Statistics and Programme Implementation (MoSPI)** then filed a legal challenge in the Delhi **High Court** against a ruling by the CIC on a **Right to Information (RTI)** application.
- **Court's Ruling:**
 - Delhi High Court held that the **CIC has no jurisdiction to comment upon the utilisation of funds by the MPs under the MPLADS**.
 - The scope of the **RTI Act** is limited to providing access to information under the control of public authorities.
 - Court said that as per **Section 18 of the RTI Act**, the CIC can "only deal with issues relating to the information sought for under the RTI Act or any other issue which leads to dissipation of information as sought for by the applicant"
 - The Court however retained the portion of the order of CIC where it has instructed the public authority to publish details of the funds MP-wise, Constituency-wise, and work-wise under the **RTI Act**.

What is the MPLADS Scheme?

- **About:**
 - It is a **Central Sector Scheme** announced in **1993**.
- **Objective:**
 - It enables **Members of Parliaments (MPs)** to recommend works of a developmental nature with a focus on the creation of durable community assets in the areas of **drinking water, primary education, public health, sanitation and roads**, etc. primarily in their Constituencies.
 - Since June 2016, the MPLAD funds can also be used for implementation of the schemes such as **Swachh Bharat Abhiyan, Accessible India Campaign (Sugamya Bharat Abhiyan)**, conservation of water through rainwater harvesting and **Sansad Aadarsh Gram Yojana**, etc.
- **Implementation:**
 - The process under MPLADS starts with the MPs recommending works to the **Nodal District Authority**.
 - The Nodal District Authority concerned is **responsible for implementing the eligible works recommended** by the Members of Parliament and maintaining the details of individual works executed and the amount spent under the Scheme.

Note:



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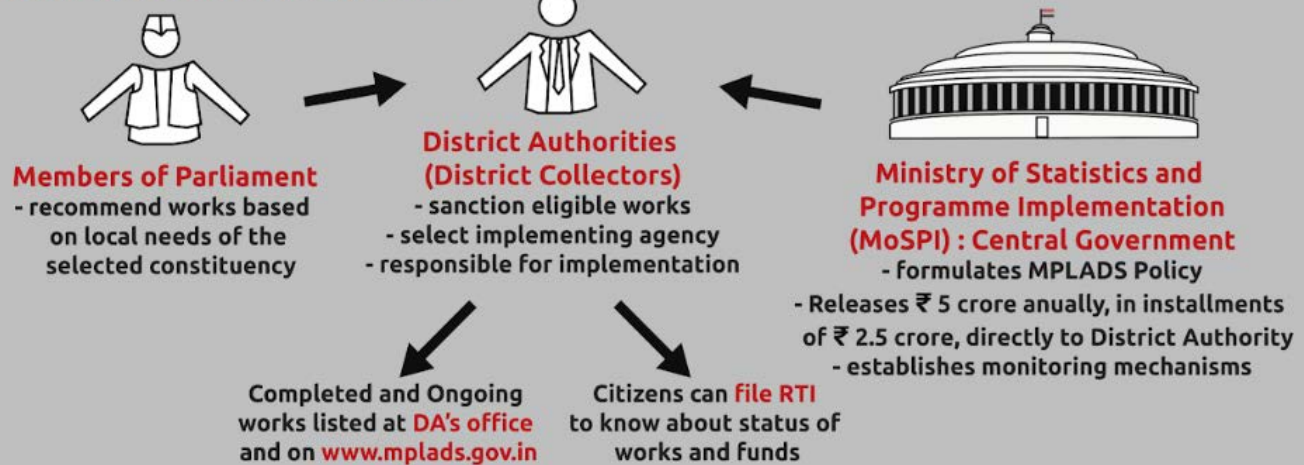
➤ Functioning:

- Each year, MPs receive **Rs. 5 crore** in two instalments of Rs. 2.5 crore each. Funds under MPLADS are **non-lapsable**.
- **Lok Sabha** MPs have to recommend the district authorities projects in their Lok Sabha constituencies, while **Rajya Sabha** MPs have to spend it in the state that has elected them to the House.
- **Nominated Members** of both the Rajya Sabha and Lok Sabha can recommend works anywhere in the country.

➤ Concerns:

- **Breach of Federalism:** The MPLADS encroaches upon the domain of **local self-governing institutions**, thereby violating the principles laid out in Part IX and IX-A of the Constitution.
- **Implementation Lapses:** The MPLAD Scheme allows MPs to **utilise funds as a source of patronage**, which they can dispense at their discretion.
 - The **Comptroller and Auditor General (CAG)** has highlighted instances of **financial mismanagement and artificial inflation of expenditure**.
 - The scheme is also criticised for **fostering a nexus between MPs and private firms**, leading to the **misuse of funds for private projects**, allocation to **ineligible agencies**, and **diversion of funds** to private trusts.
- **No Statutory Backing:** The MPLAD Scheme is **not governed by any statutory law**, making it susceptible to arbitrary changes by the government of the day.
- **Criticism:** Both the **National Commission to Review the Working of the Constitution (2002)** and the **2nd Administrative Reforms Commission (2007)** recommended its termination.
 - Their argument centres on the **scheme's incompatibility with the division of power between the central and state governments**.

How does MPLADS work?



What is the Central Information Commission (CIC)?

- It was **established in 2005** under the **Right to Information Act**.
- It is a **non-constitutional body** overseeing **access to information held by central government agencies**.
- It comprises a **CIC and up to 10 Information Commissioners (ICs)**, serving **terms set by the central government** (with a maximum age limit of 65) and **ineligible for reappointment**.
- The CIC's **key functions** include:
 - Receiving and investigating complaints regarding information requests submitted under the RTI Act.
 - Launching **inquiries into relevant matters** based on reasonable grounds (suo moto power).
 - Exercising **powers similar to a civil court to summon individuals** and request documents during investigations.
- Each state in India has a **State Information Commission (SIC)** with a similar structure.

Note:



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Right to Information (RTI) Act 2005

- Under the RTI Act of 2005, Public Authorities are required to make ***suo moto* disclosures** on various aspects of their structure and functioning. This includes:
 - The disclosure of their **organisation, functions, and structure**.
 - The powers and **duties of its officers** and employees.
 - The **financial information**.
- The intent of such disclosures is that the **public should need minimum recourse through the Act** to obtain such information.
- If such information is **not made available, citizens have the right to request** it from the Authorities.
- The intent behind the enactment of the Act is to promote transparency and accountability in the working of Public Authorities.

Meaning of the Term 'Public Authorities':

- '**Public Authorities**' include bodies of **self-government** established under the Constitution, or under any law or government notification, such as **Union Ministries, Public Sector Undertakings, and Regulators**.
- It also includes any entities **owned, controlled or substantially financed and non-government organisations** substantially financed directly or indirectly by funds provided by the government (this was pronounced by the **Supreme Court** in its judgement in ***D.A.V. College Trust and Management Society v. Director of Public Instructions Case, 2019***).

What are the Concerns Related to Autonomy of CIC?

- **Appointment Process:**
 - The CIC and Information Commissioners (ICs) are appointed by a committee comprising politicians, which potentially allows political considerations to influence the selection, thereby compromising the CIC's impartiality
- **Tenure and Removal:**
 - The **RTI Act** originally guaranteed a fixed 5-year term for Information Commissioners. However, the **RTI (Amendment) Act, 2019** removed this, giving the central government control over their terms.
 - This has raised concerns that the government might influence these officials, impacting their independence.
- **Salaries, Wages and Allowances to CEC:**
 - The **RTI Act (2005)** linked the salaries of the CIC and ICs to those of the **Chief Election Commissioner and Election Commissioners**.
 - However, the 2019 amendment removed this link, giving the **central government the power to decide their pay and benefits**. This shift raises concerns about potential government influence.
- **Funding and Resources:**
 - The CIC relies on the central government for its **budgetary allocations and administrative support**, which can limit the CIC's autonomy and effectiveness.

Enforcement Powers:

- The CIC has the power to order the disclosure of information and impose penalties on non-compliant officials, but the **lack of a robust enforcement mechanism** hampers the effectiveness of these powers, making it difficult to ensure compliance.

NOTA Option in Indian Elections**Why in News?**

Recently, the **Lok Sabha** elections in Indore, Madhya Pradesh saw a remarkable outcome, with the **NOTA (None of the Above) option** receiving over 2 lakh votes, making it the highest ever for NOTA in any constituency.

What is NOTA in Indian Elections?

- **About:**
 - It is a **voting option** on the ballots and **Electronic Voting Machines (EVMs)** that allows voters to indicate **disapproval of all contesting candidates** without choosing any of them.
 - NOTA empowers the electors to **express their negative opinions** and a **lack of support** for the contenders.
 - It gives them the **right to reject** while maintaining the secrecy of their decision.

Note:



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➤ Background:

- In its 170th Report in 1999, the **Law Commission** explored the concept of **negative voting alongside a 50%+1 voting system**, but practical challenges led to no final recommendations on the matter.
- In September 2013, the **Supreme Court** directed the **Election Commission of India (ECI)** to introduce the **NOTA** option as a measure to safeguard the **secrecy of voters' choices**.
 - The **People's Union for Civil Liberties (PUCL)** had approached the Supreme Court in 2004, seeking measures to protect the 'right to secrecy' of voters.

- They argued that the **Conduct of Elections Rules, 1961** violated the secrecy aspect as the **Presiding Officer (from the ECI) maintained a record of voters who chose not to vote**, along with their signatures or thumb impressions.

➤ First Use of NOTA:

- NOTA was used for the first time in the **2013 Assembly elections in five states of Chhattisgarh, Mizoram, Rajasthan, Delhi, and Madhya Pradesh** and later in the **2014 General Elections**.
- It was introduced into the electoral process following the **2013 Supreme Court directive** in the **PUCL vs Union of India Case**.

What Happens if NOTA Receives the Highest Votes?

- The **Election Commission of India** clarified that votes cast as **NOTA are counted, but are considered 'invalid votes'**.
- Even if NOTA votes get the most number of votes in a constituency, the **next candidate with the second-most number of votes is declared the winner**. Therefore, votes made to **NOTA do not change the outcome of an election**.
- However, the **Supreme Court** is considering a petition seeking guidelines/rules for situations where **NOTA receives the most votes**, including the **possibility of nullifying the election and holding fresh polls**.
 - Some states and union territories, such as **Maharashtra, Haryana, and Puducherry**, have already declared **NOTA as a "Fictional Electoral Candidate"**, where fresh elections are held if **NOTA gets the majority of votes**.

What are the Landmark

Judgments Related to NOTA?

➤ **Lily Thomas v. Speaker, Lok Sabha Case, 1993:**

- The **Supreme Court** held that "Voting is a formal expression of will or opinion by the person entitled to exercise the right on the subject or issue in question" and that **right to vote means right to exercise the right in favour of or against the motion or resolution**.
 - Such a right implies the **right to remain neutral as well**.

➤ **People's Union for Civil Liberties & Anr v. Union of India & Anr Case, 2013:**

- The Supreme Court mandated the provision of a **"None of the Above" (NOTA)** button on EVMs to allow voters to **express dissatisfaction with contesting candidates while maintaining secrecy**.
- The 3-judge Bench of Court held that **"Whether a voter decides to cast his vote or decides not to cast his vote, in both cases, secrecy has to be maintained."**
 - This decision came to enhance democracy by empowering voters and promoting fair elections.

➤ **Shailesh Manubhai Parmar v. Election Commission of India Through the Chief Election Commissioner Case, 2018:**

- The Supreme Court decided that while the **NOTA** option could be useful in direct elections, it **wasn't suitable for Rajya Sabha (Council of States) elections**.
- The court believed that using **NOTA** in these elections **could harm democracy** and encourage defection and corruption.
- Therefore, the **court removed the NOTA option from Rajya Sabha elections**.

Similar Initiatives to NOTA in Other Democratic Countries

- **European Countries:** Finland, Spain, Sweden, France, Belgium, Greece **allow their voters to cast votes similar to NOTA**.
- **United States:**
 - While the U.S. **does not have a formal NOTA option** on ballots, some states allow **write-in votes**, which can serve a similar purpose.
 - Voters can **write "None of the Above" or other names as an expression of dissatisfaction**.
- Other countries such as **Colombia, Ukraine, Brazil, Bangladesh** also allow voters to cast **NOTA votes**.

Note:



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What are the Arguments in Favour and Against the NOTA Option?**➤ Arguments in Favour of NOTA Option:**

- **Enhances Voters Choice:** The NOTA option empowers voters by giving them the **ability to reject all the candidates** on the ballot, thereby **expressing their dissatisfaction** with the available choices.
- **Increased Political Accountability:** The existence of NOTA forces political parties and candidates to **field better, more capable, and more ethical representatives**, as they risk losing votes if the voters are dissatisfied.
- **Identifies Voter Dissatisfaction:** The NOTA votes can provide **valuable feedback to the Election Commission and political parties** about the level of voter dissatisfaction, which can then be addressed.

➤ Arguments Against the NOTA Option:

- **No Electoral Value:** NOTA votes are merely symbolic and do not affect the outcome of the election. Even if NOTA receives a majority, the candidate with the highest vote share still wins.
- **Potential for Misuse:** There are concerns that the NOTA option could be misused

Election Commission of India (ECI)

About

- **Autonomous Constitutional Authority** - Administers Union/state election
 - LS, RS, State LA, the offices of the President and VP
- Estd - **25th Jan 1950** (National Voters' Day)

**Constitutional Provisions**

Part XV - Article 324 to 329

Structure

- 1 Chief Election Commissioner and 2 Election Commissioners **appointed by President**
- **Tenure- 6 years, or up to the age of 65 years**, whichever is earlier
- Retiring ECs – **eligible for further appointment by the govt.**
- **Removal of CEC-** Resolution on the **ground of proven misbehaviour or incapacity**, with majority of 2/3rd members present and voting, supported by more than 50% of the total strength of the house

**Major Roles and Responsibilities**

- Determining Electoral Constituencies
- Preparing/Revising electoral rolls
- Notifying the schedules and dates of elections
- **Registering political parties and granting them the status of national or state parties**
- Issuing the Model Code of Conduct (MCC) for political parties
- Advising the President on **matters concerning the disqualification of MPs**

Challenges

- Truncated Tenure of CEC
- Executive Influence in Appointments
- Dependence on Centre for Finance
- Lack of Independent Staff



Note:

by voters to **express protest votes against the system**, rather than a genuine rejection of the available candidates.

- **Caste Bias:** In some cases, high NOTA votes in **reserved constituencies** suggest a bias against candidates from certain castes, potentially undermining the purpose of NOTA.
- **Undermines Representative Democracy:** NOTA option undermines the principles of representative democracy, as it **does not provide a clear mandate** for the winning candidate.

Creation of Andhra Pradesh and Special Category Status

Why in News?

Recently, **Andhra Pradesh** marked the **10th anniversary** of its bifurcation into two states, **Andhra Pradesh** and **Telangana**.

- This significant political shift offers a compelling opportunity to explore its wide-ranging implications on the **political, economic, and historical** landscape of the **Telugu people**.

How Andhra Pradesh has been Divided on Linguistic Basis?

➤ Background:

- At the **Nagpur session** of the **Indian National Congress** in **December 1920**, it was decided to reorganize the **Provincial Congress Committees** on a **linguistic basis**.
 - This move was aimed at promoting the interests of **various linguistic groups**. This leads to **demand for linguistic state**.
- The roots of the agitation can be traced back to the **linguistic reorganization movements** that gained momentum in post-independence India.
- The demand for a **separate state for Telugu-speaking individuals** was driven by a desire to preserve and promote their **linguistic and cultural identity**.

➤ Agitation for Linguistic State:

- One of the most pivotal figures in this movement was **Potti Sreeramulu**, a Gandhian and social activist.
- He undertook a hunger strike on **19th October, 1952**, demanding the creation of a separate state of **Andhra Pradesh for Telugu speaking people**.
- His **martyrdom after 56 days of fasting**, intensified the agitation and forced the Indian government to reconsider their **stance on linguistic reorganisation**.

➤ Commission for Linguistic Reorganisation of States:

The **Central Government of India** established several commission from time to time to examine and give recommendations regarding the reorganization of state on linguistic basis. Few related commissions are:

○ **Dar Commission (1948):**

- **Purpose:** To examine the feasibility of reorganization of states on linguistic lines.
- **Outcome:** The **Dar Commission**, headed by **S.K. Dar**, did not support the idea of reorganisation solely based on language. It emphasized **administrative efficiency over linguistic homogeneity**.

○ **JVP Committee (1948-1949):**

- **Members:** Jawaharlal Nehru, Vallabhbhai Patel, and Pattabhi Sitaramayya.
- **Purpose:** To reassess the demands for linguistic states after the recommendations of the Dar Commission.
- **Outcome:** The JVP Committee also **recommended against the reorganization of states purely on linguistic lines**, suggesting that such reorganisation could lead to administrative difficulties and national disintegration.

○ **Fazal Ali Commission (States Reorganisation Commission) (1953-1955):**

- **Members:** Fazal Ali (Chairman), K.M. Panikkar, and H.N. Kunzru.

Note:



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- **Purpose:** To examine the entire question of the reorganisation of states on linguistic and other bases.
- **Outcome:** It recommended the **creation of linguistic states** but with certain **reservations to ensure national integration and administrative convenience**. Its recommendations led to the formation of several states based on linguistic lines.

➤ **States Reorganisation Act (1956):**

- It was based on the recommendations of the **Fazal Ali Commission**.
- The act led to the reorganization of state boundaries across India, significantly altering the political map of the country.
- The **States Reorganisation Act, 1956** merged the **Telugu-speaking areas of Hyderabad state** with the **Andhra state** to create the enlarged **Andhra Pradesh**.

➤ **The Formation of Andhra State:**

- The death of **Potti Sreeramulu** led to violent protests and a significant public outcry and following the recommendations of several committees the Indian government, decided to form a separate state on linguistic basis.
- The **first linguistic state of India**, known as the **state of Andhra**, by taking out the **Telugu speaking areas from the State of Madras** was created.
- On **2nd June, 2014** the **northwestern part** of Andhra Pradesh was separated and **29th state Telangana** was created through the **Andhra Pradesh Reorganisation Act, 2014**.
- The issue of granting **Special Category Status (SCS)** to **Andhra Pradesh** has been a significant and contentious topic since the bifurcation of the state in **2014**.

What is Special Category Status (SCS)?

- **About:**
 - **SCS** is a classification granted to some States by the Centre to **assist development**, based on **geographical and socio-economic disadvantages**.

- The scheme was introduced in **1969** on the recommendation of the **Fifth Finance Commission**.

➤ **Factors considered for granting SCS to a State:**

- Hilly and difficult terrain
- Low population density and/or sizeable share of tribal population
- Strategic location along international borders
- Economic and infrastructural backwardness
- Non-viable nature of State finances

- The **14th Finance Commission** has done away with the '**special category status**' for states, except for the **Northeastern and three hill states**.

- **States with Special Status:** Arunachal Pradesh, Assam, Himachal Pradesh, Jammu and Kashmir, Manipur, Meghalaya, Mizoram, Nagaland, Sikkim, Tripura, and Uttarakhand .

What are the Constitutional Provision for Formation of New State?

➤ **Article 2:**

- Parliament may by law admit into the Union, or establish, new States on such terms and conditions as it thinks fit.

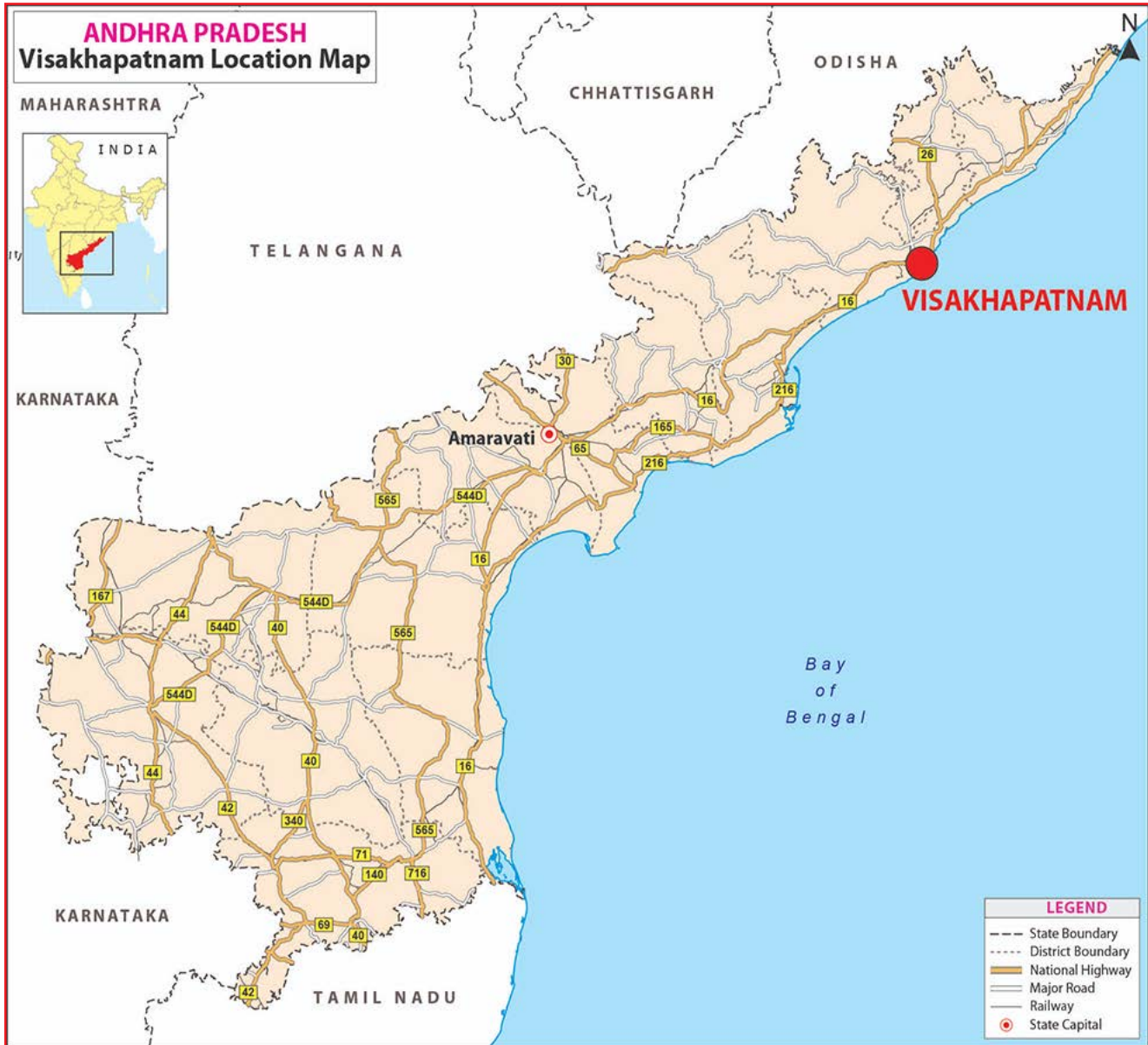
➤ **Article 3:**

- Formation of new States and alteration of areas, boundaries or names of existing States:
 - Form a new State by separation of territory from any State or by uniting two or more States or parts of States or by uniting any territory to a part of any State
 - Increase the area of any State
 - Diminish the area of any State
 - Alter the boundaries of any State
 - Alter the name of any State

What are the Important Fact about State of Andhra Pradesh?

- **Bordered:** The state is bordered by Chhattisgarh to the north, Odisha to the northeast, Telangana and Karnataka to the west, Tamil Nadu to the south, and the Bay of Bengal to the east.

Note:



- **Festival:** Ugadi, Pedda Panduga, Pongal
- **Art & Culture:** TholuBommalata (Puppet show), Dappu (The Dance of Percussion), Veera Natyam (The Dance of the Brave), Tappeta Gullu (The Dance of the Rain God), Kolattam, Lambadi (The Dance of Nomads), Kuchipudi, Bhama Kalapam, Yakshagana, Kalamkari (Textile Art).
- **Wildlife and Bird Sanctuary:**
 - Nagarjunsagar-Srisailem Tiger reserve
 - Pulicat Lake Bird Sanctuary
 - Coringa Wildlife Sanctuary (Mangrove forests)
 - Krishna Wildlife Sanctuary
 - Atapaka Bird Sanctuary (Kolleru Lake) Papikonda Wildlife Sanctuary
- **Tribes:** Chenchu, Gadabas, Sawara, Kondh, Kolam, Porja

Note:



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General Election 2024 and Coalition Government

Why in News?

Recently, for the first time **since 1962**, a government has returned for a **third term** after completing **two consecutive terms** spanning a decade.

- However, the result signifies the **end of single-party dominance** and heralds the return of a **true coalition government** at the Centre.

What is a Coalition Government?

➤ About:

- Coalition government is defined as when **several political parties** join hands to form a government and **exercise political power** based on a common agreed programme.
- Coalitions usually occur in **modern parliaments** when no single political party gets clear majority.
- If several parties with a majority of elected members can agree on a shared plan without compromising too much with their policies, they can form a government.

➤ Features Of Coalition Government:

- A coalition implies the existence of **at least two parties to form government**.
 - Pragmatism and not ideology mark of coalition politics.
- Coalition politics is not a static but a **dynamic affair** as coalition players and groups dissolve and form new ones.
- A coalition government works based on a **minimum programme**, which may not satisfy aspirations of all the members of the coalition government.

➤ Pre-poll and Post-poll Coalition:

- The pre-poll coalition is considerably **advantageous** because it provides a **common platform** for the parties to woo the electorate based on a joint manifesto.
- The post-election union is intended to enable constituents to **share political power** and run the government.

Recommendations of Punchhi and Sarkaria Commission on Coalition

- **Punchhi Commission Recommendation:** The **Punchhi** Commission established clear rules for how Governors should handle appointing Chief Ministers in **hung assemblies**. These guidelines **hold true for President as well:**
 - The **party or combination of parties which commands the wide support** in the Legislative Assembly **should be called upon to form the Government**.
 - If there is a **pre-poll alliance or coalition**, it should be **treated as one political party** and if such coalition obtains a majority, **leader of such coalition shall be called by the Governor to form the Government**.
 - In case **no party or pre-poll coalition has a clear majority**, Governor should select the Chief Minister **in the order preference indicated here**.
 - The group of parties which had **pre-poll alliance commanding the largest number**
 - The largest **single party staking a claim to form the government** with the support of others
 - A **post-electoral coalition with all partners** joining the government
 - A **post-electoral alliance with some parties joining the government** and the **remaining** including independents **supporting the government from outside**

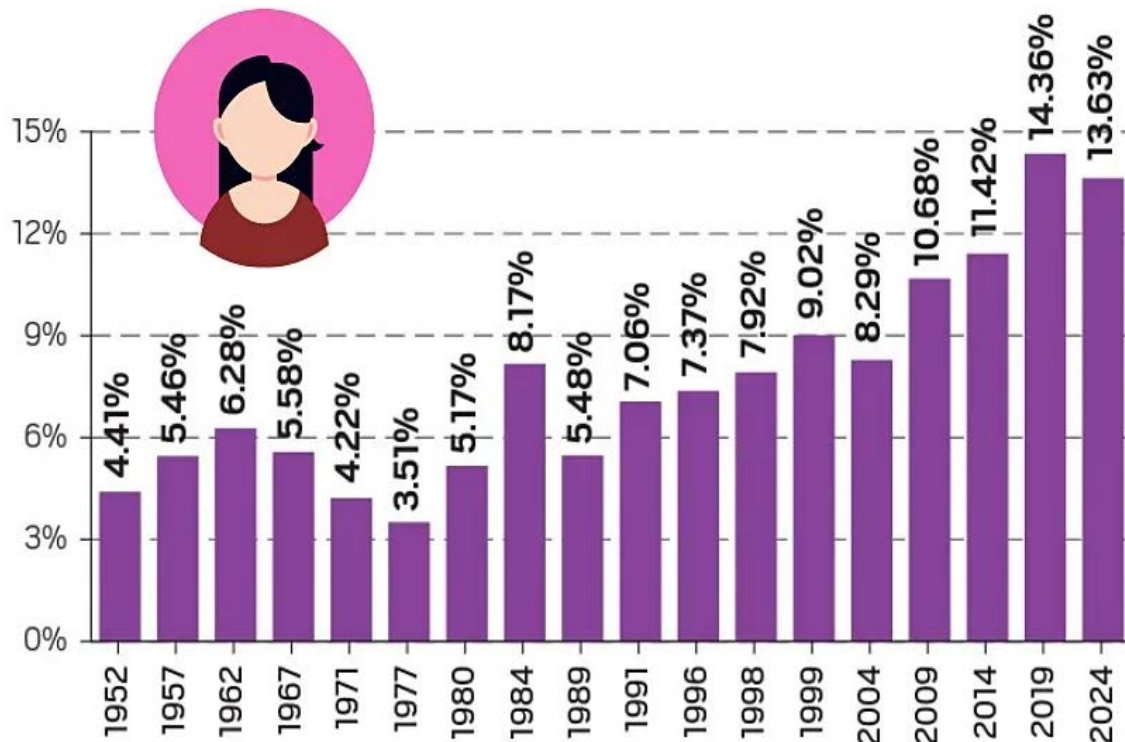
Note:

- The **Sarkaria Commission** had found that problems in Indian federalism came from a **lack of consultation** and dialogue between the Centre and states.
 - It was found that the interstate council worked whenever regional political parties had a major role to play at the national level. This **signifies the role of coalition government** in which regional parties play an important role.

Other Development in 2024 General Election

- **Women:**
 - India has elected **74 women MPs to Lok Sabha** in the **2024 general election** four less than in 2019 and 52 more than in India's first elections in 1952.
 - These **74 women make just 13.63%** of the elected strength of the Lower House compared to **46% of MPs in South Africa**, **35% in the UK**, and **29% in the US**.
 - Indira Gandhi has been India's first and only woman **Prime Minister**.

CHANGE IN WOMEN'S STRENGTH IN LOK SABHA OVER THE YEARS



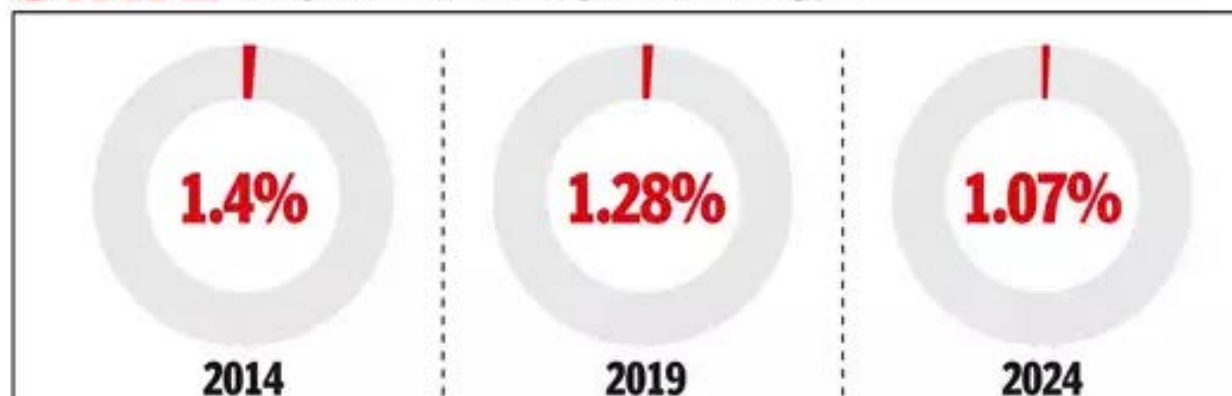
- **NOTA:**
 - In Indore the **None Of The Above (NOTA)** received more than 2 lakh votes.
 - This is the **highest-ever NOTA number for any Lok Sabha constituency ever**.
 - The NOTA option was introduced for the **first time** in the general elections in **2014**.
 - NOTA has **no legal consequence** attached to it as even if the highest number of votes in a seat are polled for NOTA, the second most successful candidate wins.
 - In Haryana, NOTA has been treated as a fictional candidate.

Note:



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STATE NOTA PERCENTAGE



TOP 5 THIS YEAR

	NOTA	Total voters	Percentage
DINDIGUL	22,120	11,43,196	1.93%
SRIPERUMBUDUR	26,450	14,35,243	1.84%
TENKASI	17,165	10,31,961	1.66%
TIRUPPUR	17,737	11,35,998	1.56%
CHENNAI CENTRAL	11,163	7,28,614	1.53%

What are the Merits and Demerits of the Coalition Government?

➤ Merits:

- A coalition government brings together different parties to make decisions that are **balanced and satisfy interests** of various stakeholders.
- India's diverse cultures, languages, and groups make coalition governments **more representative** and reflective of popular opinion than single-party governments.
- Coalition politics **strengthens India's federal system** by being more attentive to regional needs than a single-party government.

➤ Demerits:

- They are **unstable** because **disagreements on policy issues among coalition partners** can cause the government to collapse.
- In a coalition government, the **Prime Minister's authority is restricted** as they must consult with coalition partners before making significant decisions.
- The Steering Committee, like a 'Super-Cabinet' for coalition partners, **diminishes the authority of the cabinet** in governing.

Note:

- **Smaller parties** in a coalition government might have **significant influence** by demanding more than their fair share of power in Parliament.
- Leaders of **regional parties** influence **national decisions** by advocating for issues specific to their regions, exerting pressure on the central government to align with their interests under the threat of coalition withdrawal.
- In a coalition government, the **Council of Ministers** tends to be **larger** due to the interests of all major parties in the coalition.
- In coalition governments, members often avoid taking responsibility for mistakes by blaming each other, thus **avoiding both collective and individual accountability**.

What has been the Role of Coalition Governments in Reforms?

- **Historical Context:**
 - Since 1991, India has experienced coalition governments where the leading party was far from the **majority mark of 272**.
 - Coalition governments have implemented some of the **boldest economic reforms** in India's history.
- **Notable Reforms by Previous Coalition Governments:**
 - P V Narasimha Rao Government (1991-1996):
 - **Economic Liberalisation (LPG Reforms):** Liberalised the economy by removing the **licence-permit raj** and embraced global competition.
 - **WTO Membership:** India became a member of the **World Trade Organisation**, integrating more deeply into the global economy.
 - Deve Gowda Government (June 1996-April 1997):
 - **Dream Budget:** Finance Minister was known for reducing tax rates, and fostering a more favourable economic environment for **taxpayers and businesses**.
 - Atal Bihari Vajpayee Government (March 1998-May 2004):

- **Fiscal Responsibility & Budget Management (FRBM) Act:** Introduced **fiscal discipline** by limiting government borrowing.
- **Disinvestment and Infrastructure:** Pushed for disinvestment of loss-making PSUs and **improved rural infrastructure** through schemes like the **PM Gram Sadak Yojana**.
- **Information Technology Act, 2000:** Laid the groundwork for the booming **e-commerce sector** in India.
- **Manmohan Singh Government (2004-2014):**
 - **Rights-Based Reforms:** Various reformative measures were brought in like the **Right to Education Act**, the **Right to Information Act**, the **Right to Food**, and the **Mahatma Gandhi National Rural Employment Guarantee Act (MG-NREGA)**.
 - **Economic Deregulation:** Deregulated fuel prices, initiated direct benefit transfers, and **worked on the Aadhaar and GST systems**.

Special Marriage Act, 1954

Why in News?

Recently, the **Madhya Pradesh High Court's** decision concerning the marriage of a Muslim man with a Hindu woman, despite it being registered under the **Special Marriage Act (SMA)**, has garnered significant attention.

- The court dismissed the couple's petition seeking protection and assistance in registering their marriage, citing **incompatibility with personal laws**.
- A '**registered marriage**' is a **civil marriage** under the SMA, solemnised in a registrar's office **without religious rituals**.

What is the Recent Judgement of the MP High Court?

- The petitioners had argued that since they planned to marry under the Special Marriage Act, the Islamic Nikah ceremony was unnecessary, and they intended to keep following their own religions without the Hindu petitioner converting to Islam.

Note:



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- However, the High Court observed that as per **Mahomedan law**, the marriage of a Muslim man with a Hindu woman is **not valid**; even if such a marriage is registered under the Special Marriage Act, it would still be **considered irregular**.
- The court emphasised that **personal laws override** the provisions of the Special Marriage Act in this context and dismissed the couple's petition.

What is the Special Marriage Act, 1954?

➤ **About:**

- The Special Marriage Act of 1954 (SMA) governs a **civil marriage** where the state sanctions the marriage rather than the religion.
- Codified religious laws govern issues of personal law such as marriage, divorce, and adoption. These laws, such as the Muslim Marriage Act, 1954, and the Hindu Marriage Act, 1955, require either spouse to convert to the religion of the other before marriage.
- However, the SMA enables marriage between **inter-faith or inter-caste couples** without them giving up their religious identity or resorting to conversion.

➤ **Eligibility:**

- The applicability of the Act extends to the **people of all faiths**, including Hindus, Muslims, Sikhs, Christians, Sikhs, Jains, and Buddhists, across India.
- Some customary restrictions such as parties not being within degrees of a prohibited relationship (as per their personal laws) still apply to couples under SMA.
- The minimum age to get married under the SMA is 21 years for males and 18 years for females.

➤ **Procedure:**

- As per **Section 5 of the Act**, the parties to the marriage are required to give a notice, in writing, to a "Marriage Officer" of the district in which at least one of the parties has resided for at least 30 days immediately preceding the notice.

- Before the marriage is solemnised, the parties and three witnesses are required to sign a declaration form before the **Marriage Officer**.

- Once the declaration is accepted, the parties will be given a "**Certificate of marriage**" which is essentially proof of the marriage or "conclusive evidence of the fact that a marriage under this Act has been solemnised and that all formalities respecting the signatures of witnesses have been complied with".

➤ **"Notice Period" Under the SMA:**

- As per Section 6, a true copy of the notice given by the parties will be kept under the "**Marriage Notice Book**" which will be open for inspection at all reasonable times, without a fee.
- Upon receiving the notice, the marriage officer shall publish it in "some conspicuous place in his office" to invite any objections to the marriage **within 30 days**.

➤ **Concerns Associated with SMA:**

- **Objections to Marriage: Section 7** allows **any person** to object to a marriage **within 30 days** of notice publication if it contravenes **conditions under Section 4**, requiring the **Marriage Officer** to investigate and resolve the objection before solemnising the marriage, unless the objection is withdrawn.
 - This can often be used to **harass consenting couples** and delay or prevent their marriage from taking place.
- **Privacy Concerns:** The requirement for notices to be published can also be seen as a **violation of privacy**, as it can disclose the personal information of the couple and their plans to get married.
 - The **Supreme Court** in an oral observation, said that the mandatory 30-day notice inviting public objections to an intended marriage under the SMA is "**patriarchal**" and makes it "**open for invasion by society**".

Note:

- **Social Stigma:** Inter-caste or inter-religious marriages are still not widely accepted in many parts of India, and couples who choose to get married under the SMA may face social stigma and discrimination from their families and communities.

Note:

- The Constitution of India guarantees the **right to life** and **personal liberty** under **Article 21**, which includes the **right to marry a person of one's choice**. The Supreme Court of India has dealt with several cases involving the marriage of a person of his/her choice. Like:
 - **Lata Singh v. State of U.P., 2006:** The Court held that the right to marry a person of one's choice is a **fundamental right under Article 21**, and that **no one**, including the parents or the community, **can interfere** with or object to such marriages.
 - **Shakti Vahini v. Union of India, 2018:** The Supreme Court held that consensually choosing life partners is a manifestation of their freedom of choice guaranteed **under Articles 19 and 21** of the Constitution.

Personality Rights

Why in News?

The recent dispute between Hollywood Actress and OpenAI highlights the importance of **personality rights** in the context of **Artificial Intelligence (AI)** models.

- The actress accused **OpenAI**, the **artificial intelligence** company behind **ChatGPT**, of using her voice despite having previously declined licensing requests from the company's CEO.
- Earlier, the New York Times (NYT) took legal action against OpenAI and Microsoft, alleging the **unauthorised use of its copyrighted content to train AI models**, including **ChatGPT**.

What are Personality Rights?

➤ About:

- **Personality rights** refer to an individual's **right to protect their personality**, which is a part of the broader right to privacy or property.
- These rights encompass **various aspects of a celebrity's public persona**, including its name, voice, signature, images, distinctive features, mannerisms, poses etc.

➤ Types:

○ Right to Privacy:

- This protects an individual's control over their **personal information and affairs**.
- It prevents **unauthorised disclosure of personal details or intrusion** into one's private life
- It is affirmed by the **Supreme Court** judgement on the **Puttaswamy v Union Of India, 2017 Case**.

○ Right of Publicity:

- This grants individuals control over the **commercial use of their name, image, likeness, or other recognisable characteristics**.
- They can **choose whether and how these aspects of their identity are used** for product endorsements or advertising.

➤ Importance:

- These rights are **important to celebrities** as their names, photographs or even voices can easily be **misused in various advertisements** by different companies to boost their sales.

What is the Status of Personality Rights in India?

- While personality rights are **not explicitly mentioned** in Indian statutes, they are protected through principles related to **privacy** and **property rights**.
- Key legal Provisions include:
 - **Article 21 of the Indian Constitution:**
 - While there is no specific statute solely for personality rights, the **right to privacy** enshrined in **Article 21** of the Constitution offers the closest legal protection in India.

Note:



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○ Copyright Act, 1957:

- The **Copyright Act of 1957**, while not directly addressing personality rights, offers some tangential protection through concepts like “**passing off**” and “**deception**” in **Intellectual Property Rights (IPR)** cases.
- “**Passing off**” occurs when someone misrepresents their goods or services as belonging to someone else.
- This can be **relevant to personality rights if**:
 - Someone **uses a celebrity’s name or image to endorse a product without their permission**, creating the impression that the celebrity is associated with the product.
 - Someone creates a **character or image that is so similar to a well-known personality that it deceives the public** into thinking it’s the real person.
 - **Deception** is when someone uses a **person’s name or likeness in a way that is deceptive or misleading**, it might be possible to argue copyright infringement, especially if the use harms the reputation of the person.
- **Indian Trademarks Act, 1999**:
 - Section 14 restricts the use of individual names and representations.
- **Court Judgments**:
 - Courts have recognized the right of publicity, allowing celebrities to protect their name, likeness, and persona from unauthorised use.
 - In **Krishna Kishore Singh vs Sarla A Saraogi Case, 2021**, the **Supreme Court of India** held that the right to publicity is distinct from the right to privacy.
- The court emphasised that **public figures have a similar right of publicity**. It affirmed that publicity rights are inheritable and devisable.
 - In its **Arun Jaitley vs. Network Solutions Private Limited, 2011**, the Delhi High Court observed that an **individual’s popularity or fame is equally significant on the internet as in real life**.
- The court also stated that a **name, besides being a personal identifier, can acquire its own distinctive significance**.

○ Examples:

- In May 2024, the Delhi **High Court** upheld **Jackie Shroff’s personality and publicity rights**, restraining various e-commerce stores, AI chatbots, and others from using the actor’s name, image, voice, and likeness without his consent.
- Similarly, in **September 2023**, actor **Anil Kapoor** also received legal protection for his image rights.
- The Delhi High Court placed restrictions on 16 entities, prohibiting them from using his name, image, or likeness for commercial purposes.
 - In the **2010 case of D.M. Entertainment Pvt. Ltd. vs. Baby Gift House**, Daler Mehndi’s company emerged victorious in the Delhi High Court. The case **involved shops selling dolls that mimicked Mehndi’s appearance** and sang his songs.
- The court upheld Mehndi’s right to control his public image commercially.

What is the Status of AI Regulation in India?

- **No Specific Regulation for AI in India**:
 - Currently, India **does not** have a specific regulation for **artificial intelligence (AI)**.
 - But various **advisories, guidelines, and IT rules** from time to time have **provided legal supervision for the advancement of AI, Generative AI, and large language models (LLM)** in India.
- **NITI Aayog’s Leadership**:
 - In 2018, **NITI Aayog** released the “**National Strategy for Artificial Intelligence#AIForAll**” outlining responsible development and deployment of AI in healthcare, agriculture, education, and smart infrastructure.
- **Data Protection & Global Collaboration**:
 - The recently enacted **Digital Personal Data Protection Act (2023)** empowers the government to address privacy concerns arising from AI use.
 - Additionally, India’s membership in the **Global Partnership on Artificial Intelligence (GPAI)** fosters collaboration on **responsible AI** development, data governance, and ethical considerations.

Note:



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INTELLECTUAL PROPERTY RIGHTS (IPRs)

IP refers to intangible assets owned/legally protected by an individual/company from outside use or implementation without consent.



NEED FOR IPR

- Encourages Innovation
- Economic growth
- Safeguard rights of creators
- Enhances ease of doing business



RELATED CONVENTIONS/TREATIES (INDIA SIGNATORY TO ALL)

- WIPO Administered (first recognised IPR under):
 - Paris Convention for the Protection of Industrial Property 1883 (**Patents, Industrial Designs**)
 - Berne Convention for the Protection of Literary and Artistic Works 1886 (**Copyrights**)
- WTO - TRIPS Agreement:
 - Ensures adequate standard of protection
 - Argues for incentives for technology transfer to developing countries
- Budapest Treaty 1977:
 - International recognition of the deposit of micro-organisms for the purposes of patent procedure
- Marrakesh VIP Treaty 2016:
 - Facilitate access to published works by visually impaired persons and persons with print disabilities
- IPR also outlined in Article 27 (Universal Declaration of Human Rights)



INDIA AND IPRS - INITIATIVES

- National IPR Policy 2016:
 - Motto:** "Creative India; Innovative India"
 - Compliant with TRIPS Agreement
 - Brings all IPRs to single platform
 - Nodal Dept - Department of Industrial Policy & Promotion (Ministry of Commerce)
- National (IP) Awareness Mission (NIPAM)
- Kalam Program for Intellectual Property Literacy and Awareness Campaign (**KAPILA**)

World Intellectual Property Day: 26th April

Intellectual Property	Protection	Law in India	Duration
Copyright	Expression of Ideas	Copyright Act 1957	Variable
Patent	Inventions- New Processes, Machines, etc.	Indian Patent Act 1970	20 years Generally
Trademarks	Sign to distinguish business goods or services	Trade Marks Act 1999	Can last Indefinitely
Trade Secrets	Confidential Business Information	Protected without Registration	Unlimited time
Geographical Indication (GI)	Sign used on specific geographical origin and possess qualities due to site of origin	Geographical Indications of Goods (R & P) Act, 1999	10 years (Renewable)
Industrial Design	Ornamental or aesthetic aspect of an article	Design Act, 2000	10 years



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Note:



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AMRUT (Atal Mission for Rejuvenation and Urban Transformation) Scheme

Why in News?

Recently, the **AMRUT** scheme has garnered attention due to the **challenges** it is facing in **addressing infrastructure** issues related to water, mobility, and pollution.

What is AMRUT Scheme?

➤ About:

- **Atal Mission for Rejuvenation and Urban Transformation (AMRUT)** was launched on 25th June 2015 in 500 selected cities across the country, covering around **60% of the urban population**.
- The mission targets enhancing **basic infrastructure** and implementing urban reforms for **selected cities**, encompassing water supply, sewerage, drainage, green spaces, non-motorised transport, and capacity building.

➤ **AMRUT 2.0 Scheme:**

- **The scheme** was launched on 1st October 2021, **subsuming AMRUT 1.0** for the period of 5 years i.e. from the financial year (FY) 2021-22 to the FY 2025-26.
- Its objective are **universal coverage of water supply** from 500 cities to about 4,900 statutory towns in the country and coverage of **sewerage/septage management** in 500 cities covered in the first phase of the AMRUT scheme.
- AMRUT 2.0 aims to promote the **circular economy of water** through the development of a **City Water Balance Plan (CWBP)** by recycling/reuse of treated sewage, rejuvenation of water bodies and water conservation.
- The mission also has a **reform agenda** on **ease of living of citizens** through the reduction of non-revenue water, urban planning, strengthening urban finance etc.
- Other components of AMRUT 2.0:
 - **Pey Jal Survekshan** to ascertain **equitable distribution of water**, reuse of wastewater, mapping of water bodies and promote healthy competition among the cities /towns.

- **Technology Sub-Mission for Water** to leverage the latest global technologies in the field of water.
- **Information, Education and Communication (IEC)** campaign to spread awareness among the masses about the conservation of water.

What is the Status of the AMRUT 2.0 Scheme?

➤ Fund Allocation:

- The **total outlay** for AMRUT 2.0 is Rs. 2,99,000 crore for ongoing projects until March 2023.

➤ Impact:

- AMRUT has impacted the **lives of women in many positive ways**. Women can now utilise their time in a more **productive way** due to a decrease in effort in fetching water.
- It has further led to a **decrease in disease** load due to availability of safe drinking water.

➤ Challenges:

- Despite the implementation of the scheme, **around 200,000 people die annually due to inadequate water, sanitation, and hygiene**.
- **India's 2016 disease burden from unsafe water and sanitation is 40 times higher per person than China's** and showing little improvement.
- A **NITI Aayog** report indicates that around 21 major cities will deplete their groundwater, leaving **40% of India's population without access to drinking water by 2030**.
 - Nearly 31% of urban Indian households lack piped water while **67.3% are not connected to a piped sewerage system**.

Other Initiatives

- **Pradhan Mantri Awas Yojana-Urban (PMAY-U)**
- **Climate Smart Cities Assessment Framework 2.0**
- **TULIP-The Urban Learning Internship Program**
- **Smart Cities Mission (SCM)**
- **National Mission for Clean Ganga (NMCG)**
- **River Cities Alliance (RCA)**
- **National Water Policy, 2012** advocates rainwater harvesting and de-salinization in urban and industrial areas, wherever techno-economically feasible, to increase the availability of utilizable water.

Note:

What are the Challenges in the Implementation of AMRUT Scheme?

- **State Project Implementation:** Despite regular fund releases, states like **Bihar and Assam** have **yet to complete projects** or utilise the **PPP model**, resulting in less than 50% execution completion in most states.
- **AMRUT Program Scope:** The scheme entails a **project-focused approach** instead of a holistic perspective.
- **Potential Overlaps and Convergence Challenges:** The overlap between **AMRUT and other schemes**, like **Swachh Bharat mission**, could result funding allocation challenges, and increased workload in addressing specific urban issues.
- **Unaddressed Air Pollution:** **National Clean Air Programme** was launched as deterioration of air quality persisted since **AMRUT 2.0** shifted solely to water and sewerage, leaving the unresolved air quality issues from **AMRUT 1.0**.
- **Non-Inclusive Governance Structure:** The mechanically designed scheme **without organic participation from elected city governments**, making it less inclusive scheme for urban people.

Promotion Not a Fundamental Right

Why in News?

The **Supreme Court** in its recent judgement has reiterated that **promotion is not a fundamental right** for government servants in India, as the **Constitution does not prescribe any criteria for filling promotional posts**.

- This has been left to the discretion of the **legislature and executive**.

Fundamental Rights

- These are the **basic human rights enshrined in our constitution that are guaranteed to all its citizens**. These rights are essential for a person's development and well-being.
- There are **6 Fundamental Rights that are enshrined in Part III (Articles 12-35) of the Constitution**.

What are the Constitutional Provisions Related to Reservation?

- **Article 15 (6):** It enables the State to make **special provisions for the advancement of any economically weaker section** of citizens, including reservations in educational institutions.
 - It states that such reservations can be made in any educational institution, including both aided and unaided private institutions, except minority educational institutions covered under **Article 30 (1)**.
- **Article 16 (4):** Provides that the State can make any provision for the reservation of appointments or **posts in favour of any backward class of citizens** who, in the opinion of the state, are not adequately represented in the services under the State.
- **Article 16 (4A):** Provides that the State can make any provision for **reservation in matters of promotion in favour of the Scheduled Castes and the Scheduled Tribes** if they are not adequately represented in the services under the State.
- **Article 16(4B):** It enabled the unfilled SC/ST quota of a particular year to be carried forward to the next year.
 - Both Articles 16(4A) and 16(4B) were inserted by the 77th **Constitutional Amendment Act**, 1995.
- **Article 16 (6):** It enables the State to make **provisions for reservation in appointments**. These provisions will be **subject to a 10% ceiling**, in addition to the existing reservations.
- **Article 335:** It recognises that **special measures need** to be adopted for considering the **claims of SCs and STs to services and posts**, in order to bring them at par.
- **82nd Constitutional Amendment Act, 2000:** It inserted a condition at the end of **Article 335 that enabled the state to make any provision in favour of the members of the SC/STs for relaxation** in qualifying marks in any examination.

Note:



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What are the Pros and Cons of Reservation in Promotion?

Pros of Reservation	Cons of Reservation
Social Justice & Inclusion: Promotes representation of historically disadvantaged groups (SC, ST, OBC) in higher positions of services.	Merit vs Reservation: Raises concerns about overlooking the most qualified candidate for the promotion.
Breaks Caste & Social Barriers: Creates a more diverse and inclusive leadership structure, fostering better understanding of societal issues.	Demotivation & Frustration: Can lead to demotivation and frustration among general category candidates who feel passed over.
Empowerment & Upliftment: Offers marginalised communities opportunities to advance and compete at higher levels.	Creamy Layer Issue: The “creamy layer” within reserved categories might still benefit, negating the upliftment purpose.
Positive Discrimination: Addresses past discrimination by offering a helping hand to overcome ingrained social and economic barriers.	Seniority & Efficiency: Reservation in promotions can disrupt seniority-based promotion systems, impacting overall efficiency.

What are the Reservation Related Developments in India?**➤ Indra Sawhney Judgment, 1992:**

- In this nine-judge bench judgement held that **Article 16(4)** of the Constitution, which allows **reservation in appointments, does not extend to promotions**.
- Court upheld the **constitutionality of the 27% reservation but put a ceiling of 50%** unless exceptional circumstances warranting the breach, so that the constitutionally guaranteed **right to equality** under **Article 14** would remain secured.
- Carry forward rule is valid but it is subject to 50%. There **should be no reservation in the promotions**.
- The court clarified that **Article 16(4) is not a separate rule** that overrides Article 16(1). The article 16(1) is a fundamental right, **article 16(4) is an enabling provision**.
 - **Article 16(1):** It states that there shall be **equality of opportunity for all citizens in matters** relating to employment or appointment to any office under the State.
- Further, the Court directed to **exclude Creamy Layer** (economically well-off) from **Other Backward Classes (OBCs)** from getting reservation benefits.
 - However, it **specifically excluded SCs and STs** from this concept.

➤ 77th Amendment Act (1995):

- This act empowered states to **maintain existing reservation policies** for promoting SC/ST employees.
- It introduced a new article, **16(4A)**, **allowing states to grant reservations in promotions** as long as they believe SC/STs are **underrepresented**.

➤ 85th Amendment Act (2001):

- It introduced the concept of **consequential seniority for SC/ST candidates promoted through reservations**. This applied retroactively to June 1995.
 - **“Consequential seniority”** refers to the **concept of granting seniority to government servants belonging to Scheduled Castes (SCs) and Scheduled Tribes (STs)** in cases of promotion through reservation rules.
- This provision was brought with retrospective effect from June 1995.

➤ M. Nagaraj Judgment, 2006:

- This judgement **partially overturned Indra Sawhney judgement**.
- It introduced a conditional extension of the **“creamy layer” concept to SC/ST communities** seeking promotions in government jobs.

Note:



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- This concept was previously applied **only to Other Backward Classes (OBCs)**.
- Judgement laid down **3 conditions** to allow states to provide reservations in promotions for **SCs/STs**, as:
 - **Inadequacy of Representation:** The state must demonstrate SCs/STs are inadequately represented in promotions.
 - **Creamy Layer Exclusion:** Reservation benefits should not extend to the “creamy layer” within SCs/STs.
 - **Maintain Efficiency:** Reservation should **not** affect overall administrative efficiency.
- **Jarnail Singh vs Union of India, 2018:**
 - In this case, the Supreme Court (SC) reversed its stance on data collection.
 - **States No Longer Need Quantifiable Data:** The SC ruled that states no longer needed to **collect quantifiable data to prove the backwardness of the SC/ST** community when implementing reservation quotas for promotions.
 - It allowed the government to implement “**accelerated promotion with consequential seniority**” for SC/ST members more easily.

➤ **103rd Constitution (Amendment) Act, 2019:**

- It provides for reservation to **Economically Weaker Sections (EWS)** in jobs in central government jobs as well as government educational institutions.
- It was introduced by amending **Articles 15 and 16** and inserted **Article 15 (6)** and **Article 16 (6)**.
- It was enacted to promote the welfare of the poor not covered by the 50% reservation policy for **Scheduled Castes (SCs)**, **Scheduled Tribes (STs)** and **Socially and Educationally Backward Classes (SEBC)**.
- It enables both the **Centre** and the **States** to provide reservations to the EWS of society.

➤ **Janhit Abhiyan v. Union of India, 2022**

- It challenged the **103rd Constitutional Amendment** that introduced a **10% reservation for Economically Weaker Sections (EWS)** in educational institutions and government jobs.
 - In a 3-2 verdict, the **Court upheld** the amendment.
- It allowed the government to provide reservation benefits based on economic standing, alongside existing reservations for disadvantaged social groups.

Note:

Economic Scenario

Highlights

- Global Economic Prospects Report 2024
- Sticky Inflation and RBI's Monetary Policy
- Disbursal of Duty Drawback by PFMS 45
- Coal and Thermal Power Plants in India
- Fintechs Leading India's Start-up Ecosystem
- National Health Claim Exchange
- Authorised Economic Operators Programme
- Aspirational Goals of RBI
- UN Report on Global Debt Crisis
- Household Consumption Expenditure Survey 2022-23
- Financing of Large Infrastructure Projects
- Look-Out Circulars to Wilful Defaulters
- RBI's Repatriation of Gold from UK to India
- Open Network for Digital Commerce
- India to take Australia to WTO Arbitration
- Coal Gasification
- Women in Corporates Roles in India
- Increased Recovery Under IBC
- India to Import Wheat After 6 Years
- WIPO Treaty Protecting Genetic Resources and Traditional Knowledge

Global Economic Prospects Report 2024

Why in News?

According to the recently released **Global Economic Prospects Report** by the **World Bank**, India is predicted to remain the **fastest-growing major economy globally**, with a projected GDP growth rate of 6.6% for FY25.

What are the Key Findings of the Report?

➤ Global:

- **Growth Outlook:** According to the report, for the first time in three years, the global economy is showing signs of stabilisation in 2024.
 - Globally, GDP growth is now anticipated to be 2.6 % for 2024-25. For FY26 and FY27, global growth is expected to be 2.7% amid modest growth in **trade and investment**.
- **Projection for Global Inflation:** The World Bank forecasts a slower moderation of **global inflation**, averaging **3.5%** this year.
 - Central banks in advanced and emerging **market economies** are expected to be cautious about **easing monetary policy** due to **ongoing inflationary pressures**.
- **Challenges to Global Growth:** The global outlook remains subdued due to factors such as **geopolitical tensions**, trade fragmentation, higher interest rates, and **climate-related disasters**, despite some near-term improvements.

- It also emphasises the **need for global cooperation** to safeguard trade, support green and digital transitions, provide debt relief, and enhance **food security**.

➤ South Asian Region (SAR):

- **Growth Outlook:** In the South Asia region, **GDP growth** is projected to decrease from 6.6 % in 2023 to **6.2 % in 2024**, largely due to a slowdown in India from its high growth rates in recent years.
 - Other economies such as **Bangladesh**, are expected to maintain robust growth, though at a slower pace.
 - **Pakistan and Sri Lanka** are expected to see **strengthened economic activities**.
- **Poverty Reduction:** The report noted that **per capita income growth** in the **South Asian region** is expected to decrease from 5.6% in 2023 to **5.1% in 2024-25**, then slightly rise to 5.2% in 2026.
 - This slower pace is due to weaker-than-expected growth in **private consumption** and fiscal adjustments that may reduce household income.

➤ India:

- **India's Economic Trajectory:** India, the **largest economy in South Asia**, has significantly contributed to regional growth.
 - The country's growth rate for FY24 is estimated at 8.2 %, driven by its **industrial and services sectors**, which have offset a **slowdown in agricultural production** caused by monsoon disruptions.

Note:

- **Fiscal and Trade Balances:** In India, the **fiscal deficit relative to GDP** is projected to decrease due to increased revenues from a broadened tax base.
 - Trade deficits are narrowing, particularly in India, contributing to overall **economic stability** in the **South Asian region**.

India's GDP Forecast by MOSPI and RBI

- According to the **Ministry of Statistics and Programme Implementation (MOSPI)** data, the **GDP growth provisionally stands at 8.2%** for the Financial Year 2023-24, as
 - compared to the growth rate of 7.6% in FY23.
 - The Reserve Bank of India raised **India's FY25 real GDP forecast to 7.20%**.

World Bank

- **About:**
 - It was created in 1944, as the **International Bank for Reconstruction and Development (IBRD)** along with the IMF. The IBRD later became the World Bank.
 - The World Bank Group is a unique **global partnership of five institutions** working for sustainable solutions that **reduce poverty and build shared prosperity** in developing countries.
 - The World Bank is one of the **United Nations'** specialised agencies.
- **Members:**
 - It has **189 member** countries. India is also a member country.
- **Major Reports:**
 - **Human Capital Index.**
 - **World Development Report.**
 - **Global Economic Prospects Report** (usually published twice a year)
- **Its Five Development Institutions:**
 - International Bank for Reconstruction and Development (IBRD)
 - International Development Association (IDA)
 - International Finance Corporation (IFC).
 - Multilateral Guarantee Agency (MIGA)
 - International Centre for the Settlement of Investment Disputes (ICSID)
 - India is not a member of ICSID.

What are the Associated Risks to the Global Economy Highlighted by the Report?

- **Proliferation of Armed Conflicts and Geopolitical Tensions:** The report highlights an **increase in the number of armed conflicts** and heightened tensions between countries.
 - These can lead to loss of life, destruction of infrastructure, and economic instability. Also, ongoing **conflicts in the Middle East** could disrupt oil supply and push up prices.
- **Further Trade Fragmentation and Trade Policy Uncertainty:** The report highlighted a situation where countries become more isolated economically, imposing **trade barriers** like tariffs and quotas on each other.
 - The trade war between the **US and China** in recent years has disrupted **supply chains** and led to higher prices for consumers in both countries.
- **Higher Interest Rates and Weaker Risk Appetite:** Persistently **high inflation** erodes the **purchasing power of consumers** and discourages spending. Higher interest rates, while necessary to control inflation, can lead to slower economic growth and job losses.
 - When investors are **uncertain about the future economic outlook**, they become less willing to take risks. This can lead to a decline in investments and stock market volatility.
- **Weaker-than-expected Growth in China:** China is the **world's second-largest economy**, so a slowdown there has significant global impacts. This could be due to factors like a **real estate market crisis or internal political instability**.
 - A sharp slowdown in China **reduces demand for raw materials** and other goods exported by other countries. This can lead to job losses and economic hardship in countries that rely heavily on trade with China.
- **More Frequent Natural Disasters with Worsening Impacts:** **Climate change** is increasing the frequency and intensity of natural disasters like **floods, droughts, and hurricanes all across the world**.
 - These disasters cause **widespread damage** to infrastructure, homes, and businesses.
 - They disrupt agricultural production, leading to food shortages and price hikes. Rebuilding after disasters puts a strain on government finances.

Note:



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What are the Key Policy Challenges in the Emerging Market and Developing Economy?

- **Elevated Debt:** Many emerging market and developing economy (EMDE) struggle with **high debt burdens**, **weak growth prospects**, and downside risks.
 - **International cooperation** is crucial to address debt crises and prevent economic instability. The G20 Common Framework for debt restructuring is viewed as inadequate and needs improvement.
- **Climate Change:** Current **global climate commitments** fall short of achieving **net-zero emissions** by 2050. EMDEs need to invest **1-10% of GDP** annually to achieve **low-carbon development goals**.
 - Mobilising public resources, carbon pricing, and attracting private investment are crucial for climate action.
- **Digital Divide:** About **one-third of the global population** lacks internet access, concentrated in EMDEs.
 - Governments can play a role by catalysing **private investment** in digital infrastructure.
- **Trade Fragmentation:** Trade fragmentation due to rising geopolitical tensions and protectionist measures hurts EMDEs.
 - Restoring the **rules-based multilateral trade system** and expanding trade agreements are crucial.

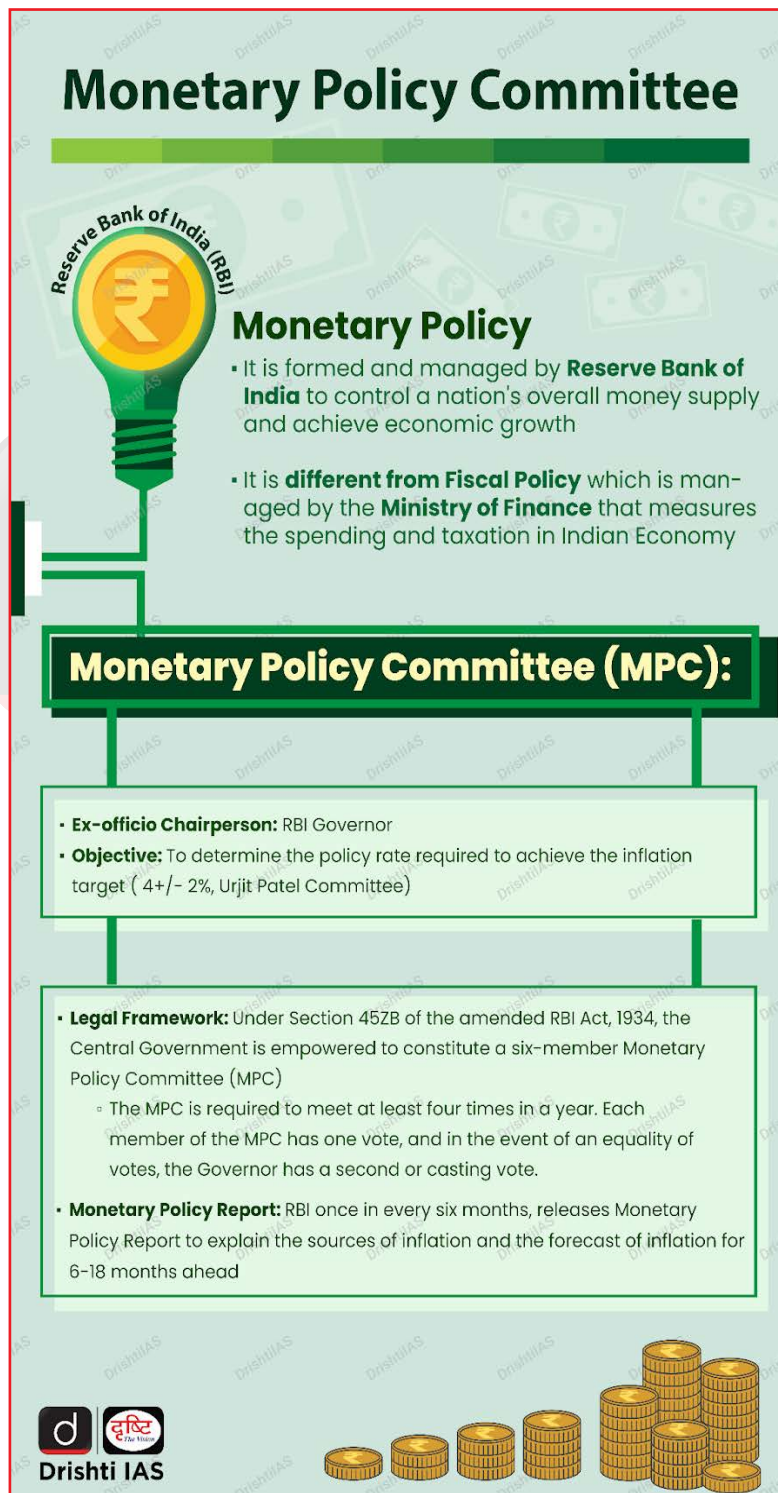
Sticky Inflation and RBI's Monetary Policy

Why in News?

The **Reserve Bank of India (RBI)** in its latest bi-monthly monetary policy review opted to **maintain the repo rate unchanged** for the 8th consecutive time, amid discussions on **inflation targeting** and **economic growth**.

Why is the RBI not Cutting Interest Rates?

- **Persistent Inflation:** Despite **high repo rates** inflation hasn't hit the **4% mark** since **early 2021**. The decline has been gradual, with inflation hovering around 5% in the first four months of 2024. The RBI is concerned about **"sticky" inflation trends**.



Note:

- **Durable Inflation Control:** The RBI aims for sustained control, not a temporary dip below 4%. RBI Governor emphasises commitment to achieving the 4% target “on a durable basis”.
- **Strong GDP Growth:** India’s **Gross Domestic Product (GDP)** growth has been surprisingly strong, exceeding 7% for four consecutive years. The RBI recently revised the current financial year’s GDP forecast upwards to 7.2%. In this scenario, repo rates likely aren’t hindering economic growth.
- **Upcoming Union Budget:** The RBI might be considering the upcoming **Union budget**, which could impact inflation dynamics and monetary strategies.

What is RBI’s Inflation Targeting?

- **About:** RBI’s Inflation Targeting is a monetary policy framework implemented to maintain price stability in the economy.
 - The RBI targets a specific inflation rate, **currently set at 4% per year**. This target is a long-term average and not a rigid ceiling or floor.
 - The target is accompanied by a tolerance **band of +/- 2 percentage points**. This means the RBI considers inflation acceptable as long as it falls within the range of 2% to 6%.
- **Goal:** The main aim of inflation targeting is to **achieve and maintain price stability, promoting economic growth**, protecting the **value of the rupee**, and ensuring fair resource allocation in the economy.
- **Mechanism:** The RBI uses monetary policy tools, primarily the **repo rate**, to influence inflation.
 - The repo rate is the interest rate at which the RBI lends money to commercial banks.
 - By raising the repo rate, the **RBI makes borrowing more expensive, which discourages spending and investment**, ultimately slowing down inflation.
 - Conversely, lowering the repo rate encourages borrowing and spending, boosting economic activity but potentially increasing inflationary pressures.
- **Limitations:** Inflation targeting **may not effectively address supply-side shocks** or structural constraints like inadequate infrastructure, thus leading to higher inflation.

- It can also cause **exchange rate volatility in open economies** and have social and economic impacts on vulnerable populations.
- Additionally, accurate and timely data on inflation and other macroeconomic variables may not be available in all countries, including India.

What is Sticky Inflation?

- **About:** Sticky inflation refers to a persistent economic phenomenon where prices for **goods and services do not adjust quickly to changes in supply and demand dynamics**.
 - Generally, prices for goods or services that don’t appear to be coming down anytime soon are considered sticky.
 - This “stickiness” makes it difficult for inflation to return to a desired level, such as the **RBI’s target of 4% in India**.
- **Features of Sticky Inflation:** Prices remain high despite fluctuations in supply and demand. Certain sectors like medical services, education, and housing are particularly prone to sticky inflation.
 - **Erodes purchasing power and affordability**, especially in essential goods and services.
 - Poses difficulties for central banks in controlling inflation without causing adverse economic impacts.
- **Causes of Sticky Inflation:** Prices may not respond immediately to changes in market conditions due to factors like rigid pricing mechanisms.
 - Rising wages can lead to higher costs for businesses, contributing to inflation stickiness.
 - Unique characteristics of sectors such as healthcare and housing contribute to persistent inflationary pressures.
- **Managing Sticky Inflation:** Central banks often raise interest rates to curb inflation, though balancing rate adjustments is critical to avoiding economic downturns.
 - Targeted policies addressing specific sectors experiencing inflation stickiness can help mitigate its impact.
 - Regular assessment and adjustment of economic forecasts and policies are crucial to managing sticky inflation effectively.

Note:



QUANTITATIVE INSTRUMENTS OF MONETARY POLICY



LIQUIDITY ADJUSTMENT FACILITY (LAF)

- Repo Rate (RR): The rate at which the RBI lends money to commercial banks. Here, RBI purchases securities.
- Reverse Repo Rate: The rate at which the RBI borrows money from commercial banks within the country. Opposite of Repo.
- If RBI wants to signal tight monetary policy, it will increase the repo rate; banks will increase their lending rates.



BANK RATE

- It is a long-term rate (RR is short-term) at which the central bank lends money to other banks.
- Increase in Bank rate will increase the interest rates on the Loans / Deposits and vice versa.



STATUTORY LIQUIDITY RATIO (SLR)

- SLR is the minimum percentage of deposits that a commercial bank has to maintain in the form of liquid cash, gold or other securities.
- If RBI wants to tighten the monetary policy, it will raise the SLR.



CASH RESERVE RATIO (CRR)

- Banks are required to hold a certain proportion of their deposits in the form of cash with RBI.
- With the increase in CRR, banks increase the lending rates.



OPEN MARKET OPERATIONS (OMOS)

- These include purchase/sale of government securities by the Central Bank for injection/absorption of durable liquidity in the banking system.



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Note:

Disbursal of Duty Drawback by PFMS

Recently, the **Central Board of Indirect Taxes and Customs (CBIC)** has decided to **electronically transfer duty drawback funds** via the **Public Finance Management System (PFMS)**, directly to exporters' bank accounts to ensure transparency and efficiency.

What is Duty Drawback ?

- Duty drawback under **section 75 of the Customs Act, 1962** rebates customs duty chargeable on **any imported materials** or excisable materials used in the manufacture of **export goods**.
- This system **helps exporters mitigate some of the costs incurred during the export** process, particularly within the supply or value chain.

Public Financial Management System (PFMS)

➤ About:

- It is a **web-based online software** application developed and implemented by the **Office of the Controller General of Accounts (CGA), Ministry of Finance**. Initially launched in **2009** as a **Central Sector Scheme** by the **Planning Commission (NITI Aayog)**.

➤ The objective of PFMS:

- The overarching goal of PFMS is to facilitate a robust Public Financial Management System by establishing **an efficient fund flow system and a payment-cum-accounting network**.
- Currently, the PFMS covers **Central Sector and Centrally Sponsored Schemes**, as well as other expenditures, including **Finance Commission** grants.
- PFMS provides stakeholders with a **real-time, reliable, and meaningful management information** system and an effective decision support system, aligning with the **Digital India initiative**.
- The system is integrated with the **core banking system** in the country, enabling seamless financial transactions and facilitating transparency and accountability in the management of public funds.

What is the Significance of Electronic Disbursal of Duty Drawbacks?

- **Streamlining the Process:** Electronically transfer of **duty drawback funds** has been introduced to streamline the process, reduce processing time, eliminate manual intervention, and enhance transparency in customs operations.
- **Less Paperwork:** It eliminates the need for physical documentation and manual processing, reducing the time and effort required to claim the refund.
- **Promotes Transparency:** The electronic system enhances **transparency** by **providing exporters with real-time visibility** into their claims' status and enabling seamless refund process tracking.
- **Trade Facilitation:** This initiative aligns with CBIC's commitment to paperless customs and trade facilitation, building upon its implementation of the **World Trade Organization's Trade Facilitation Agreement (TFA)**.

Coal and Thermal Power Plants in India

Why in News?

Recently, According to the data on **NITI Aayog's energy dashboard**, India's **coal-fired thermal capacity** grew to 218 GW in FY24 from 205 GW in FY20, a 6% growth.

- A recent report alleges that in 2014, the a company **misrepresented low-grade Indonesian coal** as high-quality, and sold it to a public power generation company in Tamil Nadu.

What is the Current Status of India's Power Sector?

- **Background:** The power market is experiencing a **growing demand-supply mismatch** due to a slowdown in new **coal-fired power plant capacity** and a **lack of effective storage options** for **renewable energy**.
 - This has put pressure on the country's grid managers, especially with increasing power demand during **soaring temperatures**.
- **Thermal Power Plants:** The share of **coal-fired power generation** has risen to **75% in FY2023-24** from **71% in FY2019-20**.

Note:



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- Generation by coal-fired thermal plants also increased by 34% from 960 billion units (BU) to 1,290 BU, and the average plant load factor (PLF) rose from 53% to 68%.
- In the past five years, **thermal capacity addition** has fallen short of the government's targets by an average of 54% annually with the **private sector** only contributing 7% of new capacity.
 - The private sector has contributed **only 1.7 GW**, or **7% of the total thermal capacity** added in the **last five years**.
- There has been a push for **investments in new thermal power projects, including from the private sector**, with a target of adding 80 GW of new thermal power capacity by 2032.
- **Renewable Energy:** India's **solar capacity** has seen a significant surge, **doubling to 81 GW**. **Wind power** capacity has also witnessed impressive growth, **increasing by 22% to reach 46 GW**.
- Setting up a new **coal plant (Rs 8.34 crore per MW)** is considerably **more expensive** compared to setting up a **solar power plant (per MW cost much lower)**.

INDIA'S POWER MIX

Power source	Share in power generation		Capacity utilisation	
	FY20	FY24	FY20	FY24
Coal-fired	71%	75%	53%	68%
Solar	4%	7%	17%	16%
Wind	5%	5%	20%	21%
Hydro	12%	8%	39%	33%
Others	8%	5%	-	-

Source: India Climate & Energy Dashboard, NITI Aayog

What Grade of Coal does India Produce?

- **High Grade' vs 'Low Grade' Coal:** The **Gross Calorific Value (GCV)** determines the **gradation of coal** based on the amount of heat or energy that can be generated from burning it.
 - Coal is a **mixture of carbon, ash, moisture, and other impurities**. The higher the available carbon in a unit of coal, the better its quality or 'grade.'
 - The most important **uses of coal** are in thermal power plants and in powering blast furnaces for **steel production**, each requiring different kinds of coal.
 - **Coking coal** is needed for **producing coke**, an essential component of steel making, and **requires minimal ash content**.
 - **Non-coking coal** can still be used to generate useful **heat for running boilers and turbines** despite its ash content.

Note:

- **Characteristics of Indian coal:** Indian coal historically has **high ash content** and **low calorific value** compared to imported coal.
 - Domestic thermal coal has an average GCV of **3,500-4,000 kcal/kg**, while imported thermal coals have over **6,000 kcal/kg**.
 - Also, Indian coals also have **over 40% ash content**, while imported coal has **less than 10%**.
 - **Burning high-ash coal** results in higher particulate matter, nitrogen, and sulphur dioxide.
 - The **Central Electricity Authority (CEA)** recommended in 2012 that about **10-15% blending of imported coal can be safely used** in Indian power boilers designed for low-quality Indian coal.
- **Clean Coal:** Clean coal is achieved by **increasing the carbon content** and **reducing ash content**.
 - This can be done through **washing plants** on coal plant sites, which use blowers or a 'bath' to remove ash.
 - Another method is **coal gasification**, which converts coal into gas using steam and hot pressurised air or oxygen.
 - The **resulting syngas** are then cleaned and burned in a gas turbine to generate electricity, increasing the efficiency of coal used.
- **Future of Coal in India:** In **2023-24**, India produced **997 million tonnes of coal**, showing an **11% increase** from the previous year. Most of the production came from the **state-owned Coal India Ltd** and its subsidiaries.
 - Despite commitments to move away from fossil fuels, coal remains the main source of energy in India.

What are the Technologies to Reduce Emissions from Thermal Power Plants?

- **Flue Gas Desulfurization (FGD):** FGD systems **scrub flue gas (exhaust gas)** with methods like wet or dry scrubbing process that absorbs SO₂, removing it from the emissions before they are released into the atmosphere.
 - This technology targets **sulfur dioxide (SO₂)**, a major air pollutant linked to respiratory problems.
- **Selective Catalytic Reduction (SCR):** SCR systems tackle **nitrogen oxides (NO_x)**, another group of pollutants contributing to smog and acid rain.
 - During the SCR process, hot flue gas passes through a catalyst coated with precious metals like **platinum**. This triggers a chemical reaction that converts harmful NO_x into **harmless nitrogen gas and water vapor**.

- **Electrostatic Precipitators (ESPs):** It targets **particulate matter (PM)**, tiny particles linked to respiratory illnesses.
 - ESPs use **high voltage electricity** to charge particles in the flue gas. These charged particles then stick to collector plates, which are periodically cleaned.
- **Fabric Filters (Baghouses):** Similar to ESPs, baghouses capture particulate matter. They may be used in conjunction with ESPs or as a standalone technology.
 - Flue gas passes through a **fabric filter bag**, trapping PM on the fabric's surface. The bags are periodically shaken to release the collected particles.
- **Coal Washing:** This **pre-combustion technology** aims to reduce emissions by improving coal quality.
 - Coal is washed with water to **remove impurities like ash and sulfur**, which can contribute to air pollution when burned.
- **Co-firing with Biomass:** This approach involves **co-burning biomass (organic matter)** along with coal.
 - The revised **Biomass Policy of 2023**, mandates **5% biomass co-firing** in thermal power plants from FY 2024-25.

What are the Existing Challenges and Government Initiatives in Thermal Power Sector?

- **Challenges:**
 - **Demand-Supply Mismatch:** Rising electricity demand is outpacing the addition of new **capacity of thermal power plant**, particularly from renewable sources due to their unreliable nature.
 - **Reliance on Coal:** Coal remains the **dominant source** of power generation, despite its environmental impact and rising costs.
 - **Limited Private Sector Participation:** The **private sector is hesitant to invest** in new coal plants due to financial and environmental concerns.
 - **High-Ash Indian Coal:** Domestic coal has **lower calorific value** and higher ash content compared to imported coal, leading to higher emissions.
 - **Technological Limitations:** Large-scale battery storage solutions are still under developed which are crucial for integrating renewables into the grid.
- **Government Initiatives:**
 - **UDAY (Ujwal Discom Assurance Yojana)**
 - **PM-KUSUM**
 - **Green Energy Corridor (GEC)**
 - **National Smart Grid Mission (NSGM) and Smart Meter National Programme**
 - **International Solar Alliance (ISA)**
 - **Sovereign Green Bonds** for Solar Sector

Note:



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Fintechs Leading India's Start-up Ecosystem

Why in News?

Fintech Companies continue to be an attractive option for entrepreneurs in the **Start-Up** ecosystem.

- As per the data from **Tracxn** (a company that provides market intelligence data for private companies), fintechs have received over 15% of the total **equity** funding into start-ups in FY24 so far.

What are Fintechs?

- **About:**
 - Fintech, a combination of the terms “**financial**” and “**technology**,” refers to businesses that **use technology to enhance or automate financial services** and processes.
- **Types:**
 - **Digital Payments:** These offer digital payment solutions, such as mobile wallets, online payment gateways, and **peer-to-peer (P2P) payments**. Ex-Phonepe, Paytm etc.
 - **Alternative Lending:** They are also known as **marketplace lending** or **Peer-2-Peer (P2P lending)**, occurring on online platforms that connect borrowers overlooked by traditional lenders with investors looking for high-yield investments. Ex: Lending Club, Prosper, PayPal Working Capital, GoFundMe etc.
 - **Insurance:** These offer digital insurance solutions, such as health insurance, life insurance, and car insurance. Ex-Digit Insurance, Policybazaar etc.
 - **InvestmentTech:** These offer digital investment solutions, such as stock trading, mutual funds, and **cryptocurrency** trading. Ex-Zerodha, Groww etc.
 - **Others types include** Crop loan risk management (Eg: Satsure), online fraud detection(e.g. Tutelar), debt management (Debt Nirvana) and Banking-as-a-Service Platform (e.g., FidPay)

What is the State of Fintech Industry in India?

- **FinTech Ecosystem:** India remains a global leader in fintech, 3rd highest globally after the US and UK, having a combined valuation of over USD 155 billion.
 - Nearly a third of the **soonicorn universe** (soon to be unicorns) comprises fintechs.
 - As per **Startup India**, an initiative by the Ministry of Commerce and Industry, the market size of India's fintech industry is expected to reach USD 150 billion by 2025.

- **High Adoption Rate:** As per the **Economic Survey 2022-23**, fintech companies in India witnessed an **87%** adoption rate across varied user bases as opposed to the global average rate of 64%.
- **Driving Digital Payments:** Fintech companies in India account for 70% of digital payment transactions, marking a two fold rise in their share during FY22 compared to FY19.
- **Financial Inclusion:** More than 10 million people and small businesses gained access to savings accounts, insurance, investment options, and credit facilities through mobile-based services and digital platforms.
- **Democratising Lending Process:** Peer-to-peer lending platforms are democratising lending, providing individuals and small businesses with access to funds without the need for traditional financial institutions.
- **Rise in Public Investment:** Investment platforms and robo-advisors are making investments in stocks, mutual funds, and other financial instruments more accessible.

What are the Government Initiatives Driving the Growth of FinTech?

- **Digital Identity Infrastructure (JAM Trinity):**
 - **Jan Dhan Yojana (PMJDY):** This world's largest financial inclusion program has provided bank accounts to over 450 million people creating a massive base for FinTech companies to offer new financial products and services like remittances, credit, insurance, and pensions directly through these accounts.
 - **Aadhaar:** According to a **World Bank** study, Aadhaar has facilitated bank account opening for over 570 million previously unbanked adults in India.
 - **Aadhaar Enabled Payment System (AePS)** has allowed Aadhaar card holders to conduct financial transactions using their Aadhaar number and biometric authentication (fingerprint or iris scan).
 - **Unified Payments Interface: UPI** transaction volume has surged by 49% year-on-year.
 - More banks are embracing UPI, with the number of integrated banks increasing from 414 in April 2023 to 581 in April 2024. This wider availability is fueling the overall growth in UPI transactions.
- **Regulatory Support and Innovation:**
 - In 2017, the RBI granted recognition to **Peer-to-Peer (P2P) lending** platforms as **Non-Banking Financial Companies (NBFCs)** providing legitimacy and facilitated growth within the P2P lending segment, **expanding credit access** for individuals and small businesses.

Note:

➤ **Regulatory Sandbox (RS) and Fintech Repository:**

- RS is an infrastructure that helps Fintech players to **live test their products or solutions, before getting the necessary regulatory approvals** for a mass launch, saving start-ups time and cost. The RBI established a **Regulatory Sandbox in 2017**.
- Additionally, the **Fintech Repository** launched in 2021 serves as a centralised information hub for fintech companies, promoting transparency and streamlining regulatory compliance.

➤ **Self-Regulatory Organisations (SRO) Framework:**

- To promote responsible growth, and recognizing the need for industry-led self-regulation, the RBI introduced a framework for **Self-Regulatory Organizations (SROs)** in the FinTech sector in **2023**.
- These SROs act like **guardians** within the industry, **establishing and enforcing a code of conduct, grievance redressal mechanisms, and consumer protection standards**.



Note:

What are Potential Growth Areas for the Fintech Sector in India?

- **SME Lending:** **Small and medium enterprises (SMEs)** often face challenges accessing traditional credit channels.
 - Fintech solutions leveraging alternative data sources and AI-powered credit scoring can streamline lending processes and make credit more accessible for SMEs.
- **Supply Chain Financing:** Traditional supply chain financing methods are often cumbersome and lack transparency.
 - **Blockchain**-based fintech solutions can streamline payments, improve traceability, and enhance working capital management for businesses within the supply chain.
- **AgriTech:** Solutions for crop loan risk management, micro-insurance for farmers, and digital marketplaces for agricultural products can provide much-needed support and empower rural communities.
- **Regulatory Landscape and Long-Term Stability:** The RBI's framework for managing "user harm" within the fintech sector, while potentially creating a cautious investment climate in the short term, is a positive development in the long run.
 - Clear and well-defined regulations will enhance consumer protection and build trust in the ecosystem, attracting long-term investors and fostering sustainable growth.

Steering Committee Recommendations Related to Fintech

- **About:**
 - The **Steering Committee, chaired by Subhash Chandra Garg**, on Fintech Related Issues submitted its report to the Finance Minister in **2019**.
 - The Committee was constituted with the objective of making Fintech related regulations more flexible and enhancing entrepreneurship.
- **Key Observations regarding Fintechs:**
 - Banking entities have an advantage in accessing crucial payment infrastructure like Aadhaar-enabled payment systems. This hinders a **level playing field for non-banking Fintech companies**.
 - The **lack of a regulatory sandbox**, a controlled environment for testing innovative products, stifles experimentation and slows growth.
 - The rise of Fintech introduces **new data privacy and security risks**. Existing regulations and the **Data Protection Act** might need adjustments to foster a secure and growth-oriented environment.

➤ Recommendations:

- **Expanding Fintech Services:** Encourage the use of Fintech for bolstering cybersecurity, fraud control, and money laundering prevention. Explore virtual banking and dematerialisation of financial instruments (converting physical certificates to electronic form).
- **Policy Actions for Promotion:**
 - Government and public sector institutions should leverage **AI for back-end automation**.
 - Collaborate with MSMEs to **implement blockchain solutions** in trade finance.
- **Financial Inclusion:**
 - Develop a **credit registry** for farmers using **AI/ML** based credit scoring to enable easier loan access.
 - Utilise Fintech for managing claims and premium payments in agricultural crop insurance schemes.
 - Create a common digital platform for small savings products, micro-pension schemes, and government pensions, facilitating digital subscriptions.
- Collaboration and Coordination:
 - Form an **advisory council** on Fintech with industry experts for each financial sector regulator.
 - Establish an **inter-regulatory technical group** for better coordination between regulatory bodies.
 - Set up an **inter-ministerial group** to explore potential applications of Fintech-enabling technologies.
 - **Collaborate with other countries to share knowledge** on Fintech risks and benefits.
- **Data Protection:** Establish a **task force** within the Ministry of Finance to address data protection challenges specific to the financial sector.

National Health Claim Exchange

Why in News?

Recently, the **National Health Authority (NHA)** and the **Insurance Regulatory and Development Authority of India (IRDAI)** launched the National Health Claim

Note:

Exchange (NHCX) to facilitate the exchange of **claims-related information among stakeholders** in the **healthcare and health insurance ecosystem**.

What is the National Health Claim Exchange (NHCX)?

➤ **About:**

- It is a digital platform designed to **streamline health insurance claims** processing in India.
- It will act as a **centralised hub for all health claims**, alleviating the **administrative burden** on hospitals and providing a seamless, paperless, and secure contractual framework.
- The system is designed to accommodate the dynamic and diverse healthcare system of India, aligning with IRDAI's objective of achieving **'Insurance for All by 2047'**.

➤ **Advantages:**

- NHCX aims to **simplify and expedite the cashless claims** process, potentially reducing waiting times and **out-of-pocket expenses** for patients.
- NHCX **streamlines claim processing** by eliminating the need for multiple portals and manual paperwork, reducing administrative burdens for hospitals.
- The platform could lead to a more standardised approach to **healthcare pricing** through uniform data presentation and **centralised validation**.
- The system can help **detect and prevent fraudulent claims** through data verification.

Note:

Out-of-Pocket Expenditure (OOPE):

- Out-of-Pocket Expenditure (OOPE) is the **money paid directly by households**, at the **point of receiving health care**.
- It **excludes the individuals covered** under any public or private insurance or social protection scheme.
As per IRDAI, Status of Insurance in India:
- **Health insurance** contributes to **approximately 29%** of the total general insurance premium income in India.
- In **life insurance business**, India is **ranked 10th** in the world. India's share in **global life insurance market** was **2.73%** during 2019.
- In **non-life insurance business**, India is **ranked 15th** in the world. India's share in **global non-life insurance market** was **0.79%** during 2019.

Insurance Penetration and Density:

- Insurance penetration and density are two metrics, among others, often used to assess the level of development of the insurance sector in a country.
- **Insurance penetration** is measured as the **percentage of insurance premiums to GDP**.
 - Insurance penetration which was **2.71% in 2001** has steadily increased to **3.76% in 2019** (Life 2.82% and Non-Life 0.94%).
- **Insurance density** is calculated as the **ratio of premiums to population** (per capita premium).
 - The insurance density in India which was **USD 11.5 in 2001**, reached to **USD 78 in 2019** (Life-USD 58 and Non-Life - USD 20).

Government initiatives Related to Health Insurance:

- **Pradhan Mantri Jeevan Jyoti Yojana (PMJJBY)**
- **Pradhan Mantri Suraksha Bima Yojana (PMSBY)**
- **Ayushman Bharat: Pradhan Mantri Jan Arogya Yojana**
- **Bima Sugam, Bima Vistar, Bima Vaahaks**
- **National health Policy 2017** envisages health insurance as an important quality service as well as to increase population coverage reduces catastrophic expenditure in health sector.

What is the Need for the National Health Claim Exchange in India?

- **High Out-of-Pocket Expenditure:** A study highlights the importance of health insurance in reducing out-of-pocket expenses.
 - The data showcases a concerning **reliance on private insurance** for hospitalisation, especially in rural areas (73.5 cases per 100,000 people).
 - **Streamlined claims** processing through **NHCX** can lead to faster claim settlements, potentially **reducing financial burdens** for patients.
 - This can incentivize more people to utilise health insurance, ultimately reducing reliance on out-of-pocket payments and improving financial security.
- **Inefficiencies in Claim Processing:** Varying requirements and processes of different insurance companies lead to **delays and errors in claim decisions** and **lack of transparency** for patients behind claim approvals or denials.

Note:



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- **High Operational Costs for Hospitals:** Currently, hospitals in India face **administrative burdens** due to the **multiple portals** for different insurance companies as well as **manual processes** for submitting and tracking claims.

What are the Hurdles in the Adoption of the National Health Claim Exchange (NHCX)?

- **Digital Adoption Gap:** Encouraging both hospitals and insurance companies to fully integrate with the NHCX platform requires **ongoing efforts and training**.
 - **Example:** Hospitals, especially smaller ones in rural areas, may **lack the necessary IT infrastructure** or trained staff to fully integrate with the NHCX platform.
- **Building Trust and Collaboration:** For the success of NHCX, building trust among policyholders through **delivery of efficient services** and **streamlined claim processes**.
 - **Example:** Historically, **communication gaps** and **complexities** between hospitals and insurance companies have led to claim processing issues.
- **Data Security Concerns:** Robust measures are essential to **ensure data privacy** and prevent security breaches.
 - **Example:** With a centralised platform handling sensitive health and financial data, robust cybersecurity measures are crucial to prevent data breaches.

Authorised Economic Operators Programme

Why in News?

Recently, the **gem and jewellery sector** has been granted **Authorised Economic Operator (AEO)** status by the **Ministry of Finance**, easing export-import processes with shorter cargo release times and reduced bank guarantees.

What is the Authorised Economic Operators Programme?

- The **Authorised Economic Operator (AEO) programme** is a global initiative launched in 2007 under the **World Customs Organization's (WCO) SAFE Framework of Standards**. It serves a dual purpose

- **Enhancing International Supply Chain Security:** The AEO programme aims to **strengthen security measures** throughout the international movement of goods, minimising risks associated with smuggling and counterfeiting.
- **Facilitating Trade Flow:** By recognising businesses that meet stringent security standards, the programme **aims to expedite customs clearance processes**, reducing delays and costs for legitimate traders.
- Under this, an entity engaged in international trade is approved by WCO as compliant with supply chain security standards and granted AEO status.
- An entity with an **AEO status** is considered a **'secure' trader** and a reliable trading partner.
- Benefits of AEO status include **expedited clearance times, fewer examinations, and** improved security and communication between supply chain partners.
- AEO is a **voluntary programme**.
- India has also launched **pilot project** in 2011, the **Indian AEO Programme** that leverages the security standards established by the **WCO SAFE Framework**.
 - This program offers a **three-tiered system** for **both exporters and importers**, allowing companies to progressively demonstrate their commitment to secure trade practices.

World Customs Organisation

- The **World Customs Organization (WCO)**, established in 1952 as the **Customs Co-operation Council (CCC)** is an independent intergovernmental body whose mission is to **enhance the effectiveness and efficiency of customs administrations**.
- At present, it represents **183 customs administrations** across the globe that collectively process approximately 98% of world trade.
- **India** became the **vice-chair (regional head)** of the **Asia Pacific region** of the WCO for a period of **two years 2018- 2020**.
- It is the only international organization with competence in **customs matters** and which can rightly call itself the voice of the international Customs community.
- It has its **headquarters in Brussels, Belgium**.

Note:

SAFE Framework

- In June **2005** the **WCO Council** adopted the **Framework of Standards to Secure and Facilitate Global Trade (SAFE Framework)** that would act as a deterrent to **international terrorism**, to secure revenue collections and to promote trade facilitation worldwide.
- The SAFE Framework has emerged as the global customs community's concerted response to threats to **supply chain security**, equally supporting facilitation of legitimate and secure businesses.
- It **prescribes baseline standards** for trade facilitation that have been tested and are working well around the globe.

Aspirational Goals of RBI

Why in News?

Recently, the **Reserve Bank of India (RBI)** has outlined **several aspirational goals** in preparation for **India's fast-growing economy**, aiming to be "future-ready" by the time it reaches its **centenary year, RBI@100**.

What are the Aspirational Goals of RBI?

- **Capital Account Liberalisation and INR Internationalisation:**
 - **Capital Account Convertibility:** Proposed full **capital account convertibility**, allowing free conversion between the rupee and foreign currencies for capital transactions.
 - **Internationalisation of the Rupee:** Enabling **non-residents** to use the rupee for **cross-border transactions** and enhancing rupee account accessibility for persons outside India.
 - **Calibrated Interest-Bearing Non-Resident Deposits:** Adopting a careful approach toward **interest-bearing deposits** for non-residents.
 - **Promotion of Indian MNCs and Global Brands:** Supporting overseas investments by Indian multinational corporations.
- **Digital Payment System Universalisation:**
 - **Domestic and Global Expansion:** Expanding the use of India's digital payment systems (**UPI, RTGS,**

NEFT) domestically and internationally, and linking payment systems with other countries.

- The starting point can be integrating **Indian payment systems** with those of other countries.
- **Central Bank Digital Currency (e-Rupee):** Phased implementation of the **e-Rupee**.
- **Globalisation of India's Financial Sector:**
 - **Domestic Banking Expansion:** Aligning banking sector growth with national economic growth.
 - **Top Global Banks:** Aiming to **position 3-5 Indian banks** among the **top 100 global banks** in terms of size and operations and positioning the Reserve Bank as a model central bank of the **global south**.
 - **Support for GIFT City:** Assisting the International Financial Services Centres Authority (IFSCA) in making **GIFT City** a leading international financial hub.
- **Monetary Policy Framework Review:**
 - **Balancing Act:** Addressing the balance between **price stability and economic growth** from an Emerging Market Economy perspective.
 - **Policy Communication:** Refining **monetary policy** communication and addressing spillovers from debt overhang in important economies.
- **Climate Change Initiatives:** Providing guidance for **stress testing asset portfolios**, strengthening **payment systems against climate risks**, and proposing disclosure norms and a government taxonomy for **climate risks**.
- **Short and Medium-Term Measures:**
 - **Trade Arrangements:** Standardizing approaches for **bilateral and multilateral trade invoicing**, settlement, and payment in rupee and local currencies.
 - **Financial Market Strengthening:** Fostering a global rupee market and recalibrating the **foreign portfolio investor regime**.
 - **Rupee Masala Bonds:** Reviewing taxes on rupee **masala bonds**.
 - **Global Bond Indices:** Including Indian Government Bonds in global bond indices.

Note:

Steps Towards Internationalisation of Rupees

- **Developments in the GIFT City**
- **Asian Clearing Union (ACU)**, a regional payment arrangement facilitates the **settlement of trade transactions among its member countries** on a multilateral basis. The ACU currently has 13 member countries. **India is a member of ACU.**
- In March 2023, the RBI put in place the mechanism for **rupee trade settlement** with as many as 18 countries.
 - Banks from these countries have been allowed to open **Special Vostro Rupee Accounts (SVRAs)** for settling payments in Indian Rupees.
- In July 2022, the RBI issued a circular on “**International Trade Settlement in Indian Rupees**”.
- RBI enabled **external commercial borrowings** in Rupees as per the (especially Masala Bonds).

Narasimham Committee

- **Dr Manmohan Singh set up Narasimham Committee in 1991** to analyse India's banking sector and recommend reforms. It was followed by the 1998 Committee which is known as the **Narasimham Committee II.**
- Narasimham Committee- I Recommendations:
 - **A 4-tier hierarchy for the Indian banking system** with 3 or 4 major public sector banks at the top and **rural development banks** for agricultural activities at the bottom.
 - A **quasi-autonomous body** under RBI for **supervising banks** and financial institutions.
 - Reduction in **statutory liquidity ratio**
 - Reaching of 8% **capital adequacy ratio**
 - Setting up **Asset Reconstruction fund**
- **Narasimham Committee- II Recommendations:**
 - **Stronger banking system:** The Committee recommended the **merger of major public sector banks** to boost international trade. However, the Committee warned **against merging stronger banks with weaker banks.**
 - **Reform in the role of RBI:** The Committee also recommended reforms in the role of the RBI in the banking sector. The Committee felt that **RBI being the regulator, it should not have ownership in any bank.**
 - **NPAs:** The Committee wanted the banks **to reduce their NPAs to 3% by 2002.** It also recommended the formation of Asset Reconstruction Funds or **Asset Reconstruction Companies.**
 - **Foreign banks:** It also proposed to raise the minimum start-up capital to USD 25 million for foreign banks from USD 10 million.

Tarapore Committee

- The RBI had appointed the **Tarapore committee in 1997.** The committee was formed with the objective of **progressive liberalisation of capital account transactions.**
 - It suggested that **full convertibility should be achieved in three phases** and the process should be subject to fulfilment of certain crucial preconditions and signposts.
 - Prior RBI approval dispensed with for foreign direct and portfolio investment and disinvestments
 - **Banks and FIs allowed to play in local and overseas gold markets**
 - FIIs, NRIs, non resident banks allowed into the forward exchange markets
 - **Financial institutions** allowed to be full fledged **authorised dealers.**

Note:

INTERNATIONALISATION OF RUPEE

MEANING

- Increasing the use of Indian rupee in cross-border transactions

INVOLVES

- Rupee for import and export
- Rupee for current and capital account transactions

Indian Rupee is fully convertible in current account, but partially in capital account (BoP)

NEED

- Weaponisation of USD by US (for sanctions)
- Wave of de-dollarisation
- Increasing internationalisation of Chinese Renminbi
- India's minimal share in global forex market turnover (1.7%)

RBI'S EFFORTS

- Indian currency in cross-border trade – key component in Foreign Trade Policy 2023
- Mechanism introduced for rupee trade settlement with 18 countries
 - Banks from these countries allowed to open Special Vostro Rupee Accounts (SVRAs)
- Circular on "International Trade Settlement in Indian Rupees" (2022)
- External commercial borrowings in INR enabled

SIGNIFICANCE

- Reduced dependency on USD
- Lesser need for holding forex reserves
- Better bargaining power of Indian business
- Less exposure to currency volatility

CHALLENGES

- Rupee not fully convertible
- Less need for other countries to hold INR; India's low share in global exports
- Rupee may become more vulnerable to external shocks
- India's lesser control on Rupee supply

STEPS THAT CAN BE TAKEN

- More liberalised settlements in INR (in India and overseas)
- India to expand its reach in the global financial market
- Transition to an export-oriented economy to reduce trade deficit



What are the Challenges in Achieving the Aspirational Goals of RBI?

- **Triffin Dilemma:** It describes the conflict between a country's domestic monetary policy goals and its role as an international reserve currency issuer.
 - The **Triffin dilemma** could manifest as a conflict between maintaining stability in India's domestic economy and meeting the **global demand for the Rupee**.
- **Exchange Rate Volatility:** Opening up the currency to international markets can increase volatility in its **exchange rate**, especially in the initial stages. Fluctuations can impact trade and investments, affecting economic stability.
- **Impact on Export:** The Rupee's internationalisation will lead to **increased demand** for the currency in global markets, which **may make Indian exports costly**.
- **Limited International Demand:** The daily average share for the rupee in the global forex market is only around **1.6%**, while India's share of global goods trade is ~2%. The challenge lies in **increasing share of Indian products** in the competitive global market.
- **Convertibility Concern:** The absence of full convertibility of INR for capital transactions will restrict its widespread use in international trade and finance.

Note:

- **Cybersecurity Threats:** Digital payment systems are vulnerable to **cyberattacks**, which can lead to fraud and loss of money. Building trust requires robust security measures to protect user data and ensure the safety of transactions.
- **High Non-Performing Assets (NPAs):** Indian banks, particularly public sector ones, struggle with a high percentage of **non-performing assets** (loans unlikely to be repaid) making them less likely to absorb shock in case of global financial crisis.

What are the Steps Needed to Reach the Aspirational Goals?

- **Convertible of Rupee:** As per the **recommendation of Tarapore committee**, the goal should be of **full convertibility by 2060**, letting financial investments move freely between India and abroad.
 - This would **allow foreign investors** to easily buy and sell the rupee, enhancing its liquidity and making it more attractive. **Tobin Tax** can be used as a **safeguard measure** by RBI against **currency speculation**.
- **Reforms Suggested by Tarapore Committee:**
 - It had listed several preconditions such as **fiscal consolidation**, **inflation control**, **low level of non-performing assets**, low current account deficit and strengthening of financial markets **for achieving capital account liberalisation**.
 - **Strong Fiscal Management:** Such as reducing **fiscal deficits** lower than 3.5%, reducing gross inflation rate to 3%-5%, and reducing gross banking non-performing assets to less than 5%.
 - **Liberalised Scheme for Personal Remittance:** The introduction of a more liberal scheme for **personal remittances** to facilitate easier transactions for individuals dealing with foreign exchange.
- **Pursue a Deeper Bond Market:** Enabling foreign investors and **Indian trade partners to have more investment options** in rupees, enabling its international use apart from developing the corporate bond market in India.
- **Increase Rupee in International Trade:** Optimising the trade settlement formalities for rupee import/export transactions would go a long way. For example rupee swap agreements with various countries, payment of Russian oil in Indian rupee etc.
- **Globalisation of India's Financial Sector:** Encourage **domestic banking expansion** through licensing reforms and incentivise **branch network expansion**. Support Indian banks in enhancing their global presence through **strategic partnerships and acquisitions**.

- For example, **similar to the support provided to KhanijBidesh India Ltd** support could be provided to banks for acquisition, merger and collaboration with foreign banking institutions.
- **Monetary Policy Framework Review:** Conduct a comprehensive review of the **monetary policy framework** to ensure it aligns with the goals of price stability and economic growth.
 - Enhance transparency and clarity in monetary policy communication to manage market expectations effectively. For example releasing of meeting minutes.
- **Climate Change Initiatives:** Issue guidelines for stress testing of asset portfolios to assess climate change risks. Work with financial institutions to develop resilience measures against **climate-related risks** in payment systems. Propose disclosure norms for climate risk reporting and contribute to the development of a **standardised government taxonomy**.

UN Report on Global Debt Crisis

Why in News?

Recently, a report released by the **UN Trade and Development (UNCTAD)** titled "**A World of Debt 2024: A Growing Burden to Global Prosperity**," has revealed an **unprecedented global debt crisis** in the world.

- Approximately 3.3 billion people currently live in countries where the **payment of interest on debts** surpasses the **expenditure on either education or health**.

What is Global Debt?

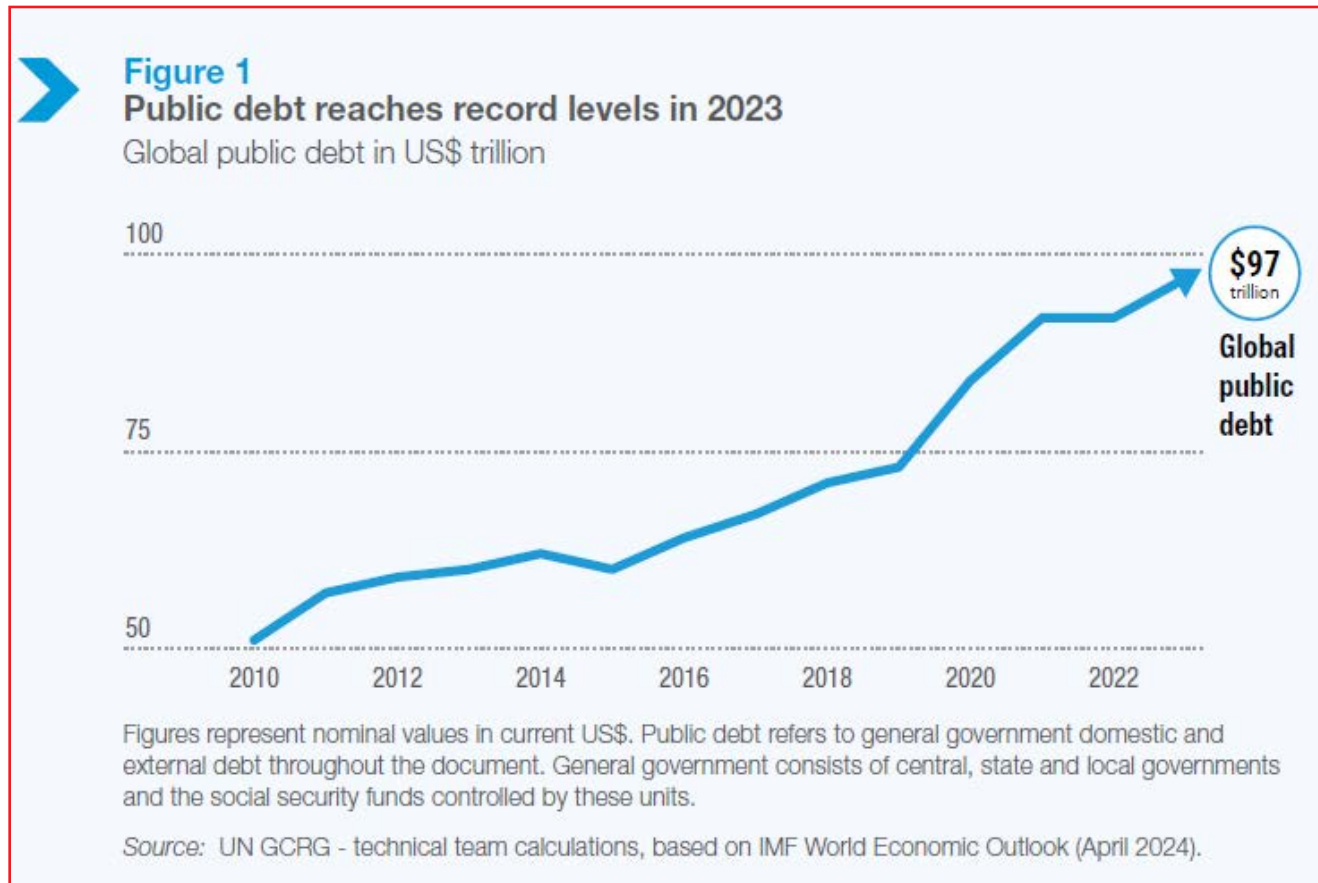
- **About:** Debt is an amount of money one borrows and has to pay back later.
 - Global Debt refers to the **total outstanding amount** owed by governments, businesses, and individuals across the world.
 - It encompasses both public and private debt.
- **Composition of Global Debt:**
 - **Public Debt:** This is the **money owed by governments** to domestic and foreign creditors.
 - It is typically financed through issuing bonds, treasury bills, or loans from international organisations.
 - **Private Debt:** This is the **money owed by businesses and individuals** to banks, lenders, and other financial institutions.
 - It includes mortgages, corporate bonds, student loans, and credit card debt.

Note:

What are the Key Highlights of the Report?

➤ Rapid Increase in Public Debt:

- **Institute of International Finance** (a global association of financial institutions) has estimated that global debt (including borrowings of households, businesses and governments) has reached **USD 315 trillion in 2024**, which is 3 times the global **Gross Domestic Product (GDP)**.
 - Global public debt is rising rapidly, due to a combination of recent crises (such as **Covid-19**, rising food and energy prices, **climate change**, etc.) and a sluggish global economy (slowing growth of economy, rising bank interest rates etc).
- **Net interest payments on public debt** reached **USD 847 billion in 2023** in developing countries, a **26% increase** compared to 2021.



➤ Regional Disparity in Debt Growth:

- Public debt in **developing countries** is rising at **twice the rate** of that in developed countries.
 - It reached **USD 29 trillion (30% of the global total)** in 2023, increasing from **16% in 2010**.
- **Africa's debt burden** is growing faster than its economy leading to a **rise in the debt-to-GDP ratio**.
 - The number of **African** countries with **debt-to-GDP ratios above 60%** has increased from **6 to 27** between 2013 and 2023.
 - This is **due to unforeseen global issues** impacting their expansion and reduced domestic income as a result of a slow economy.

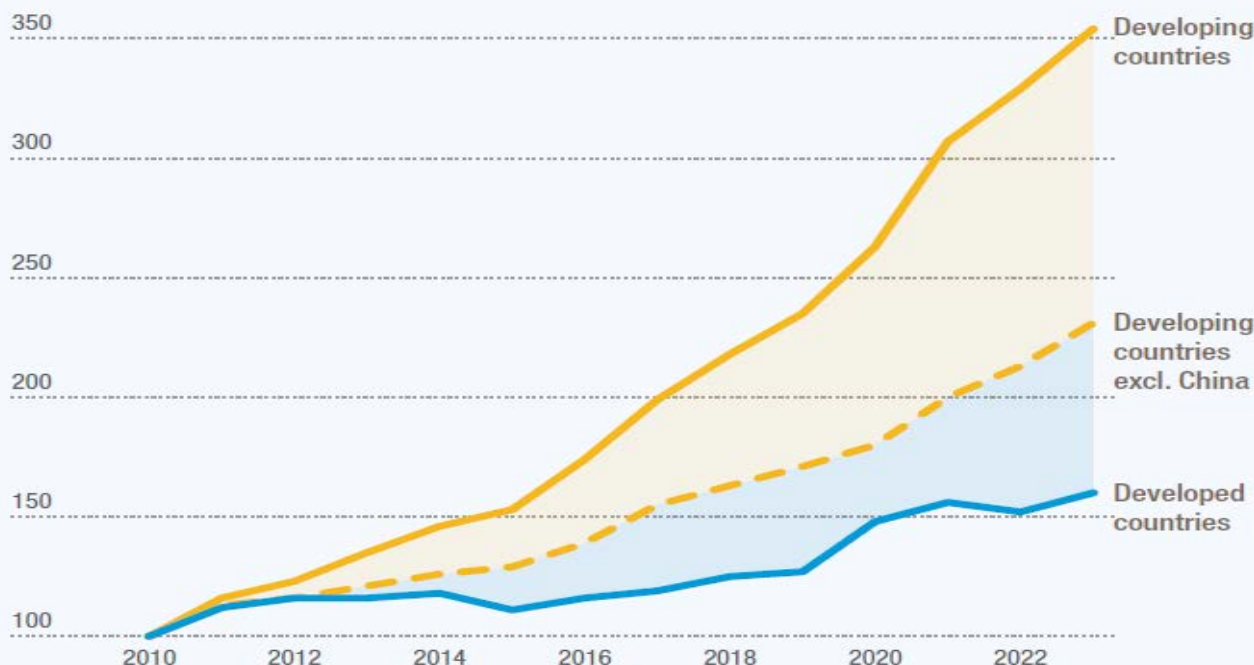
Note:



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Figure 2
Public debt grows twice as fast in developing countries

Index: Outstanding public debt in 2010 = 100



➤ **Higher Debt Servicing Share of Income & Impact on Climate Initiatives:**

- Roughly 50% of developing countries are now **dedicating a minimum of 8% of their government revenues** to servicing their debts, a number that has increased twofold in the last ten years.
- Currently, **developing nations are spending a greater portion of their GDP on paying off interest (2.4%)** than on climate efforts (2.1%).
 - Their **ability to address climate change is being constrained by debt**. In order to meet the **targets of the Paris Agreement**, there is a requirement to raise climate investments to **6.9% by 2030**.

➤ **3 Shifts in Official Development Assistance (ODA):**

- ODA is **government aid** aimed at promoting economic development and welfare in developing countries.
- Repaying loans has become **more difficult** for developing countries, due to recent changes made in nature of foreign aid such as:
 - **Decreasing Overall Aid:** ODA has been decreasing for two years in a row, dropping to **USD 164 billion** in 2022.
 - **More Loans and Less Grants:** The **proportion of aid given as loans** is increasing, rising from **28% in 2012 to 34% in 2022**. This **creates debt burdens** for developing countries.
 - **Less Help with Existing Debt:** Funds for dealing with debt, like **debt relief and restructuring**, have dropped significantly from **USD 4.1 billion in 2012** to just **USD 300 million in 2022**. This makes it harder for them to deal with their current borrowing and could limit their ability to access future loans.

What are the Initiatives Related to Solving Debt Crisis?

➤ **Heavily Indebted Poor Countries (HIPC) Initiative:**

- The **IMF** and **World Bank**'s initiative tackles debt crises in the world's poorest countries. It recognises their struggle to repay debts without sacrificing crucial investments. By offering debt relief, the program frees up resources.
 - This **allows these nations to invest in** healthcare, education, and poverty reduction, promoting long-term economic growth and social progress.

Note:

➤ **Debt Management and Financial Analysis System (DMFAS) Programme:**

- UNCTAD's DMFAS program helps developing countries manage debt responsibly. It provides **training and technical support** to improve their borrowing practices, including tools for recording debt, assessing risks, and negotiating effectively.
 - This program promotes **sustainable debt management** so these countries can borrow for development without creating future crises.

➤ **Global Sovereign Debt Roundtable (GSDR):**

- The roundtable is co-chaired by the IMF, World Bank and **G20** presidency, which aims to address debt challenges comprehensively. It brings together debtor countries and creditors with the **objective of fostering a greater common understanding among key stakeholders on issues related to debt sustainability**, debt restructuring challenges, and potential solutions.

What Measures should be taken to Address the Global Debt Crisis?

➤ **Inclusive Governance, Transparency and Accountability:**

- The **World Bank's 2022 International Debt Statistics report** highlights a concerning rise in public debt, particularly for low-income countries, thus increased participation for these nations in decision-making processes is essential.
- The **UN Office for Sustainable Development** emphasises that **financial transparency and accountability** are crucial for preventing debt crises.

➤ **Contingency Financing:**

- The **IMF** performs a vital role in providing emergency financial support.
- A 2019 IMF Report titled **"Three Steps to Avert a Debt Crisis"** proposed measures like increased access to **Special Drawing Rights (SDRs)** to bolster developing countries' reserves during emergencies.

➤ **Managing Unsustainable Debt (Managing Debt Challenges):**

- Existing frameworks for debt restructuring, such as the **G20 Common Framework for Debt Treatment** should be improved.
- In addition, including automatic provisions for suspending debt payments for countries facing crises **would offer essential flexibility to help them stabilize their economies.**

➤ **Scaling up Sustainable Financing:**

- **Multilateral Development Banks (MDBs)** need to be transformed to play a more prominent role in long-term financing for **Sustainable Development Goals (SDGs)**.
- Attracting **private investment towards sustainable projects** like clean energy is also crucial. Fulfilling existing commitments for aid and climate finance, particularly for developing countries, is essential for facilitating this transition.

G20 Common Framework for Debt Treatment

- It is an initiative established in 2020, endorsed by the **G20**, in collaboration with the **Paris Club** to provide structural support to **Low-Income Countries (LICs)** facing unsustainable debt burdens.
- This framework aims to offer a coordinated and comprehensive approach to tackling the severe debt challenges faced by LICs, **which have been worsened by the Covid-19 pandemic.**

Household Consumption Expenditure Survey 2022-23

Why in News?

Recently, the detailed report of **Household Consumption Expenditure Survey (HCES) 2022-23** was released by **Ministry of Statistics and Programme Implementation (MoSPI)**.

- It provided valuable insights into the **spending habits** of rural and urban households across different states.

What is the Household Consumption Expenditure Survey?

➤ **About:**

- The HCES is conducted by the **National Statistical Office (NSO)** every 5 years.

Note:



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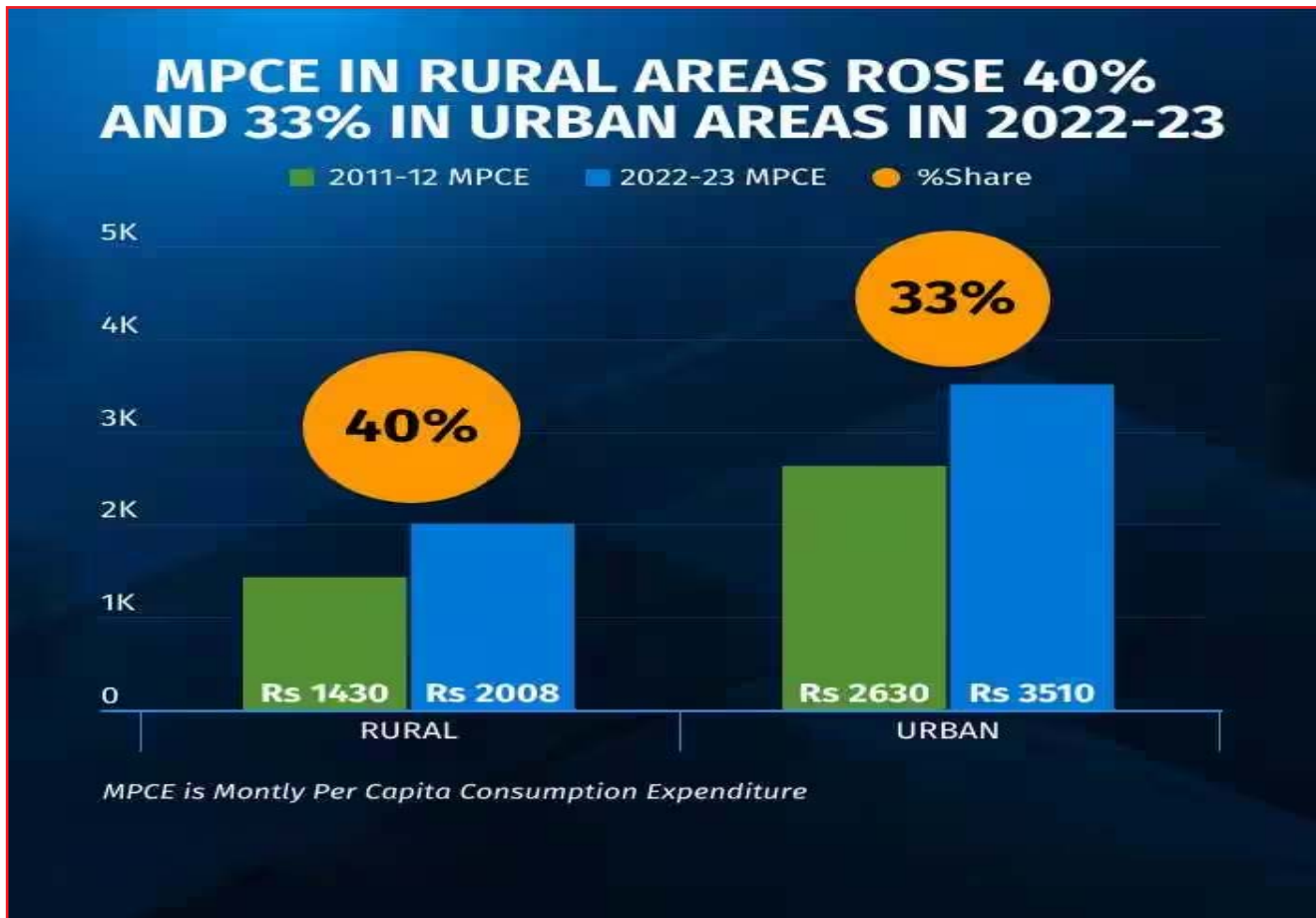
- It is designed to **collect information** on the consumption of goods and services by households.
- The data collected in HCES is also utilised for deriving various other macroeconomic indicators such as **Gross Domestic Product (GDP)**, **poverty rates**, and **Consumer Price Index (CPI)**.
- The average MPCE has been calculated at **2011-12 prices**.
- The survey covered the **whole of the Indian Union** except a few inaccessible villages in the Andaman and Nicobar Islands.
- The findings of the last HCES, conducted in 2017-18 were not released after the government cited "data quality" issues.
- **Information Generated:**
 - Provides information on the **typical spending on both goods** (including food and non-food items) and services.
 - Additionally, assists in calculating estimates for **household Monthly Per Capita Consumer Expenditure (MPCE)** and analysing the distribution of households and individuals across different MPCE categories.

What are the Highlights of the Recent Household Consumption Expenditure Survey?

- **Food Expenditure Preferences:**
 - **Beverages, Refreshments, and Processed Food:** This category was the most significant part of the food expenditure across many states, particularly noticeable in **Tamil Nadu** with the **highest spending percentages** both in rural (28.4%) and urban (33.7%) areas.
 - **Milk and Milk Products:** Predominantly favoured in rural and urban households of northern states like **Haryana** (rural 41.7%, urban 33.1%) and **Rajasthan** (urban 33.2%).
 - **Egg, Fish, and Meat:** **Kerala** households showed the highest expenditure in this category, both in rural (23.5%) and urban (19.8%) setups.

- **Overall Food vs. Non-Food Expenditure:**
 - **Food Expenditure:** In rural India, **food constitutes about 46%** of total household consumption expenditure, whereas in **urban areas, it is around 39%**.
 - **Non-Food Expenditure:** There has been a **significant shift** towards higher spending **on non-food items**, with rural spending on non-food items rising from 40.6% in 1999 to 53.62% in 2022-23 and urban spending from 51.94% to 60.83% in the same period.
- **Major Non-Food Expenditure Categories:**
 - **Conveyance:** Remained the **top non-food expenditure** in both rural and urban settings, with the highest percentages in Kerala.
 - **Medical Expenses:** Particularly high in **Kerala, West Bengal, and Andhra Pradesh** for rural areas and West Bengal, Kerala, and Punjab for urban areas.
 - **Durable Goods:** The highest expenditure on durable goods was noted in Kerala in both rural and urban areas.
 - **Fuel and Light:** West Bengal and Odisha showed significant spending in rural and urban settings, respectively.
- **Regional Variations:**
 - Different states showed varying preferences for spending on specific food and non-food items, reflecting **cultural and regional economic differences**.
- **Growth in Consumption Expenditure:**
 - The survey indicates a substantial increase in consumption expenditure over the past decade. Rural monthly consumption per person increased by 164% from 2011-12 to 2022-23, while urban monthly consumption per person grew by 146%.
 - The rural monthly per capita consumption has seen a faster growth when compared to the urban sector in India.
 - The difference **between the urban and rural MPCE** has seen a **decrease over the years**, with the differential reducing from 90 percent in 2009-10 to 75 percent in 2022-23.

Note:



National Statistical Office

- **About:** Formed in **2019** by merging the Central Statistical Office (CSO) and the National Sample Survey Office (NSSO).
- **C. Rangarajan Committee** first suggested the establishment of NSO as the nodal body for all core statistical activities.
- It **currently works under** the Ministry of Statistics and Programme Implementation (MoSPI).
- **Function:** Collects, compiles, and disseminates reliable, objective, and relevant statistical data.

Financing of Large Infrastructure Projects

Why in News?

Recently, the **Reserve Bank of India (RBI)** has proposed a new framework to improve the regulation of financing for **long-term projects** in infrastructure, non-infrastructure, and commercial **real estate sectors**.

- This is in response to the challenges these projects often face, such as delays and cost overruns.

What are the Key Provisions Proposed by RBI for Project Financing?

- **Mitigating Credit Events:** The framework prioritises preventing credit events such as loan defaults, extensions of the project's commercial operation start date (DCCO), additional debt requirements, or a decrease in the project's Net Present Value (NPV).

Note:



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- **Increased Provisioning:** To build a buffer against potential losses, the framework proposes a significant increase in provisioning (setting aside funds) by banks.
 - **Provisioning** is raised from the **existing 0.4% to 5%** of the loan amount during the **construction stage** (before the project launch).
 - The 5% provisioning will be implemented gradually with 2% in FY25, 3.5% in FY26, and reaching 5% by FY27.
 - The additional provisioning requirements are estimated to be 0.5-3% of banks' net worth and could impact the **CET1 (Common Equity Tier 1)** ratio.
- **Reduced Provisioning During Operations:** If a project demonstrates a **positive net operating cash flow** (enough income to cover repayments) and reduces its total debt by 20% after starting commercial operations, **provisioning can be lowered**.
- **Potential Impacts of the Proposed Framework:**
 - **Impact on banks:**
 - Higher provisioning requirements **could impact bank profitability** in the short term. Additionally, loan pricing might increase slightly to reflect the perceived higher risk.
 - **State-owned banks** are cautiously optimistic, suggesting the impact on pricing might be moderate.
 - **Impact on borrowers:**
 - Borrowers might face **stricter financing terms** and potentially higher interest rates. However, the framework aims to improve project viability and reduce overall risk in the long run.
 - **Rating agencies** predict a potential rise in funding costs by 20-40 basis points.

Classification of Bank Capital

- According to **Basel-III norms** banks' regulatory capital is divided into **Tier 1 and Tier 2**, while Tier 1 is subdivided into **Common Equity Tier-1 (CET-1) and Additional Tier-1 (AT-1)** capital.
 - **Common Equity Tier 1** capital includes **equity instruments** where returns are linked to the banks' performance and therefore the **performance of the share price**. They have **no maturity**.
 - **Additional Tier-1 capital** are perpetual bonds that carry a **fixed coupon payable** annually from past or present profits of the bank. They have **no maturity**, and their dividends can be cancelled at any time.
- **Tier 2 capital** consists of **unsecured subordinated debt** with an **original maturity** of at least five years.

Provisioning Coverage Ratio (PCR)

- Under provisioning, **banks have to set aside or provide funds** to a prescribed **percentage of their bad assets**.
- It is essentially the **ratio of provisioning to gross non-performing assets** and indicates the extent of funds a bank has kept aside to cover loan losses.

What are the Financing Issues Faced by the Large Infrastructure Projects in India?

- **Fiscal Burden on Government:** Traditionally, the government has been the **primary source of funding** for **infrastructure projects**, leading to **high fiscal deficits**. This limits spending on other **social programs** like **education and healthcare**.
 - In 2022, the government's infrastructure spending was around 3.3% of **GDP**, a positive step but still below the desired level.
- **Asset-Liability Mismatch of Commercial Banks:** Commercial banks, a key source of infrastructure financing, **prioritise short-term loans** with quicker returns. Long-term infrastructure projects with slow returns become less attractive.
 - Many infrastructure projects **experience delays and cost overruns**, leading to **financial stress for banks** that provide loans. This discourages further lending for large projects.
- **Subdued Investments in Public-Private Partnerships (PPP) Projects:** Private sector participation through PPPs hasn't met expectations. **Uncertain regulatory environment, complex project structures, and land acquisition** issues deter private investors.
 - A **2023 report** by **CARE Ratings**, an Indian credit rating agency, states that private sector investment in infrastructure projects has been around **5% of the total requirement**.
- **Inefficient and Underdeveloped Corporate Bond Market:** India's **corporate bond market**, a **potential source of long-term financing** for infrastructure, is still relatively **small and lacks liquidity**. This makes it difficult for infrastructure companies to raise funds through bond issuance.
 - In 2023, the size of **India's corporate bond market** was approximately **USD1.8 trillion**, which is significant but still smaller compared to developed economies like the US at **USD51 trillion**.

Note:



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- **Investment Obligations of Insurance and Pension Funds:** Regulations often require insurance and pension funds to **invest a significant portion** of their funds in **government securities**. This limits their ability to invest in riskier infrastructure projects, which could offer higher returns.
- According to the **World Bank**, only around 2% of Indian pension funds' assets are invested in **infrastructure projects**, compared to a global average of 5-10%.

What are the Government initiatives Related to Financing Large Infrastructure Projects in India?

- **National Infrastructure Pipeline (NIP)**
- **National Bank for Financing Infrastructure and Development (NaBFID)**
- **National Investment and Infrastructure Fund (NIIF)**
- **Infrastructure Investment Trusts (InvITs) and Real Estate Investment Trusts (REITs)**
- **Public-Private Partnerships (PPP) Model Reforms:** The government measures like **reducing legal complexities, simplifying the approval process** and streamlining dispute resolution processes.
 - **Example:** The Ministry of Finance has established a **dedicated PPP cell** and **model concession agreements** to address the concerns of private investors and facilitate faster project clearances.
- **Sovereign Wealth Funds (SWFs):**
 - The Indian government is actively engaging with **countries like UAE, Norway etc. with large SWFs** to facilitate their investment in Indian market.
 - SWFs can provide a stable source of long-term funding for infrastructure projects and help mitigate the risk burden on the government's budget.

Look-Out Circulars to Wilful Defaulters

Why in News?

Since 2018, six **Public Sector Banks (PSBs)** have issued 1,071 **Look-out Circulars (LOCs)** in order to prevent **wilful defaulters** from absconding to other countries.

- Wilful defaulters are **borrowers who deliberately or intentionally fail to repay their debts**, even though they have the capacity to do so.

What is a Look-Out Circular (LOC)?

- **About:**
 - It is a notice to **stop any individual** wanted by the police, investigating agency or even a bank from leaving or entering the country through designated land, air and sea ports.
 - The **Bureau of Immigration**, under the **Ministry of Home Affairs**, is responsible for preventing such individuals from entering or leaving the country if there is a notification against them.
 - There are a total of **112 immigration check posts** located throughout the country.
- **Who Can Issue LOCs:**
 - A large number of agencies can issue lookout circulars;
 - **Central Bureau of Investigation (CBI)**
 - **Enforcement Directorate (ED)**
 - **Directorate of Revenue Intelligence (DRI)**
 - **Income Tax department**
 - State police and intelligence agencies.
 - The officer who issues a LOC should not be below the rank of a **district magistrate or superintendent of police** or a **deputy secretary** in the Union Government.
- **Modification & Validity:**
 - LOC can be modified; deleted or withdrawn only at the request of the **originator**.
 - LOC will remain valid for a **maximum of 12 months**, and if there is no new request from the agency, it will **not be automatically renewed**.
 - The **Bureau of Immigration**, is responsible for maintaining and taking action against individuals with LOC at **Immigration Check Posts (ICPs)** as directed by the originating agency.
- **Power of PSBs to Issue LOCs:**
 - Earlier, as of 2018, **banks were also authorised to issue LOCs** against individuals who could potentially harm the economic interests of the country.
 - However, recently the Bombay **High Court** ruled that **PSBs** cannot issue **LOCs** against alleged loan defaulters, deeming it a violation of **fundamental rights** in the absence of a statute or law.
 - This ruling overturns the **2018 Government Office Memorandums**, which had empowered banks to issue LOCs.

Note:



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Who are Wilful Defaulters?

- The **Reserve Bank of India (RBI)** defines wilful defaulters as borrowers who meet one or more of the following criteria:
 - **Deliberate non-payment** of dues despite having sufficient funds.
 - **Diverting loan funds** for purposes other than what they were borrowed for.
 - **Siphoning off loan funds** so they are unavailable for repayment.
- **Minimum Threshold:** The minimum loan amount for a borrower to be labelled a wilful defaulter is **Rs 25 lakh and above**.
 - A large defaulter **refers to a borrower with an outstanding balance of Rs 1 crore or more**, whose account has been categorized as doubtful or a loss.

What are the Economic Implications of Wilful Defaulters?

- **Credit Market Impact:**
 - **Liquidity Constraints:** Wilful defaulters struggle to secure new loans due to liquidity constraints. Lenders are hesitant to provide them with additional credit or financing for fresh business ventures.
 - **Market Reputation:** Being labelled a wilful defaulter tarnishes the borrower's reputation, affecting their ability to raise capital or secure loans in the future.
 - As of December 2023, banks had categorised 17,713 accounts involving loans of Rs 353,129 crore as wilful defaults.
- **Equity Markets and IPOs:**
 - **SEBI Restrictions:** The **Securities and Exchange Board of India (SEBI)** prohibits companies with wilful defaulters (including promoters or directors) from launching **Initial Public Offers (IPOs)** or issuing equity shares.
 - This restriction hampers companies' growth prospects and investor confidence.
- **Insolvency and Bankruptcy Code (IBC):**
 - **Exclusion from Resolution Plans:**
 - The **IBC** specifically prohibits wilful defaulters from submitting resolution plans for the company they defaulted on.
 - Allowing wilful defaulters to participate in resolution plans could create a moral hazard, risking creditors, and discouraging responsible borrowing.

➤ NPA Accumulation:

- Wilful defaults contribute to the rise in **Non-Performing Assets (NPAs)** within the banking system which can reduce bank profits and shareholder value, affecting the overall economy.

How Wilful Defaulters can be Prevented by Banks?

➤ Debt Recovery Tribunals (DRTs):

- It aims to provide a **fast-track mechanism for loan recovery**, where banks can file cases with DRTs for swift debt recovery and asset attachment.
 - It was established under the **Recovery of Debts Due to Banks and Financial Institutions Act 1993**.

➤ IBC & National Company Law Tribunal (NCLT):

- For large defaults involving companies, banks can approach the **National Company Law Tribunal (NCLT)** under the **IBC 2016**.
- The IBC provides a **time-bound framework** for resolving insolvency and recovering dues.
 - The success rate of loan recovery through the IBC has been improving. As of March 2023, the **Insolvency and Bankruptcy Board of India (IBBI)** reported a resolution value of Rs 8.3 lakh crore (USD1.03 trillion) achieved through IBC cases.

➤ Utilising the Securitization and Reconstruction of Financial Assets and Enforcement Securities Act, 2002:

- **SARFAESI Act** empowers banks to take possession of **secured assets** like land and buildings in case of defaults without lengthy court procedures. This can deter defaults by making the consequences of non-payment quicker and more tangible.

➤ Reserve Bank of India (RBI) Guidelines:

- **RBI** guidelines on **KYC, Anti Money Laundering** emphasise thorough due diligence before loan approvals.
 - KYC requires banks to collect **detailed borrower information** to identify individuals or businesses with financial risks or suspicious activities.
 - Anti-Money Laundering provisions will help **identify potential money laundering schemes** and can avoid lending to those who might be planning to deliberately default.

➤ Legal Action and Blacklisting: Banks should initiate criminal proceedings against wilful defaulters when necessary.

- By blacklisting a wilful defaulter will make it **very difficult to get any loans or investments in the future**, which discourages him from intentionally not paying back their loans.

Note:

RBI's Repatriation of Gold from UK to India

Why in News?

Recently, the **Reserve Bank of India (RBI)** has undertaken a significant strategic move by bringing back over 100 tonnes of gold from the UK to its domestic vaults.

- This has marked the largest such repatriation since the early 1990s and signifies the RBI's evolving approach to managing its gold reserves.

Note:

- During the **1990-91 foreign exchange crisis**, India pledged part of its **gold reserves to the Bank of England to secure a USD 405 million loan**.
- Although the loan was **repaid by November 1991**, the RBI chose to **keep the gold in the UK for logistical reasons** as the gold stored abroad can be easily used for trading, entering into swaps, and earning returns.
- The repatriation of gold reserves has **no financial implications** for India's **GDP**, tax collections, or the RBI's balance sheet, as it only involves a **change in the storage location of the gold** (the **total gold asset of the RBI will remain the same**).
- There are **no customs or GST implications** associated with this transfer, as the **gold being repatriated is already owned by India**.

A Stylised Central Bank Balance Sheet

Liability	Asset
1	2
Currency	Gold
Deposits, of	Loans and advances, to
Government	Government
Banks	Banks
Loans (including securities)	Investments, in
Other Liabilities	Government securities
Capital Account	Foreign Assets
Paid-up Capital	
Reserves	Other Assets
Total Liabilities	Total Assets

How Much Gold Does RBI Have?

- **Gold Stock:**
 - The **Reserve Bank of India Act, of 1934** provides the overarching legal framework for the deployment of **reserves in different foreign currency assets and gold** within the broad parameters of currencies, instruments, issuers and counterparties.
 - As of the end of March 2024, the RBI held **822.10 tonnes** of gold, with **408.31 tonnes stored domestically** and the remaining **413.79 tonnes** are still held in custody with foreign institutions like the **Bank of England and the Bank for International Settlements (BIS)**.
 - According to RBI as of April 2024, the **share of gold is USD 54.4 billion** in the current **forex reserve** of India (**USD 648.562 billion**).

Note:



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➤ **History of Gold Purchasing:**

- According to the World Gold Council, **RBI is among the top five central banks that are buying gold.**
- RBI purchased **200 tonnes of gold during the global financial crisis in 2009.**
- The RBI bought 65.11 tonnes of gold in FY 2022, 34.22 tonnes of gold in FY2023 and **19 tonnes of gold in FY 2024.**

Gold Reserves in India

- As per the **National Mineral Inventory**, total reserves of gold ore in India are estimated at **501.83 million tonnes** as of 2015.
- Largest resources of gold ore located in **Bihar (44%), followed by Rajasthan (25%), Karnataka (21%),** West Bengal (3%), Andhra Pradesh (3%), Jharkhand (2%)
- **Karnataka commands around 80% of the nation's total gold output.** The **Kolar Gold Fields (KGF)** in the Kolar district is **one of the world's oldest and deepest gold mines.**

Other Major Buyers of Gold

- **People's Bank of China:** It remains a significant gold buyer. According to the World Gold Council (WGC) report (released in April 2024), **China was the top buyer of gold among central banks in the first quarter of 2024.**
- **Central Bank of Turkey:** As of April 2024, the Central Bank of Turkey had purchased the **most gold (8 tonnes) year-to-date**, bringing its total holdings to 578 tonnes.
- **Emerging Market Economies:** The WGC report consistently highlights that central banks from emerging economies are leading the gold-buying trend.

Why did the RBI Decide to Move the Gold Back to India?➤ **Protection Against Inflation:**

- When **inflation** is high, gold tends to hold its value well. Unlike currencies that can lose purchasing power due to inflation, gold's historical performance suggests it can even appreciate in price during these times.
- This provides the RBI with the **potential for good returns even in challenging economic situations.**

➤ **Hedge Against Geopolitical Uncertainty:**

- The current geopolitical climate, with events like the **Russia-Ukraine war** which has triggered a **wave of sanctions on Russia by Western nations**, leading to the **freezing of Russian assets held abroad** might have caused some concern for the RBI to control its assets by moving them in their own wallets.
- Gold is also seen as a safe haven during such uncertainties.

➤ **Diversification and Liquidity:**

- Including gold in its reserves allows the **RBI to diversify its foreign exchange holdings.**
- Gold is a **secure and liquid asset** (can be easily bought and sold on the international market at a transparent price).
- This provides the **RBI with flexibility and additional options for managing its reserves.**

➤ **Strength and Confidence:**

- It will show India's robust economic growth and its **ability to safeguard its financial assets** and indicate confidence in the Indian economy's stability.
- This contrasts with the **1991 economic crisis** when India had to pledge gold reserves for foreign currency.

➤ **Storage Charges:**

- Bringing the **gold back eliminates storage costs paid to the Bank of England.**

What is the Significance of Gold in the Economy?

- **Limited Supply & Intrinsic Value:** Unlike currencies that can be printed at will by central banks, **gold has a finite supply** due to geological limitations.
 - This **scarcity, combined with its unique physical properties** and historical significance, gives gold intrinsic value.
- **Hedge Against Inflation:**
 - Gold has historically performed well during **inflation** by holding its value well. A 2023 World Gold Council study found a **positive correlation** between **gold prices and US inflation** over 50 years. This makes gold valuable for hedging against inflation.

Note:



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➤ **Diversification & Stability:**

- Gold **diversifies** a country's foreign reserves, **reducing dependence on a single currency** and **offering stability during economic challenges**.
- Additionally, holding gold reserves can be seen as a **sign of confidence** in a country's economy by international investors.

➤ **Jewelry & Cultural Significance:**

- The demand for gold in jewellery remains strong globally, particularly in certain regions like India and China.
- Additionally, gold holds **cultural significance** in many societies, further influencing its value and demand.

Historical Regime of Exchange Rate Management

➤ **The Gold Standard (1870-1914):**

- Currencies were **directly tied to the value of gold**. Each country held gold reserves to back their currency.
- Stable exchange rates made international trade easier and predictable.
- Drawbacks:
 - **Limited gold supply made it difficult to expand the money supply** to meet economic growth.
 - **Countries lost gold reserves when they had trade deficits**, which could hurt their economies.
 - **Gold discoveries or losses could cause sudden fluctuations** in exchange rates.

➤ **The Bretton Woods System (1944-1971):**

- It was established after **World War II**, and aimed to create a more stable and predictable international financial system.
- **Key Feature:**
 - **Fixed exchange rates with the US dollar** as the reserve currency.
 - Other currencies were pegged to the dollar at a fixed rate.
 - **The US dollar was, in turn, convertible to gold at a fixed price** of USD 35 per ounce.
- **Challenges:**
 - **The Triffin Dilemma:** As the global economy grew, the US **couldn't keep up its gold reserves to support the system**.
 - The US running **trade deficits** created doubts about its ability to **maintain the gold peg**.

➤ **The Current Scenario (Multiple Regimes - Post-1971):**

- **Market forces of supply and demand** determine exchange rates with variety of regimes.
 - **Floating and Fixed Exchange Rates**
 - **Pegged Rates:** A country ties its currency to a single strong currency (e.g., USD) or a basket of currencies.
 - **Dollarization:** Some countries **completely abandon their own currency and adopt the US dollar** (e.g., Ecuador). Eliminates exchange rate risk but gives up control over monetary policy.

➤ **Special Drawing Rights (SDRs):**

- **Special Drawing Rights (SDRs)** was created **by the IMF as a supplement to gold reserves**. It's a basket of major currencies, **not directly convertible to gold**.
- Price of gold is determined by supply and demand in the free market, not by its connection to currencies.

Note:

Open Network for Digital Commerce

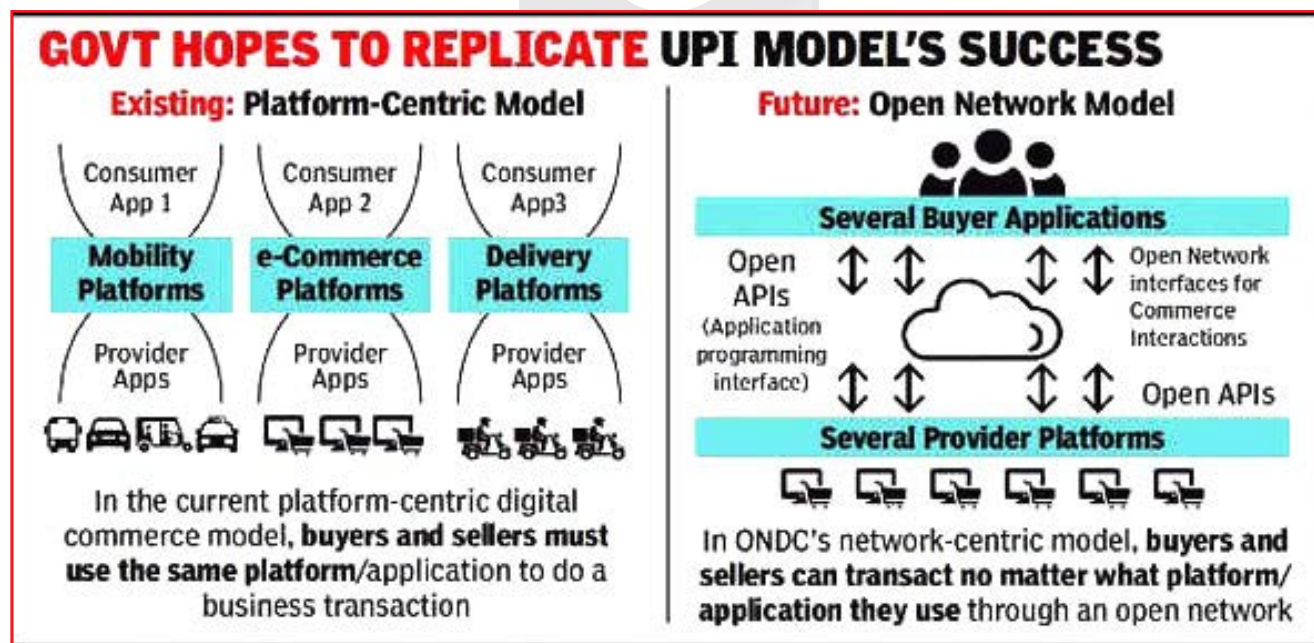
Why in News?

Recently, **Open Network for Digital Commerce (ONDC)** recorded an all-time high of **8.9 million transactions** across retail and ride-hailing segments in May 2024, representing a **23% month-on-month increase** in total transaction volume.

What is ONDC?

➤ About:

- **Open Network for Digital Commerce (ONDC)** is a network of **interconnected e-marketplaces** through which sellers, including brands, can list and sell their products **directly to customers bypassing any middlemen or intermediaries**.
 - It allows transitioning from a platform-centric model to an **open source network for buying and selling goods and services**.
- It was launched in **2021** under the **Department for Promotion of Industry and Internal Trade (DPIIT)** by the **Ministry of Commerce** as part of the **Digital India** initiative.
- It offers delivery services for groceries, home decor, cleaning essentials, food delivery and other products.
- It is a **not-for-profit organisation** that provides a network enabling local digital commerce stores across various industries to be discovered and engaged by any network-enabled applications.
- Similar to the **Unified Payments Interface (UPI)**, ONDC aims to level the **operational playing field** among e-commerce platforms.
- The **Quality Council of India** has been tasked with **integrating e-commerce platforms** through this **open-source technology network**, allowing users to modify, enhance, or improve the original code.



➤ Objectives:

- **Democratisation and decentralisation** of e-Commerce
- **Inclusivity and access for sellers**, especially small and medium enterprises as well as local businesses
- **Increased choices and independency** for consumers
- Making goods and services **cheaper**.

Note:

➤ Working Mechanism:

- ONDC functions on the basis of an **open network** where it will not be a single platform similar to Amazon or Flipkart but rather in the **form of a gateway** where buyers and sellers across different platforms will be able to connect.

Open Network for Digital Commerce

What is ONDC?

ONDC is a freely accessible government backed platform that aims to democratise e-commerce by moving it from a platform centric model to an open network for buying and selling of goods and services. It aims to enable buying of products from all participating e-commerce platforms by consumers through a single platform. It is an initiative of the Department for Promotion of Industry and Internal Trade (DPIIT) under the Ministry of Commerce and Industry.

What is a Platform Centric Model?

A platform is a business model that creates value by facilitating exchanges between two or more interdependent groups, usually buyers and sellers. Buyers and sellers have to be on the same app for a transaction which happens through the same platform. For example, a buyer needs to go to Amazon, to buy a product from a seller on Amazon.

Advantages

Will standardise operations like cataloguing, inventory management, order management and order fulfilment, hence making it simpler and easier for small businesses to be discoverable over network and conduct business. For buyers, there would be access to more sellers and faster deliveries due to access to hyper-local retailers.

How is ONDC different?

The ONDC model is trying to replicate the success of the Unified Payments Interface (UPI) in the field of digital payments. Under ONDC, it is envisaged that a buyer registered on one participating e-commerce site (for example, Amazon) may purchase goods from a seller on another participating e-commerce site (for example, Flipkart). The open network concept extends beyond the retail sector, to any digital commerce domains including wholesale, mobility, food delivery, logistics, travel, urban services, etc.

Potential Issues

Getting enough number of e-commerce platforms to sign up, issues related to customer service and payment integration.



What is Open Source?

- Open source implies that the **technology** or code deployed for the process is **freely made available for everyone to use, redistribute, and modify**.
- For instance, the **operating system of iOS is closed source**, it cannot be legally modified or used.
 - Whereas, the **android operating system is open source**, making it possible for smartphone manufacturers, such as Samsung, Nokia, Xiaomi, etc., to modify it for their respective hardware.

What are the Potential Advantages of ONDC?

- **Empowering Consumers:** ONDC fosters a **more transparent environment** by potentially increasing access to information.
 - This **empowers consumers** to make informed choices and benefit from a wider array of sellers, potentially leading to lower prices.
- **Boosting Competition:** By **breaking down the dominance of existing platforms**, ONDC creates a level playing field. This **incentivizes competition among sellers**, ultimately translating into a wider variety of products and potentially lower prices for consumers.

Note:



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- **Innovation:** The open-source architecture of ONDC fosters innovation.
- **Cost Efficiency:** ONDC's decentralised structure has the potential to **streamline operations and reduce redundancies** and lead to significant cost savings.
- **Boosting Small Businesses:** ONDC removes entry barriers for **small and medium-sized enterprises (MSMEs)** and **local vendors**. This paves the way for greater participation in the digital marketplace, fostering a more inclusive e-commerce ecosystem.

ONDC & its potential

Grow India's digital consumption to \$340 bn by 2030 with 500 mn transacting users



Bring the next **500 mn** consumers & 100 mn sellers to trade online



Scope to connect **80-90 mn** self-employed workers



Get **6-7 times** more MSMEs into a diverse ecosystem



Increase a farmer's net income by **25-35%**, enhance the agricultural ecosystem



Further inclusion in digital commerce which is only 7% of total market with **165 mn users**

What are the Challenges to ONDC?

- **Complexity Factor:** Compared to user-friendly systems like UPI, **ONDC's underlying mechanisms are intricate**. The ease of adoption witnessed with UPI might not be easily replicated with ONDC.
- **Breaking Established Habits:** Consumers are accustomed to the existing e-commerce platforms' user interfaces and functionalities. ONDC will **need to provide a seamless and user-friendly experience** to compete effectively.
- **Dispute Resolution Concerns:** Unlike traditional platforms that manage the entire transaction lifecycle, **ONDC focuses solely on online buying and selling**.
 - This separation might lead to an **increase in disputes related to deliveries**, product quality, or after-sales service, as **ONDC doesn't function as a direct intermediary**.

Note:



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- **Lack of a Robust Grievance Redressal Mechanism:** The lack of clarity on **responsibility for customer service and handling complaints** may deter people from joining the platform.
- **Challenges from Existing E-commerce Platforms:** Existing e-commerce giants have fostered **strong relationships with consumers through loyalty programs**, bundled services, and other incentives.
 - ONDC will need to develop compelling strategies to attract and retain customers in this competitive landscape.
- **Price Advantage Uncertainty:** As a facilitator, **ONDC might not be able to directly influence product pricing or offer discounts on the scale** of established players who leverage bulk deals and partnerships.

Note: The **Nandan Nilekani committee, formed by the Department for Promotion of Industry and Internal Trade (DPIIT)**, recommended the following for the ONDC:

- **Open Network Protocols:** Establish open protocols for digital commerce operations.
- **Interoperability:** Ensure seamless interaction across different platforms.
- **Standardisation:** Develop uniform standards for e-commerce.
- **Decentralisation:** Reduce reliance on a few large platforms to foster competition.
- **Inclusivity:** Make the network accessible to small and medium enterprises.
- **Transparency and Security:** Ensure data privacy and fair operations.
- **Regulatory Framework:** Create robust regulations for compliance and consumer protection.
- **Capacity Building:** Train small businesses to participate effectively.
- **Consumer Choice:** Expand product and service options through competition.
- **Tech-Driven Innovations:** Utilize advanced technologies to improve digital commerce.

India to take Australia to WTO Arbitration

Why in News?

India has sought **arbitration proceedings** under the **World Trade Organization (WTO)** rules against **Australia** to resolve an issue concerning the **services sector**, as it could impact India's trade in services.

What are the Concerns Raised by India Against Australia?

- In February 2024 in Abu Dhabi, over 70 **WTO** nations agreed to **Joint Statement Initiatives (JSIs)** to take **additional obligations** under the **General Agreement on Goods in Services (GATS)** to **ease non-good trade** among themselves and **extend similar concessions** to **all other members** of the WTO.
 - **GATS** is a **WTO agreement** that came into force in **1995**. India has been a member of the Geneva-based organisation since 1995.
- These **obligations seek to mitigate unintended trade restrictive measures** relating to **licensing requirements** and procedures, qualification requirements and procedures, and technical standards among themselves.
- It will also **benefit Indian professional companies** which will now have **equal opportunity** to access markets in these 70 countries if they meet the standards.
- As per estimates, the move will help **reduce services trade costs** by 10% for lower-middle-income economies and 14% for upper-middle-income economies, with overall savings of USD 127 billion.
- **Opposition to Joint Statement Initiatives (JSIs):**
 - The new agreement in Abu Dhabi is a **plurilateral agreement where just 72 out of 164 WTO members are a party**.
 - **India, South Africa, and many WTO members haven't agreed to this deal**, and India, like other developing nations, **opposed various Joint Statement Initiatives (JSIs) because they're not negotiated by all members**.
 - Experts argue that this trend of integrating **Joint Statement Initiatives (JSI)** into **WTO will weaken the WTO** and pave the way for adopting many more such JSIs on investments, **Micro, Small and Medium Enterprises (MSME)**, gender, and **e-commerce**.
 - Australia's adherence to its commitments under a JSI is a **point of contention** in the dispute.
- **The Australia Case:**
 - In 2023, **Australia notified the WTO about intention to modify its schedule** of specific commitments under the GATS to **incorporate additional commitments** relating to services domestic regulation.
 - As an **"affected member"**, India has stated that Australia's intended modification of its specific commitments does not **satisfy certain conditions**.
 - Despite **negotiations between India and Australia**, no agreement was reached.

Note:



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What is WTO's Dispute Settlement Mechanism?

➤ Consultations:

- Before initiating a formal dispute, the complaining party must **request consultations** with the defending party. This is the **first step in attempting to resolve the dispute amicably through negotiations**.
- Consultations must be held **within specific time frames**, and the parties involved are encouraged to find a mutually agreeable solution.

➤ Panel Establishment:

- If consultations **fail to resolve the dispute**, the complaining party can request the establishment of a dispute settlement panel. The **Dispute Settlement Body (DSB)** oversees this process.
- The **General Council convenes as the DSB to deal with disputes** between WTO members. The DSB has the authority to:
 - establish dispute settlement panels,
 - refer matters to arbitration,
 - adopt panel, Appellate Body and arbitration reports,
 - maintain surveillance over the implementation of recommendations; and
 - authorise suspension of concessions in the event of non-compliance with those recommendations and rulings.
- The panel is composed of **independent experts** with relevant expertise in trade law and the subject matter of the dispute. The panel **examines the case, reviews arguments from both sides, and issues a report**.

➤ Panel Report:

- The panel's report includes findings of fact, legal interpretations, and recommendations for a resolution. It is **circulated to all WTO members**, allowing them to review and provide comments.

➤ Adoption or Appeal:

- The **report becomes the Dispute Settlement Body's ruling** or recommendation **within 60 days unless a consensus rejects it**.
- **WTO's Appellate Body:**
 - The Appellate Body was established in 1995 under **Article 17** of the Understanding on Rules and Procedures Governing the Settlement of Disputes (DSU).
 - It is a **standing body of seven persons** that hears appeals brought by WTO Members. The members of the **appellate body serve for a four-year term**.

- It can **uphold, modify or reverse** the legal findings and conclusions of a panel.
- **Appellate Body Reports**, once adopted by the DSB, **must be accepted by the parties to the dispute**.
- The Appellate Body has its seat in **Geneva, Switzerland**.

➤ Implementation of Recommendations:

- If a WTO member is found to **violate its obligations**, it is expected to bring its measures into compliance with WTO agreements.
- If the member fails to do so, the complainant may seek **authorisation to retaliate** through the suspension of concessions or other measures.

Issue with WTO's Dispute Settlement Mechanism (DSM)

- The US has **systematically blocked** the appointment of **new Appellate Body members** and judges and de facto **impeded the work** of the WTO appeal mechanism.
- Developing countries, including **India**, **advocate for the restoration of the WTO's dispute settlement mechanism (DSM)** to its previous functional state, emphasising the importance of the checks and balances provided by the appellate body.
- Developing countries face **three options** to maintain a **two-tiered DSM** at the WTO like joining the **European Union-led Interim Appeal Arbitration Arrangement (MPIA)**, accepting a **diluted appellate body** and resurrecting the original appellate body with an **opt-out provision**.

Coal Gasification

Why in News?

The Ministry of Coal requested proposals from public and private sector participants for **coal gasification projects** as part of an Rs 8,500 crore **viability gap funding (VGF) scheme**.

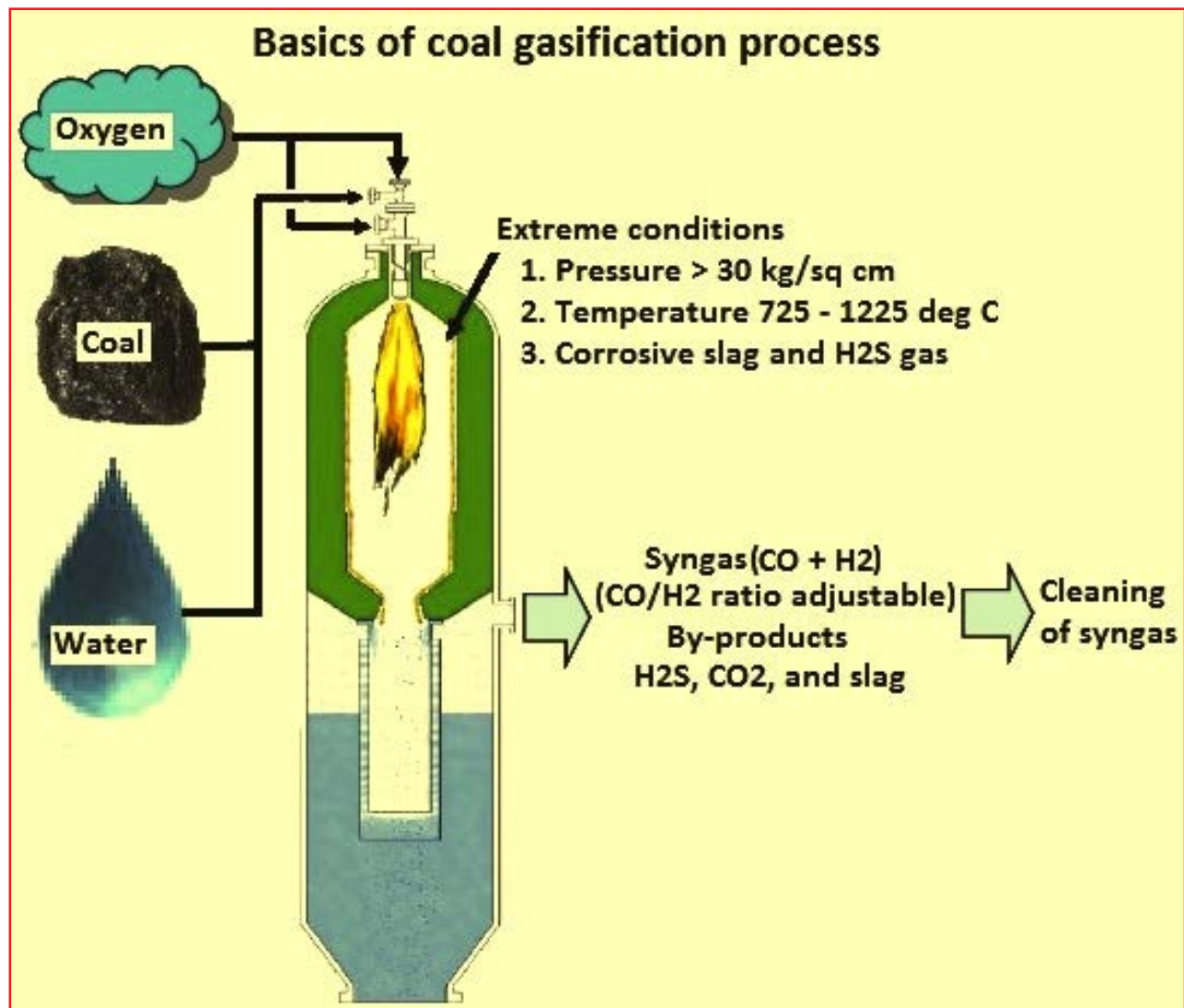
- **Viability Gap Funding (VGF)** is a financial tool used to support projects that are economically justified **but not financially viable on their own**.

What is Coal Gasification?

- Coal gasification is a process that **transforms Coal into a Synthetic gas (Syngas)**, consisting of mixture of gasses such as **Carbon monoxide (CO)**, **Hydrogen (H₂)**, **Carbon dioxide (CO₂)**, **Methane (CH₄)** and **Water vapor (H₂O)**.
 - Coal is reacted at high temperatures (typically 1,000–1,400°C) with a controlled amount of oxygen and steam.

Note:

- Syngas can be used to produce a wide range of **Fertilizers**, **Fuels**, solvents and synthetic materials.
- The Process is as given:
 - **Preparation:** Coal is **crushed into a fine powder to increase its surface area** and enhance the chemical reactions during the process.
 - **Gasification Reactor:** The crushed coal is **introduced into a high-temperature and high-pressure reactor** along with limited **oxygen or air and steam**.
 - **Chemical Reactions:** In the absence of **sufficient oxygen for complete combustion**, the coal undergoes a series of complex chemical reactions.
 - These reactions **break down the coal molecules into the components of syngas**.
 - **Gas Cleaning:** The raw syngas produced from the reactor contains impurities like tar, sulfur, and dust. These **impurities need to be removed through a gas cleaning process** before the syngas can be used further.
- **Benefits of Coal Gasification:**
 - **Cleaner Alternative to Coal Combustion:** Coal gasification burns cleaner than coal for electricity. It captures pollutants before using the gas for power generation.
 - **Versatile Syngas Usage:** The syngas produced can be used for various purposes, including **electricity generation**, **production of cleaner fuels** like hydrogen and **production of chemicals** like ammonia and methanol.



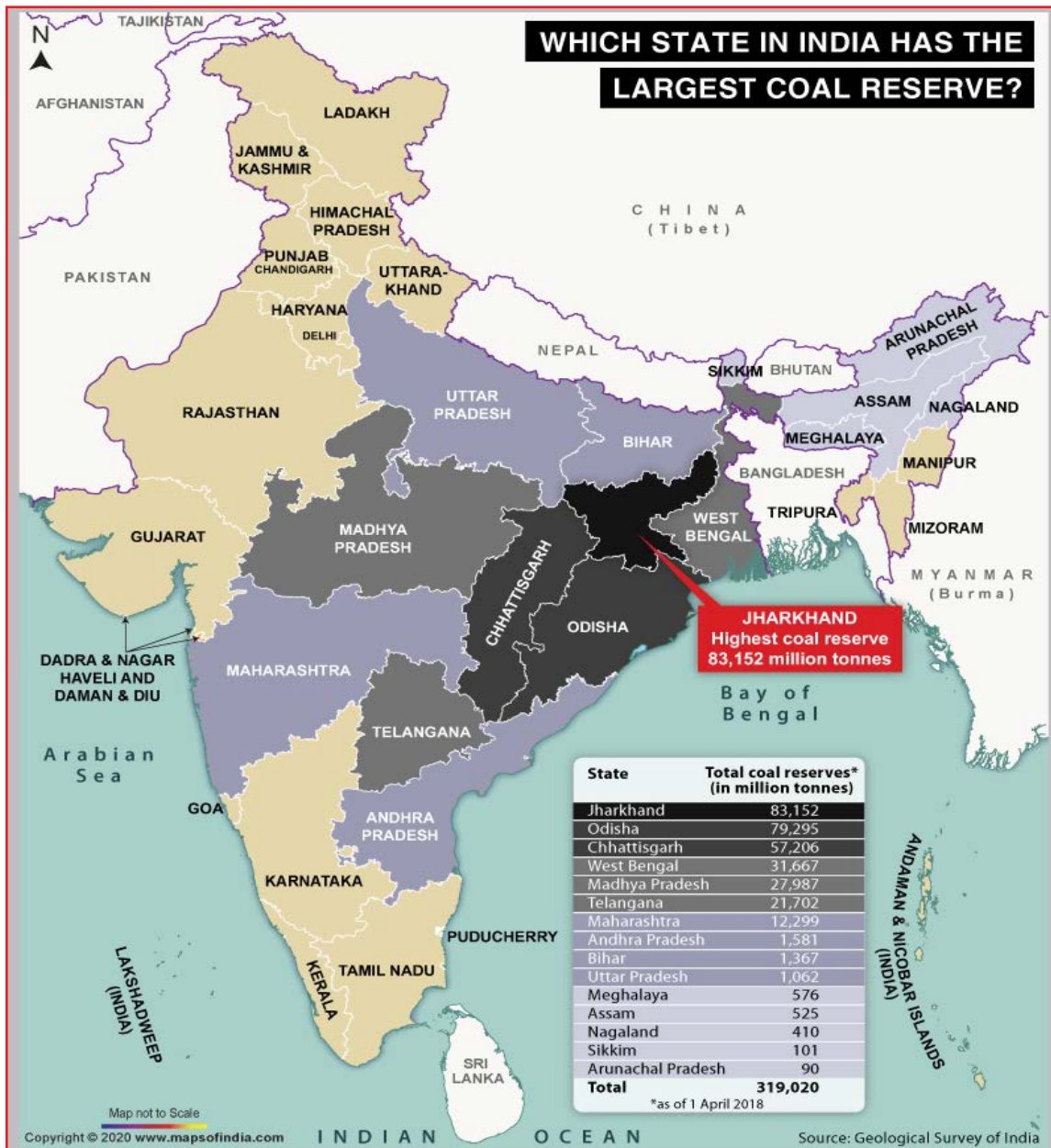
Note:



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Note:

- The Government is promoting **coal-to-chemical and gasification processes** due to the expected **surplus of domestic coal** in the future after meeting the **power and other sectors' needs**.
 - India aims for **100 million tonnes (MT) coal gasification by 2030** with investments worth over Rs. 4 lakh crores.
- In addition to **VGF**, the government is supporting the coal industry in 2 ways:
 - **Long-term linkage window**: This creates a stable market for coal producers.
 - **Coal utilization for gasification**: Coal mine owners can use their coal for gasification projects and get a discount on revenue sharing.
- Production of **coal and lignite** reached **1 billion tonnes** in FY2024, target of **1.08 billion tonnes** is set for the current fiscal year 2024-25.
- India has the **fourth largest coal reserves** in the world, with reserves of **361.41 billion tonnes**.
 - **Top 3 Coal Reserves**: US, Russia and Australia.
 - **Top 3 Coal Production**: China, India and US.



Note:



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Women in Corporates Roles in India

Why in News?

A recent report titled “**Women in Leadership in Corporate India**” by a networking platform called **LinkedIn** has shown a persistent **underrepresentation of women in leadership positions** across Indian corporates.

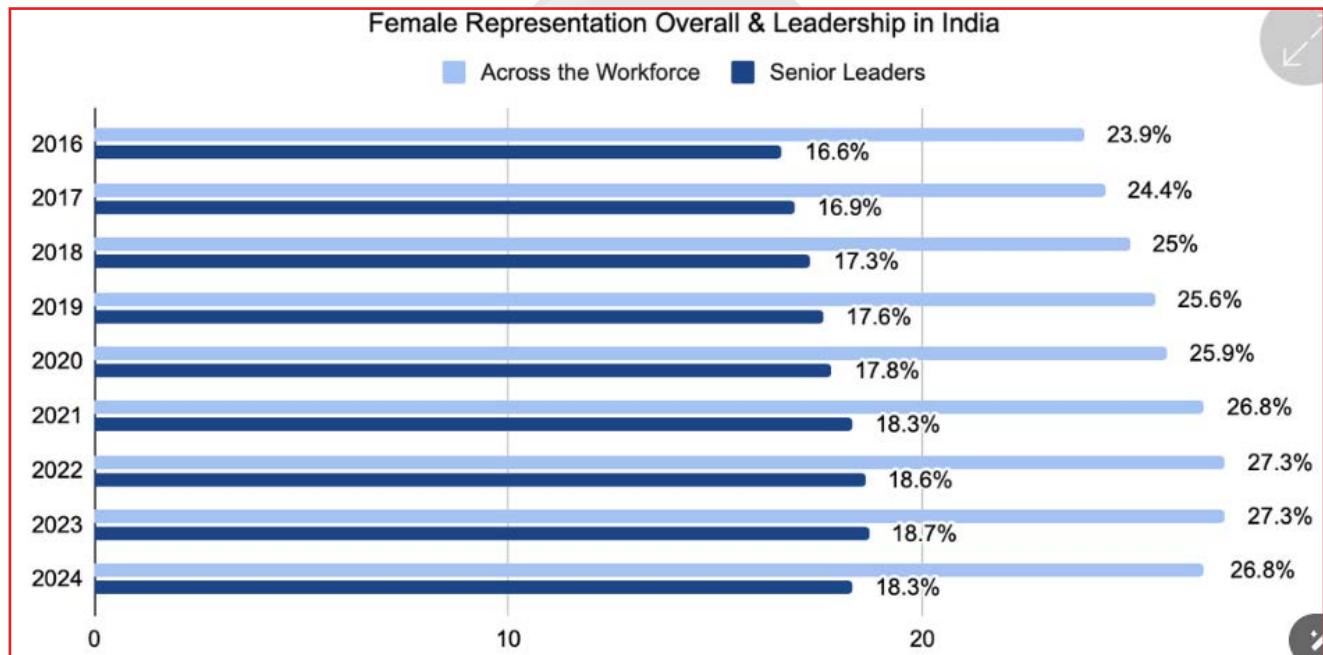
- The percentage has remained **stagnant** below 30% for a considerable period.

LinkedIn

- LinkedIn is a **business-oriented social media platform**, launched in **2003**, that **focuses on professional networking**.
- Unlike general social media sites like Facebook or Twitter, **LinkedIn focuses on career-related aspects**.
- The data is based on LinkedIn members in **India**, where the **firm has over 100 million people registered**

What are the Findings of the Report?

- **Stagnation of Women Representation in Corporates:**
 - Women representation across the workforce and in senior leadership positions is below 30% all the time, and is on a declining trend post-pandemic.
 - This can be attributed to the **slowdown in fresh hires of women for leadership roles**.



- **Women in Leadership Lowest, Moderate and Highest in Sectors:**
 - **Lowest Representation:** Construction, Oil, Gas, and Mining, and Utilities (11%), Wholesale and Manufacturing (12%), and Accommodation and Food Services (15%).
 - **Slightly Better (12%):** Wholesale, Manufacturing
 - **Moderate Representation:** Technology, Information & Media, Financial Services (19%)
 - **Highest Representation:** Education (30%) and Government Administration (29%)
- **Breaking the Law:**
 - Reports show that laws such as the **Companies Act, 2013**, which **mandates women directors on company boards**, are **not being followed** strictly.
 - Between April 2018 and December 2023, 507 companies were fined for flouting this norm. Of them, 90% were **listed companies**.

Note:

India Employment Report 2024 by the International Labour Organization (ILO)

- The **female labour force participation rate in India** was 24.5% in 2024, a slight increase from **23.3% in 2019 (lower than the global average of 47.2%)**.
- Women in India are more likely to be employed in the informal sector, with **86% of working women in informal employment** compared to 82% of men.
- The **Covid-19** pandemic has disproportionately impacted women's employment, with **women 1.8 times more likely to lose their jobs compared to men**.
- Women also face significant challenges in re-entering the labour force after the pandemic, due to increased care responsibilities and gender biases.

Labour Force Participation Rate

- It is the **section of the working population in the age group of 16-64 in the economy currently employed or seeking employment**.
- Persons still **undergoing studies, housewives and persons above the age of 64 are not seen as a part of the labour force**.

What are the Factors Contributing to Lower Representation of Women in Corporates?

- **Unconscious Bias:** Deeply ingrained **societal biases and stereotypes** about women's abilities, leadership styles, and career ambitions can **lead to unfair assessments and limited opportunities for advancement**.
- **Reduction in Work-from-home Options:** The reduction in the availability of hybrid or work-from-home roles may have **contributed to the stagnation**, as these arrangements often facilitate the participation of women in the corporate workforce.
- **Work-Life Balance Challenges:** The disproportionate **burden of domestic and caregiving responsibilities** that often falls on women can make it **difficult to demonstrate the same level of commitment and availability as their male counterparts**.
- **Safety Concerns:** Migration and safety concerns further limit women's access to employment. **Inadequate urban infrastructure, along with safety issues in public spaces, can discourage women from seeking and retaining jobs**, particularly in urban areas.
- **Lack of Mentorship and Sponsorship:** Women often have **less access to influential mentors and sponsors** who can advocate for their career progression and help them navigate the corporate landscape.

- **Limited Representation in Leadership:** The scarcity of **women in senior leadership positions creates a lack of visible role models** and makes it harder for women to envision themselves in these positions.

International Labour Organisation (ILO)'s Framework for Bridging the Workforce Gender Gap

- **Closing the Pay Gap:**
 - Enforce laws ensuring **equal pay for work of equal value**.
 - Implement salary transparency measures to **expose and address pay discrepancies**.
 - Utilise **objective criteria for job evaluation** that are not biased by gender stereotypes.
- **Deconstructing Occupational Segregation:**
 - **Dismantle preconceived notions** about the suitability of certain jobs for specific genders.
 - **Promote women's participation** in traditionally male-dominated fields like **STEM (Science, Technology, Engineering, and Mathematics)**.
- **Fostering a Safe and Inclusive Work Environment:**
 - Implement strong **legal frameworks to prohibit gender discrimination** and harassment.
 - Example, India's the **Sexual Harassment of Women at Workplace (Prevention, Prohibition and Redressal) Act, 2013**.
 - Raise **awareness about gender bias** and create a culture of zero tolerance.
- **Promoting Work-Life Balance:**
 - Provide adequate **maternity and paternity leave policies** to support parents during childbirth and early parenthood.
 - Design social protection measures that **support working families**, including affordable childcare options.
- **Valuing Care Work:**
 - Invest in **creating quality care jobs with fair wages** and decent working conditions.
 - Strengthen regulations for care professionals, who are predominantly women.
 - India needs to ratify the **Domestic worker convention of ILO (Domestic Workers Convention, 2011 (No. 189))** and frame domestic law accordingly.
- **Crisis Resilience for Women's Employment:**
 - Develop policies that **safeguard women's employment during economic downturns**, such as targeted training programs or financial support.

Note:



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What Measures can be Adopted to Enhance Gender Diversity in Corporate Leadership?

- **Flexible or hybrid work policies:**
 - This is important for **retaining women, especially at the junior and middle management levels**, as this is when they often have to balance career aspirations and family commitments.
- **'Skills-First' Approach to Hiring:**
 - Adopting a **'skills-first' approach to hiring, rather than making gendered assumptions** about a prospective employee's capabilities, can help reduce biases and promote meritocracy.
 - This involves **focusing on the candidate's relevant skills, qualifications**, and experience, rather than relying on gender-based stereotypes.
- **Promoting Diversity in Senior Leadership:**
 - The government can promote **diversity in senior leadership** through initiatives to raise awareness of **board diversity** in listed companies.
 - As an example, the **Japanese Ministry of Economy** collaborated with the Tokyo Stock Exchange to introduce the **"Nadeshiko Brands"** program.
 - This **highlights companies that encourage women's empowerment and leadership** as attractive investment opportunities.
- **Establish Networking and Support Groups for Women:**
 - **Creating a Strong Network:** These groups for women professionals can foster connections and collaboration, **empowering women to navigate the path to leadership**.
 - **Peer Learning and Support:** Through these, **women can share experiences, learn from each other's successes and challenges**, and build a strong support system.
- **Mentorship and Networking Opportunities:**
 - Providing **mentorship and networking opportunities for women** can help them navigate the **corporate ladder more effectively**.

- Experienced **female leaders can guide and support aspiring women**, sharing insights and strategies for career advancement.

➤ **Shared Parental Leave Policies:**

- These can **promote a more equitable distribution of caregiving responsibilities** between men and women.
- **Paid paternity leave policy**, especially in the private sector, **can help promote a more equitable distribution of caregiving responsibilities** between men and women.

Increased Recovery Under IBC

Why in News?

Recent data from the **Insolvency and Bankruptcy Board of India (IBBI)** shows, **creditors** in India have retrieved almost **half of their claims** under the **Insolvency and Bankruptcy Code (IBC), 2016** when resolutions are concluded within the **330-day deadline**, although **delays have diminished** the proportion of money recovered.

What are the Key Highlights of the Latest Data?

➤ **Recovery Rates and Timeliness:**

- Data shows that 947 financially stressed companies' resolutions resulted in creditors receiving ₹3.36 lakh crore, equivalent to **32.1% of their claims since the inception of the IBC (2016)**.
- Stress resolution under the **Insolvency and Bankruptcy Code (IBC), 2016** has improved in recent years, but recoveries have not kept pace.
 - Recoveries by creditors were at 54% in FY18 and FY19 but dropped to 22% in FY21 due to the pandemic.
 - Recoveries inched up to 23% in FY22 and 36% in FY23 before **declining again to 27% in FY24**.

Note:



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- The number of resolutions reached a record 269 in the last fiscal year (FY 24), up from 189 in FY23 and 144 in FY22, mainly due to government filling **National Company Law Tribunal (NCLT)** vacancies in the past two years.
- Creditors have experienced **stronger cumulative recoveries** compared to the fair value of stressed companies **upon insolvency admission, at 85%**.
 - In terms of liquidation value, the recovery rate has reached **161.8%** of the assets.
- Experts **stress the importance of timely initiation of the Insolvency and Bankruptcy Code (IBC)** for stress resolution, as **delays (averaging 679 days)** have **lowered recovery rates to 26%**, impacting asset value and debt recovery.

What are the Proposed Measures to Strengthen IBC?

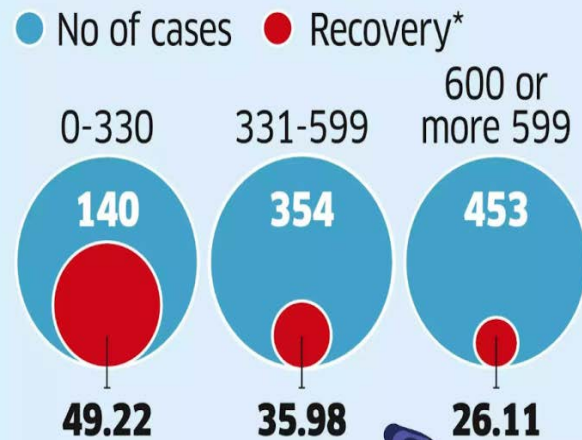
- **Reduce Delays:** Efficiently resolving insolvency cases within the **IBC's 330-day deadline** is imperative, with the **current average duration of 679 days** underscoring the need for streamlining processes and reducing litigation.
- **Improve Recovery Rates:** While the IBC has led to resolutions, the percentage of claims recovered by creditors needs improvement. It dropped from 49% for on-time resolutions to 26% for delayed ones. It can be achieved by:
 - Ensure **sufficient judges and staff at the NCLT** to handle cases efficiently to **expedite processing and reduce delays** caused by backlogs.
 - Review and **simplify the IBC procedures** to eliminate unnecessary steps and expedite approvals involving standardising processes.
- **Sector-Specific Regimes:** Considers **specialised insolvency regimes** for sectors like **real estate**, which may have unique challenges compared to other industries.
- **Cross-Border Insolvency Framework:** Establish an **effective legal framework** based on the **UNCITRAL**

(United Nations Commission on International Trade Law) to handle insolvency cases involving companies with assets in multiple countries.

- **Review Timelines:** Re-evaluate the timelines mandated by the IBC to ensure they are efficient and minimise unnecessary delays.
- **Formal Prepack for All Companies:** Allow a formal pre-packaged insolvency process for all companies, not just **Micro, Small and Medium Enterprises (MSME)**. This involves **agreeing on a resolution plan** before initiating formal bankruptcy proceedings.

Costly Delay

Resolution duration (Days)



*% of creditors' claims approved by NCLT

Insolvency cases pertain to late 2016-March 2024

Source: IBBI

679 DAYS Average time taken for resolution of a stressed firm

32.10% Average recovery rate involving 947 resolved cases

Note:



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What are the Key Highlights of the Insolvency and Bankruptcy Code, 2016?

➤ About:

- The **Insolvency and Bankruptcy Code (IBC), 2016** provides a framework for resolving the bankruptcy and insolvency of companies, individuals, and partnerships in a **time-bound manner**.
 - **Insolvency** is a state where the **liabilities of an individual** or an organisation **exceed its assets and that entity is unable to raise enough cash to meet its obligations** or debts as they become due for payment.
 - **Bankruptcy** is when a person or **company is legally declared incapable of paying their due and payable bills**.
 - The **Insolvency and Bankruptcy Code (Amendment) Act, 2021** modified the 2016 Code to offer a **more efficient insolvency resolution** framework for MSMEs, ensuring quicker, cost-effective, and value-maximising outcomes for all stakeholders.
- ### ➤ Insolvency and Bankruptcy Board of India (IBBI):
- **IBBI** serves as the **regulatory authority** overseeing insolvency proceedings in India.
 - The IBBI's Chairperson and three full-time members are appointed by the government and are experts in the fields of finance, law, and insolvency.
 - It also has ex-officio members.
- ### ➤ Adjudication of Proceedings:
- **National Companies Law Tribunal (NCLT)** adjudicates proceedings for companies.
 - **Debt Recovery Tribunal (DRT)** handles proceedings for individuals.
 - They play a pivotal role in approving the initiation of the resolution process, appointing professionals, and endorsing the final decisions of creditors.

- **Procedure for Insolvency Resolution under the Code:** Initiated by either **debtor or creditor** upon default, insolvency professionals manage financial information and debtor assets, with a 180-day legal action prohibition during resolution.
- **Committee of Creditors (CoC):** The CoC, formed by **insolvency professionals** and comprising financial creditors, determines the fate of outstanding debts through debt revival, repayment schedule changes, or asset liquidation, with a 180-day deadline before the debtor's assets are liquidated.
- **Liquidation Process:** Proceeds from the sale of the debtor's assets are distributed **first to insolvency resolution costs**, second to secured creditors, third to dues for workers and employees, and fourth to unsecured creditors.

India to Import Wheat After 6 Years

Why in News?

India, the world's second-largest wheat producer, plans to begin wheat imports after a six-year gap to replenish depleted reserves and control rising prices, driven by three consecutive years of disappointing crops.

- India is likely to **remove a 40% import tax on wheat, allowing private traders to purchase** from countries like Russia, though in small quantities.

Why India Decided to Resume Wheat Imports?

➤ Declining Wheat Production:

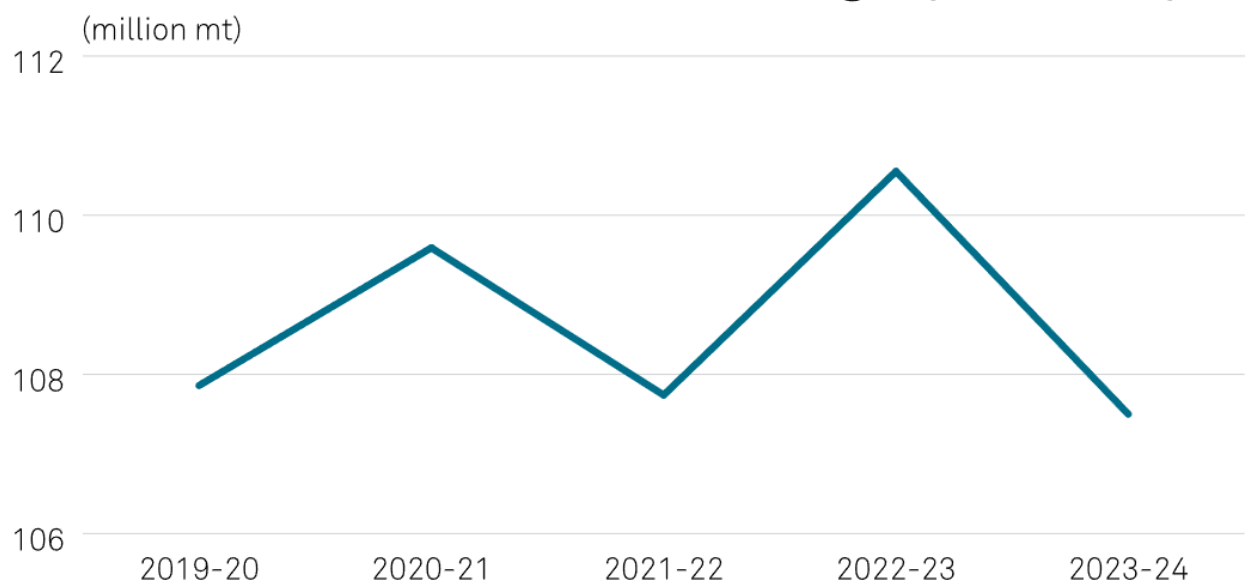
- India's wheat production has declined in the **last 3 years** due to unfavourable weather conditions, leading to a sharp drop in wheat output.
- The government estimates this year's wheat crop to be **6.25% lower** than the previous year's (2023) record production of **112 million metric tons**.

Note:



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India's 2023-24 wheat harvest seen slightly lower on year

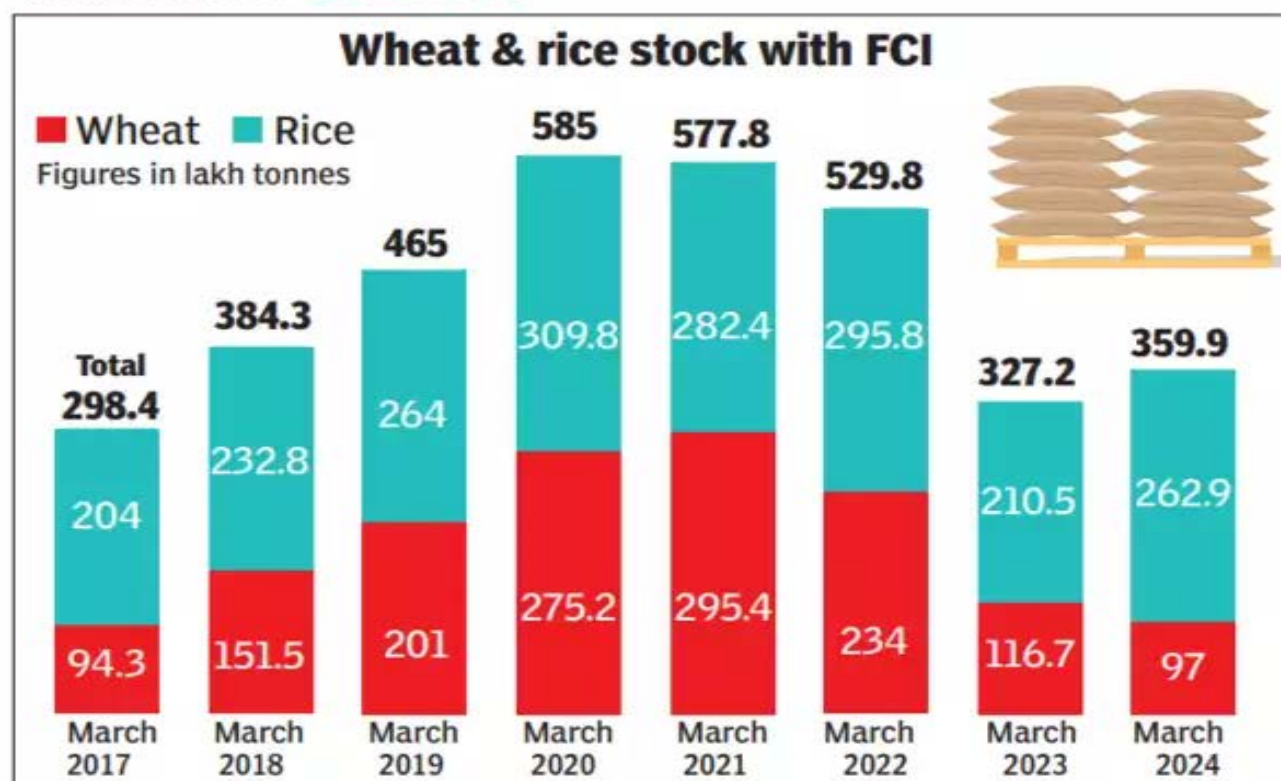


Source: Ministry of Agriculture, trade

➤ Depletion of Wheat Reserves:

- As of April 2024, wheat stocks in government warehouses have dropped to 7.5 million tons, the lowest in 16 years, due to the government selling over 10 million tons from its reserves to control domestic prices.

TAKING STOCK



Note:

➤ **Shortfall in Wheat Procurement by Government:**

- The **government's target** for wheat procurement the year 2024 was **30-32 million metric tons**, but it has managed to buy **only 26.2 million tons** so far.

➤ **Surge in Domestic Wheat Prices:**

- **Domestic wheat prices** have stayed above the government's **minimum support price (MSP)** of 2,275 rupees per 100 kg and have been on the rise recently.
 - So, the **government decided to remove the 40% import duty on wheat** to allow private traders and flour millers to import wheat, primarily from Russia.

What are the Possible Implications of the Decision?

➤ **Domestic Market:**

- **Enhanced Availability and Price Stability:** Abolishing import duty will likely lead to **increased wheat supplies in the domestic market**. This can potentially **mitigate price hikes**.
- **Replenishing Strategic Reserves:** Lower import costs can **aid the government in replenishing depleted wheat reserves**. This **bolsters food security** by creating a **buffer against unforeseen disruptions** in domestic production.

➤ **Global Market:**

- **Potential Upward Price Pressure:** While India's estimated import volume (3-5 million metric tons) is modest, it could **contribute to a rise in global wheat prices**.
 - This is due to the current scenario of **high prices driven by production concerns in major exporting nations** like Russia.
- **Limited Overall Impact:** India's import requirement is unlikely to significantly influence the global market. Larger players will continue to exert a more substantial influence on global wheat price trends.

Food Corporation of India (FCI)

- It is a statutory body established under the **Food Corporations Act 1964**.
- Functions under the Department of Food & Public Distribution, **Ministry of Consumer Affairs, Food and Public Distribution**.
- **Key Functions of FCI:**
 - **Procurement:** FCI acts as the nodal agency for procuring wheat and paddy at the government-declared **Minimum Support Price (MSP)** to safeguard farmers' interests and incentivise agricultural production.
 - **Storage:** The procured food grains are stored scientifically in **warehouses** across the country to maintain **buffer stocks** and ensure availability during lean periods.
 - **Distribution:** FCI efficiently distributes foodgrains to state governments for further distribution through the **Public Distribution System (PDS)**. This ensures access to **essential food items at subsidised prices** for vulnerable sections of society.
 - **Market Stabilisation:** By regulating procurement and distribution, FCI helps **stabilise foodgrain prices in the market**, preventing undue price fluctuations.
 - **Monitoring:** FCI closely monitors foodgrain stocks and their movement throughout the country to **identify potential shortages and ensure timely corrective measures**.

Wheat

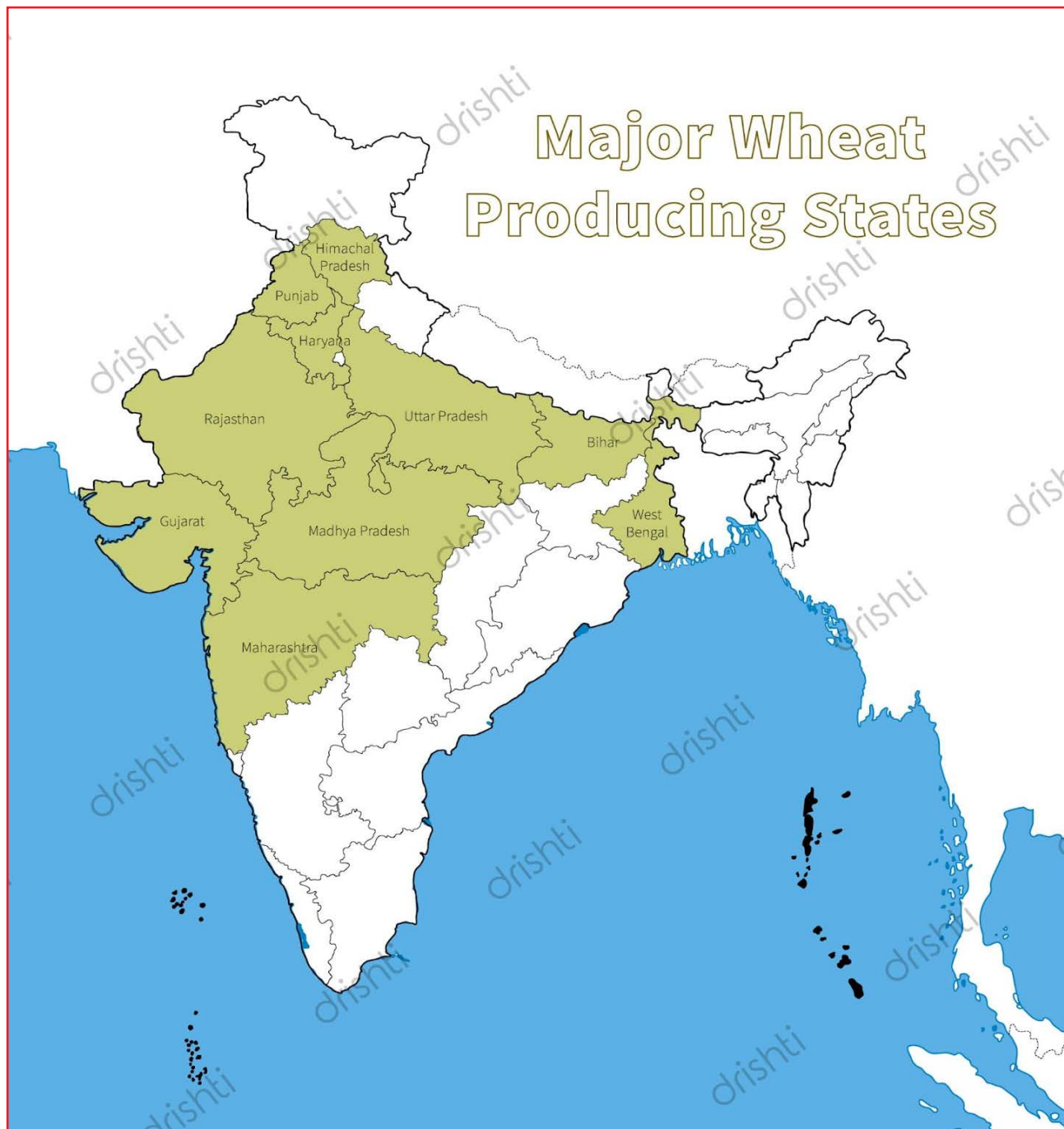
- This is the **second most important cereal crop** in India after rice and main food crop, in the north and north-western part of the country.
- Wheat is a **rabi crop** that requires a **cool growing season and bright sunshine at the time of ripening**.
- Success of the **Green Revolution** contributed to the growth of Rabi crops, especially wheat.
- **Temperature:** Between 10-15°C (Sowing time) and 21-26°C (Ripening & Harvesting) with bright sunlight.
- **Rainfall:** Around 75-100 cm.
- **Soil Type:** Well-drained **fertile loamy and clayey loamy** (Ganga-Satluj plains and black soil region of the Deccan).

Note:



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- **Top 3 Wheat Producers in World (2021): China, India and Russia.**
- **Top 3 Wheat Producers in India (in 2021-22):** Uttar Pradesh, Madhya Pradesh and Punjab
- **Status of Indian Wheat Production and Export:**
 - India is the world's second-biggest wheat producer after China. But it accounts for less than 1% of the global wheat trade. It keeps a lot of it to provide subsidised food for the poor.
 - Its top export markets are Bangladesh, Nepal, Sri Lanka
- **Government Initiatives:**
 - Macro Management Mode of Agriculture, **National Food Security Mission** and **Rashtriya Krishi Vikas Yojana** etc.



Note:



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WIPO Treaty Protecting Genetic Resources and Traditional Knowledge

Why in News?

The recently concluded **World Intellectual Property Organization (WIPO) treaty on Intellectual Property (IP), Genetic Resources (GRs), and Associated Traditional Knowledge (ATK)** is a significant win for countries of the global South including India.

- The treaty has been adopted at a multilateral forum with a consensus among more than 150 countries, including the majority of the developed economies.

What is the Significance of the WIPO Treaty?

- **Inscription of TK and Wisdom into the Global IP System:** The treaty marks the first time that traditional knowledge and wisdom systems are being inscribed into the global intellectual property (IP) system.
 - The treaty sets unprecedented global standards within the IP system for provider countries of GRs and ATK.
- **Protection of Biodiversity:** The WIPO Treaty aims to balance the **rights of countries rich in biodiversity and traditional wisdom** with the global **Intellectual Property Rights (IPR) system**.
- **Inclusive Innovation:** It promotes inclusive innovation by recognising the connection between local communities and their **GRs and ATK**.
 - The treaty protects the wealth of traditional knowledge on medicinal plants, agriculture, and other aspects of life, passed down through generations, from misappropriation.
- **Disclosure Requirements:** The treaty will require contracting parties to put in place **mandatory disclosure obligations for patent applicants** to disclose the country of origin or source of the genetic resources when the claimed invention is based on genetic resources or associated traditional knowledge.
 - The WIPO Treaty helps **combat biopiracy by establishing a legal framework to protect GRs and traditional knowledge** from unauthorised commercial exploitation.

- **Prevention of Misappropriation:** The treaty establishes mandatory disclosure obligations, which offer added protection to prevent the misappropriation of GRs and ATK in countries without existing disclosure laws.
 - The recognition is crucial as several traditional herbs and products have been falsely claimed as foreign inventions in the past, leading to contested patent applications.

World Intellectual Property Organisation

- It is the global forum for **Intellectual Property (IP) services**, policy, information and cooperation. It is a self-funding agency of the **United Nations**, with 193 member **states including India**.
- Its mission is to lead the development of a balanced and effective international IP system that enables innovation and creativity for the benefit of all.
- WIPO defines Traditional knowledge (TK) as knowledge, know-how, skills and practices that are **developed, sustained and passed on from generation to generation within a community**, often forming part of its cultural or spiritual identity.

Note:

- Genetic resources (GRs) are defined in the **Convention on Biological Diversity, 1992 (CBD)** as genetic material of plant, animal, microbial or other origin containing functional units of heredity that has **actual or potential value**.
- Examples include medicinal plants, agricultural crops and animal breeds.

What are the Past Cases Surrounding Traditional Knowledge and Genetic Resources in IPR?

- **Traditional Knowledge:**
 - **The Turmeric Case:** Turmeric, a tropical herb from India, is widely used in the country for medicinal, culinary, and dye purposes. It is used as a blood purifier, for treating the common cold, and as an antiparasitic for skin infections.
 - In 1995, the **US issued a patent for using turmeric powder for wound healing** to the University of Mississippi Medical Center, but it was **later revoked** due to **prior art evidence provided by the Indian Council for Science and Industrial Research (CSIR)**.

Note:



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- **The Neem Case:** It raised a controversy over a patent granted to a company W.R. Grace for a formulation using the **active ingredient azadirachtin from the neem plant**.

- **Traditional medicine systems like Ayurveda and Unani** have long recognised neem's medicinal and pesticide properties.
- However, the patent granted the company exclusive rights to use azadirachtin (extract of fruit from the Neem tree) in a specific storage solution.
- This sparked an outcry and led to re-examination and opposition proceedings at the United States Patent and Trademark Office (USPTO) and the European Patent Office (EPO). While the USPTO upheld the patent, the **EPO ultimately ruled against it, stating it lacked innovation**.

➤ **Genetic Resources:**

- **Wheat Varieties Case (2003):** The case involves biopiracy of Indian **wheat varieties known as Nap Hal and Nap Hal-49**, which were patented by a **European company** claiming to be the inventors.
 - Indian authorities intervened and provided evidence that these wheat varieties originally belonged to India, were its natural resources and crop varieties, and were not novel inventions. As a result, the patents were revoked.
- **Basmati Rice Case (2000):** It involved a US company being granted a patent for **Basmati rice** by the **USPTO**.
 - The applicants falsely claimed to have invented the new variety, leading to conflict between Indian and American agricultural organisations.
 - Eventually, the patent claims were narrowed down when the applicants admitted they didn't invent Basmati rice.

What are India's Initiatives Related to Protecting Traditional Knowledge and Genetic Resources?

➤ **Traditional Knowledge:**

- **Traditional Knowledge Digital Library:**
 - The TKDL is a **comprehensive database of medicinal formulations** in various languages.
 - Established in 2001, the TKDL was created in response to **India's challenges in overturning**

patents on traditional remedies like turmeric and neem.

- This initiative, a joint effort by the **CSIR** and the **Department of AYUSH**, aims to safeguard India's rich medicinal knowledge from being patented erroneously, which was happening at an estimated rate of 2,000 cases per year.
- The TKDL has been pivotal in protecting India's traditional medicinal systems from misappropriation globally.
- **Patents (Amendment) Act, 2005:** It aims to protect the rights of indigenous communities by **obligating patent applicants to disclose the origin of biological resources in their inventions**.
 - Failure to disclose this information, especially related to TK, may result in the refusal of the patent.
- **Trademark Act, 1999:** **Trademarks** are based on the principles of distinguishability and avoiding confusion. They differentiate goods and prevent confusion about the source of a product.
 - The act allows for the **protection of agricultural and biological products, including those from indigenous communities**.
 - Indigenous groups can use trademark registration to differentiate their brand and guarantee unique quality.
- **Biological Diversity Act, 2002:** It was enacted to provide for the conservation of biological diversity, sustainable use of its components, and **fair and equitable sharing of the benefits** arising out of the use of biological resources and traditional knowledge.
- **Geographical Indications (GI):** It is a designation applied to products originating from a specific geographical area, indicating that the qualities or reputation of the products are **inherently linked to that particular origin**.

➤ **Genetic Resources:**

- **National Gene Bank:** It was established in 1996 to preserve the seeds of Plant Genetic Resources (PGR) for future generations. It has the capacity to preserve about **one million germplasm** (living tissue from which new plants can be grown) in the form of seeds.

Note:

- **Plant Varieties and Farmers' Rights (PPV&FR) Act, 2001:** Plant breeders and farmers providing **Plant Genetic Resources (PGR)** for developing new varieties should receive a **fair share of commercial gains**.
 - The **PPV&FR Act 2001**, is the first to include a provision for access and benefit-sharing (ABS) along with Plant Breeder's Rights (PBRs).
- **National Bureau of Plant Genetic Resources (NBPGR):** It is an Indian institute working under the **Indian Council of Agricultural Research (ICAR)**. It plays a pivotal role in conserving and protecting the genetic diversity of cultivated plants and their wild relatives in India.
- **National Bureau of Animal Genetic Resources (NBAGR):** As a part of ICAR, NBAGR aims to conserve, characterize, and utilize animal genetic resources for sustainable livestock development in India. It maintains a **genbank repository of the National Bureau of Animal Genetic Resources**.

- **Microbial and Insect Biodiversity: National Bureau of Agriculturally Important Insects (NBAII)** serves as a nodal agency for collection, characterization, documentation, conservation, exchange, and utilisation of agriculturally important insect resources.

International initiatives for Access and Benefit-sharing of GR and TK

- **Convention on Biological Diversity**
- **Nagoya Protocol**
- **TRIPS agreement**
- **International Treaty on Plant Genetic Resources for Food and Agriculture**
- **Commission on Genetic Resources for Food and Agriculture**
- **UNESCO's Local and Indigenous Knowledge Systems (LINKS)**: It is an interdisciplinary initiative that promotes indigenous and local knowledge and its meaningful inclusion in environmental policy and action.

Note:

International Relations

Highlights

- Indian Expatriate Community in Gulf Region
- Biopharmaceutical Alliance
- Expansion of BRICS
- New Non-Permanent Members of UNSC
- Maitri Setu
- United Nations Global Supply Chain Forum
- IPEF Ministerial Meeting 2024
- CPEC and Emerging Challenges at LAC
- Colombo Process
- Pandemic Treaty

Indian Expatriate Community in Gulf Region

Why in News?

Recently, a devastating fire broke out in an apartment building near Kuwait City, resulting in the tragic loss of at least 49 lives, with around 40 of the victims being Indian nationals.

- The apartment building housed over 195 workers, the majority of whom were Indian nationals hailing from the states of Kerala, Tamil Nadu, and various parts of northern India.

Expatriate

- It is an individual **living and/or working in a country other than their country of citizenship**.
- The arrangement is often **temporary and for work reasons**.
- An expatriate can also be an **individual who has relinquished citizenship** in their home country to **become a citizen of another**.

What is the Current State of Workers in the Gulf Region?

- **Evolution of Indian community in Kuwait:**
 - The **1990-1991 Gulf War** has led to a mass exodus of the Indian community from Kuwait. After Kuwait's liberation, most members of the Indian community gradually returned and became the largest expatriate community in Kuwait.
 - Prior to the liberation war, the Palestinians constituted the largest expatriate community in Kuwait.

- **"Kuwait's liberation"** refers to the **military operations in 1991 that resulted in the expulsion of Iraqi forces from Kuwait**. This event marked the end of the Gulf War, when a coalition led by the United States launched a military campaign to free Kuwait from Iraqi occupation. The successful liberation of Kuwait restored the country's sovereignty and independence.

➤ Indians in Gulf Countries:

- According to data from the Government of India, as of 2021, there were approximately **8.9 million Indian migrants** residing in the Gulf countries.
- **25% of overseas Indians** and **56% of NRI** reside in 6 Gulf countries (UAE, Saudi Arabia, Kuwait, Qatar, Oman and Bahrain).
- **NRIs (Non-Resident Indians)** are individuals who hold Indian citizenship but live outside of India.
- **Overseas Indians or Overseas Citizens of India (OCIs)** are individuals from foreign countries with **ancestral ties to India**. They are **not considered Indian citizens** but are granted specific privileges akin to those of permanent residents in India.

➤ Inward Remittances:

- Of the total foreign inward remittances, **28.6%** originated from the **Gulf countries**, with **Kuwait** alone accounting for **2.4%** of these remittances.

➤ Trade Relations:

- The Gulf region contributes to about **one-sixth** of India's total trade.
- In FY 2022-23, India's trade with GCC countries stood at around **USD 184 billion**, marking a **20% increase** as compared to FY 2021-22.

Note:

➤ Partnership in Energy Cooperation:

- The Government of India has announced plans to develop a comprehensive relationship with the GCC countries in the area of **energy cooperation**.
- This will involve encouraging **participation in India's strategic petroleum reserves, negotiating long-term gas supply agreements, seeking concessions in oilfields, and collaborating on renewable energy projects**.

Gulf Cooperation Council (GCC)

- **GCC is a regional organisation comprising 6 nations:** Saudi Arabia, the United Arab Emirates, Oman, Kuwait, Qatar, and Bahrain. The GCC was established in **1981**, with the **aim of promoting cooperation, integration, and interconnectivity** among its member states, based on their regional and cultural proximity.
- Presently, the **primary source of revenue for the GCC countries** is derived from the **export of oil**.
- The GCC member states have been **heavily reliant on their oil resources**, which have been the backbone of their economies for decades.

What are the Challenges Faced by Indian Diaspora and Migrants in Gulf Countries?

- **Kafala System:** It is a practice of **tying a migrant worker's visa to their employer** (sponsor). It is prevalent in many Gulf countries. This creates a **power imbalance and misery** to workers who face issues like confiscation of passports, difficulty changing jobs and exploitation and abuse by their employer. This has led to **forced labour** situations.
- **Security Concerns:** In 2014, during the insurgency in Iraq, 40 Indian construction workers were abducted and killed by the **Islamic State of Iraq and Syria (ISIS)** which highlights the potential security risks faced by Indian workers in volatile regions.
- **Unsafe Working Conditions and Labor Exploitation:** Migrant workers, particularly in construction and manual labour sectors, often face **unsafe working environments with inadequate safety gear and protocols**. This can lead to accidents, injuries, and even fatalities.
 - In 2019, several Indian workers died due to **heatstroke** in the UAE, highlighting the dangers of working in extreme heat without proper precautions.
 - They also **face issues regarding non-payment of salaries, denial of overtime pay, and longer working hours**.

- **Limited Rights and Abuse:** Indian expatriates are **not granted citizenship or permanent residency** in most Gulf countries which **restricts their ability to own property, access social security benefits, and participate in political processes**.
 - Domestic workers are vulnerable to **physical and psychological abuse** by employers.

What are the Measures taken by the Indian Government to Protect its Migrant Workers Abroad?

- **Bilateral Labour Agreements (BLAs):** The government has signed BLAs with several countries to **ensure the protection and welfare of Indian migrant workers**. These agreements **cover aspects like minimum wages, working conditions, repatriation, and dispute resolution**.
- **Pravasi Bharatiya Bima Yojana (PBBY):** This is a **mandatory insurance scheme** that provides life and disability cover to all **Emigration Check Required (ECR)** category Indian migrant workers going abroad for employment.
 - It provides coverage of up to **Rs. 10 lakh in case of accidental death or permanent disability** of Indian migrant workers abroad.
- **Minimum Referral Wages (MRW):**
 - MRW has been set by the Indian Government for Indian migrant workers abroad in nations that **do not have minimum wage laws**.
 - It ranges around USD 300 to 600.
 - It is the **lowest acceptable salary** set by the Indian government for its migrant workers (especially unskilled) going to specific countries.
 - It ensures migrant workers from India receive a minimum salary in certain countries.
- This **prevents them from being exploited** by employers offering much lower wages than the norm.
 - The MRW rates are **advised by Indian missions in the destination countries**, considering the prevailing cost of living and wage rates prescribed by the relevant ministries. During the **Covid-19** pandemic, it was briefly lowered to protect Indian worker's jobs in the Gulf.
- **eMigrate System:** This is an online platform that **streamlines the emigration process**. It provides **pre-departure orientation, registers job contracts, and tracks the status of migrant workers**.
- **Migrant Resource Centers:** Set up in several states to provide information, counselling, and support services to prospective and returning migrant workers.

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- **Grievance Redressal Mechanisms:** Platforms like the eMigrate system and the Overseas Workers Resource Centre allow migrant workers to file complaints and seek assistance from the government.
- **Repatriation Assistance:** In cases of distress or conflict, the **Indian government provides repatriation assistance to Indian workers abroad**, facilitating their safe return to India.
- **Restrictions on Women's Emigration:** Women **below the age of 30 years are not granted emigrant clearance** for employment as housemaid, domestic worker, hairdresser, beautician, dancer, stage artist, labourers, or general workers.

Gulf Region

- The lands around the Persian Gulf are shared by 8 countries namely, **Bahrain, Iran, Iraq, Kuwait, Oman, Qatar, Saudi Arabia and the United Arab Emirates (UAE)**.
- These all eight countries are members of the **United Nations**.
 - UAE, Bahrain, Saudi Arabia, Oman, Qatar, Kuwait are members of the **Gulf Cooperation Council (GCC)**.
 - Out of the Persian Gulf countries, Iran, Iraq, Kuwait, UAE and Saudi Arabia are members of the **Organization of the Petroleum Exporting Countries (OPEC)**.
- **Strategic Importance:** The Persian Gulf is one of the most strategically important regions globally. This is due to two main reasons.
 - **Oil and Gas Reserves:** The Persian Gulf region holds the **world's largest proven reserves of oil and natural gas**. This has made the region a vital source of energy for many countries worldwide.
 - **Strategic Location:** The Persian Gulf is a **crucial shipping lane for oil exports** from the region to other parts of the world. The **Strait of Hormuz**, a narrow waterway between **Iran and Oman**, is a chokepoint through which a significant portion of the world's oil travels.



Note:

Biopharmaceutical Alliance

Why in News?

Recently, South Korea, India, the United States, Japan, and the **European Union (EU)** have launched the **Biopharmaceutical Alliance** to address drug supply shortages and enhance supply chain resilience in the wake of the **Covid-19 pandemic**.

- The inaugural meeting took place in San Diego, California during the **Bio International Convention 2024**.

What is the Biopharmaceutical Alliance?

- **About:** The Biopharmaceutical Alliance is a strategic partnership alliance aims to ensure a steady and secure supply of biopharmaceutical products worldwide and aid in **vaccine diplomacy**.
 - It aims to **coordinate bio policies, regulations, and research and development** support measures among participating countries.
 - The initiative originated from discussions between **South Korea and the U.S. and expanded to include Japan, India, and the EU**. By collaborating, the member countries hope to build a system that can withstand future global health crises.
- **Need:** The alliance was formed in response to the drug supply shortages experienced during the Covid-19 pandemic. The pandemic highlighted the need for a reliable and sustainable supply chain for biopharmaceuticals.
 - By aligning bio policies, and regulations, the alliance promotes a cohesive approach to biopharmaceutical development.
- **Operating Mechanism:**
 - **Implementation:** The member countries will start implementing the agreed coordination of bio policies and research support.
 - **Supply Chain Mapping:** Developing a comprehensive map of the pharmaceutical supply chain to identify and mitigate vulnerabilities.
 - **Ongoing Collaboration:** Continued collaboration and dialogue among the participating countries to ensure the alliance's goals are met.

Key Drug Shortages During the Covid-19 Pandemic

- The Covid-19 pandemic led to widespread shortages in several critical healthcare areas. **Shortages of Covid-19 vaccines affected vaccination campaigns worldwide**. The lack of vaccines slowed down the global response to the pandemic.
 - Essential drugs, like **Remdesivir**, faced shortages, impacting the treatment of severe Covid-19 cases. These shortages led to challenges in managing patient care during peak infection periods.
 - During the Covid-19 pandemic, there were significant shortages of several critical drugs, including: **Antibiotics** like amoxicillin and penicillin, which are essential for treating bacterial infections.
- The rise in Covid-19 cases caused a spike in **demand for medical oxygen**. Many countries struggled to meet the increased need for **medical oxygen**, essential for severe respiratory symptoms.
- There was a global scarcity of **Personal Protective Equipment (PPE)**, including masks, gloves, and gowns. The PPE shortages posed significant risks to frontline healthcare workers, affecting their safety and ability to care for patients.

How Can Global Vaccine Diplomacy Address Drug Supply Shortages?

- **Historical and Current Contexts:** Historically, Western powers dominated health aid, influencing global health initiatives.
 - Currently, **Russia, China, and India have transitioned from aid recipients to major vaccine producers**, signalling a shift in global health dynamics.
- **Strategic Approaches of Global Vaccine Diplomacy:**
 - **Russia's Technology Transfer:** Russia has strong research and development (R&D) capabilities but **limited production and distribution capacity**. It utilised technology transfer to outsource vaccine production to countries in Asia, Latin America, and Eastern Europe.
 - Technology transfer not only promoted sales but also enhanced Russia's soft power among developing countries.

Note:



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- **India's Mass Production:** The country's vaccine diplomacy was characterised by the production of **60% of the world's vaccines** even before the pandemic and is known as the "**pharmacy of the world**" due to its large volume of pharmaceutical production.
 - With a robust manufacturing base, India swiftly scaled up production of **Western-invented vaccines**, focusing on both donations and commercial sales through initiatives like **Vaccine Maitri**.
- Between January and April 2021, India exported more than **46 million doses to 65 countries**, with nearly **80% of these being sold rather than donated**.
 - India donated vaccines to geopolitically important countries while selling to wealthier nations to cover manufacturing costs. It focused on neighbouring countries (**Neighbourhood First Policy**) and regions with significant Indian diaspora.
 - India is playing a key role in vaccine diplomacy, addressing concerns of vaccine nationalism and inequity in supply. The **World Health Organization (WHO)** has criticised developed countries for hoarding vaccines, while many nations are turning to India to bridge the accessibility gap.
- **China's Comprehensive Investment:** China extensively invested in vaccine development, production, and distribution, prioritising **African and ASEAN countries to align with the Belt and Road Initiative**.
 - **Pakistan became the largest beneficiary of China's vaccine aid**, reflecting geopolitical rivalry with India.
- **BRICS Interactions:** **BRICS countries** are interconnected in the vaccine industry. For example, **Russia outsourced production to China and India** when it received a large order from Brazil.
 - China conducted clinical trials in Brazil and Russia supplied API to Brazil and India for **Covishield** production.
- **Vaccine Diplomacy to Mitigate Drug Supply Shortages:**
 - Vaccine diplomacy can foster collaboration between countries. This can lead to sharing of raw materials and resources to streamline production across the supply chain. Improved communication and coordination to anticipate and address potential shortages.

- Vaccine diplomacy can expand vaccine production capacity by offering **technology or production licences to other countries**, encouraging the creation of **new manufacturing hubs and freeing up existing facilities** for other medications.
 - Existing vaccine production facilities can be repurposed to manufacture essential drugs, diversifying supply chains.
- Reduces dependency on single-source suppliers, mitigating risks of supply disruptions during health crises.

Bio International Convention 2024

- The Bio International Convention 2024, also known as BIO 2024, recently **concluded in San Diego, California**.
- The event is the **biggest gathering for biotechnology**, with over 18,500 industry leaders from around the world. It includes researchers, business professionals, investors, and representatives from public pharmaceutical companies, biotech startups, academia, non-profits, and government.

Expansion of BRICS

Why in News?

Recently, **BRICS** foreign ministers held their first meeting since the BRICS was expanded to add Egypt, Iran, UAE, Saudi Arabia and Ethiopia in 2023.

- They have joined the BRICS with effect from **1st January 2024**.

What is BRICS?

- **About:**
 - BRICS is an acronym for the grouping of the world's leading emerging economies, namely **Brazil, Russia, India, China and South Africa**.
 - The BRICS Leaders' Summit is convened annually.
 - The 15th BRICS Summit was hosted by South Africa in 2023, and Russia will host the 16th Brics summit in October 2024.
- **Formation of BRICS:**
 - The grouping was first informally formed during a meeting of the leaders of **Brazil, Russia, India, and China (BRIC)** on the sidelines of the **G8 (now G7) Outreach Summit** in St. Petersburg, Russia, in 2006, this was later formalised during the 1st BRIC Foreign Ministers' Meeting in New York in 2006.

Note:

- In 2009, the inaugural BRIC summit took place in Yekaterinburg, Russia. The following year (2010), South Africa joined to form the group known as BRICS.

Note:

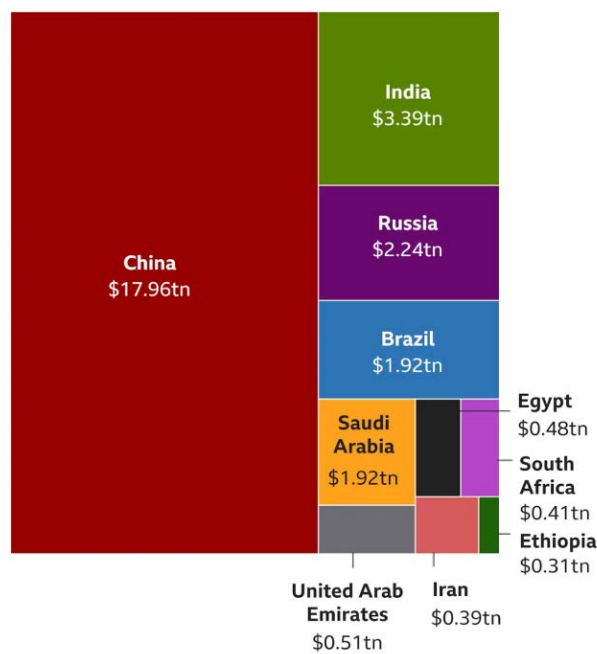
- During the **6th BRICS Summit in Fortaleza (2014)** the leaders signed the Agreement establishing the **New Development Bank (NDB)**.

➤ Significance:

- The group (enlarged) consists of approximately **3.5 billion** people, representing **45%** of the world's population.
- Collectively, the economies of its members exceed **USD 28.5 trillion**, accounting for around **28%** of the global economy.
- Iran, Saudi Arabia, and UAE, as part of the grouping, collectively contribute to approximately **44%** of the global crude oil production.

Brics countries and their GDPs

GDP in trillions of US dollars



Source: World Bank/OECD

BBC

What is the Geopolitical Importance of the Recently Included BRICS Members?

- The inclusion of **Saudi Arabia** and **Iran** boosts BRICS access to significant energy reserves, with Saudi oil increasingly directed to China and India, and Iran expanding its oil exports to China despite sanctions, highlighting the importance of energy cooperation within BRICS.

- Russia's exploration of new markets within BRICS for its energy exports **diversifies the group's energy supply**, reducing Russia's reliance on traditional markets and bolstering the coalition's energy security.
- The strategic inclusion of Egypt and Ethiopia enhances BRICS' geopolitical significance by providing greater influence and access to the crucial maritime trade routes in the **Horn of Africa** and the **Red Sea region**.



Read More: [BRICS Expansion: Challenging Western Dominance](#)

New Non-Permanent Members of UNSC

Why in News?

Recently, Pakistan, Somalia, Denmark, Greece, and Panama have been chosen as **non-permanent members** of the **UN Security Council (UNSC)**, serving a 2-year term from 1st January 2025 to 31st December 2026.

How are the New Members Elected to the UNSC?

➤ Election Process and Regional Groupings:

- The election process for non-permanent seats on the UNSC involves **regional groups** nominating candidates. There are **four regional groups**.
- The newly elected members are **Somalia for the African Group**, **Pakistan for the Asia-Pacific Group**, **Panama for the Latin America and Caribbean Group**, and **Denmark and Greece for the Western European and Others Group**.
- Each **regional group typically agrees** on candidates to present to the **General Assembly** for a **two-year term**.
- This process aims to ensure **regional representation** within the Security Council, reflecting global geopolitical diversity and interests.

Note:



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- **Current and Incoming Members:** The new members **will replace** outgoing countries such as **Mozambique, Japan, Ecuador, Malta, and Switzerland.**
- **Role and Challenges of the Security Council:** The UN Security Council plays a critical role in maintaining international peace and security.
 - However, its effectiveness can be hindered by the **veto power** of its permanent members.

What is the United Nations Security Council?

- The United Nations Security Council, established under the **UN Charter** in **1945**, constitutes one of the **UN's six principal organs.**
- It comprises **15 members (5 permanent (P5) and 10 non-permanent members).**
 - Out of the 10 **non-permanent members**, **five are elected each year** by the General Assembly **for a two-year term.**
 - The **permanent members** are the United States, the Russian Federation, France, China, and the United Kingdom.
 - According to **Oppenheim's International Law: United Nations**, "Permanent membership in the Security Council was granted to five states **based on their importance in the aftermath of World War II.**"
- **India's participation in the Security Council** has been as a non-permanent member during the periods of 1950-51, 1967-68, 1972-73, 1977-78, 1984-85, 1991-92, 2011-12, and **2021-22.**

UN Security Council (UNSC)

The UN Charter vests the primary responsibility for maintaining international peace and security to the UNSC

About One of the 6 principal organs of UN; established in 1945 by UN Charter	Headquarters New York City	First Session 17 January 1946 at Church House, Westminster, London	Membership 15 members - 5 Permanent Members (P5), 10 Non-Permanent Members elected for two-year terms (5 elected each year) - P5 - the US, the UK, Russia, France and China	Presidency - Rotates every month among the 15 members - India's Presidency for year 2022 - December
Voting Powers 1 member = 1 vote - P5 have veto power - Members of UN sans membership of UNSC participate without vote	UNSC Committees/Resolutions Terrorism - Resolution 1373 (Counter Terrorism Committee) - Resolution 1267 (Da'esh and Al Qaeda Committee) Non-Proliferation Committee - Resolution 1540 (against nuclear, chemical and biological weapons)			
India and UNSC - Served 7 times as non-permanent member; elected for the 8th time for 2021-22; advocates for a permanent seat - Arguments for a permanent seat: 43 peacekeeping missions - Active participation in formulating Human Rights Declaration (UDHR) - India's population, territorial size, GDP, economic potential, cultural diversity, political system etc.				
G4 Group of 4 countries (Brazil, Germany, India and Japan) which advocate each other's bids for permanent seats in the UNSC				
Uniting for Consensus (UfC) Movement - Informally known as the Coffee Club - Countries oppose the expansion Permanent Seats of UNSC Prime movers of the club - Italy, Spain, Australia, Canada, South Korea, Argentina and Pakistan - Italy and Spain are opposed to Germany's bid; Pakistan - India's bid; Argentina - Brazil's bid and Australia - Japan's bid		Major Challenges in UNSC - Usual UN rules don't apply to UNSC deliberations; no records of meetings kept - Powerplay in UNSC; anachronistic veto powers of P5 Deep polarisation among P5; frequent divisions end up blocking key decisions Inadequate representation of many regions among of the world		

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Note:

Maitri Setu

Why in News?

The Maitri Setu, also known as the **India-Bangladesh friendship** bridge, is set to open by September, connecting India's **landlocked Northeast** to the Bay of Bengal.



What are the Key Facts about the Maitri-Setu?

➤ About:

- The bridge is **1.9 kilometres long** and connects **Sabroom in Tripura** with **Ramgarh in Bangladesh**.
- Maitri Setu is constructed over the **Feni River**, which acts as a **boundary** between India (in Tripura) and Bangladesh.
- The name '**Maitri Setu**' signifies the **strengthening of bilateral relations** and friendly ties between India and Bangladesh.
- It is a **pre-stressed concrete bridge** with a single-span structure that facilitates smooth traffic and cargo flow.
- The construction of the bridge has been supervised by the **National Highways and Infrastructure Development Corporation Ltd. (NHIDCL)**.
 - NHIDCL is a **government-owned company** established in 2014 for the **development & maintenance of National Highways & Strategic Roads** of India. It operates as a **nodal agency** of the Ministry of Road Transport and Highways (MoRTH).

➤ Significance:

- The bridge will play a **central role** in allowing India to transport goods from **West Bengal to Northeast India** through the **Chittagong and Mongla Ports** in Bangladesh.
- **Cargo movement** through the bridge is **strategically important** as Bangladesh's Chittagong port is just 80km from Tripura's Sabroom.

Note:



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- It would serve as a new trade corridor between the two countries, helping in the development of **Northeastern states**. It will also enhance **people-to-people connect between India's northeast and Bangladesh**.
- Bangladesh is the **biggest trade partner** of India in South Asia and an integral part of India's **Act East Policy**.
 - The completion of Maitri Setu bridge will strengthen **India's strategic ties** as well as **bilateral trade** with Bangladesh.
- The **new maritime route** from Kolkata to Chittagong will provide the quickest way for the movement of goods and an **alternative to the Sittwe Port-Kaladan route**.

Key Facts about Feni River

- It **originates** in the **South Tripura district**, passes through Sabroom town in India, and flows into Bangladesh before **meeting the Bay of Bengal**.
- The river is **116 kilometres long** from its source to the Bay of Bengal.
- Some **notable tributaries** of the Feni River include the **Muhuri River, Raidak River, Chandkhira River, Ryang River, and Kushiya River**.

United Nations Global Supply Chain Forum

Why in News?

Recently the inaugural **United Nations Global Supply Chain Forum (UNGSCF)** hosted by **UN Trade and Development (UNCTAD)** and the **Government of Barbados** highlighted several critical issues and initiatives to address escalating **global supply chain disruptions**.

What are the Key Issues Highlighted at the UNGSCF?

- It emphasized the **volatility in global trade** and the urgency of making supply chains more **inclusive, sustainable, and resilient**.
 - The global disruptions are causing **increased sea time** for ships and higher **greenhouse gas emissions**.
- It focused on the compounded effects of **climate change, geopolitical tensions**, and the **Covid-19** pandemic on global supply chains.
- Ports were highlighted as crucial for maintaining global value chains through technology and sustainable practices.

- The **Port of Bridgetown** in Barbados was showcased as a model for other **Small Island Developing States (SIDS)**.
- The forum explored the challenges of reducing carbon emissions in global shipping, especially for developing countries that have **renewable energy resources**.
 - The **"Manifesto for Intermodal, Low-Carbon, Efficient and Resilient Freight Transport and Logistics"** was launched, advocating for **zero-emission fuels**, optimized logistics, and sustainable value chains to keep **global warming** below **1.5°C**.
- SIDS faces **heightened risks from climate change** impacts on transport infrastructure. Improvements in multimodal transport networks and customs procedures should be prioritised.
 - Ministers from SIDS called for **international financial institutions** and donor countries to fund projects promoting resilience and sustainability in their transport and logistics sectors.
- **Blockchain-enabled traceability** and advanced customs automation were highlighted as crucial for optimising trade facilitation and enhancing transparency.
 - UN Trade and Development presented guidelines for an **electronic single window** for trade to streamline processes.
 - A new **Trade-and-Transport Dataset** developed with the **World Bank** was launched, covering data on over 100 commodities and various transport modes. This free, comprehensive dataset aims to enhance the understanding and optimization of global trade flows.

UNCTAD

- **United Nations Conference on Trade and Development (UNCTAD)** is a **permanent** intergovernmental body of the **United Nations**.
- It was established in 1964 and is headquartered in **Geneva, Switzerland**.
- It aims to **promote sustainable development**, particularly in developing countries, through international trade, investment, finance, and technology transfer.
- UNCTAD's work focuses on **four main areas**:
 - Trade and development
 - Investment and Enterprise
 - Technology and innovation
 - Macroeconomics and development policies.

Note:

What is the Need for Supply Chain Resilience for India?

➤ About:

- **Supply Chain Resilience:** In the context of international trade, **supply chain resilience** is an approach that helps a country to ensure that it has **diversified its supply risk** across a clutch of supplying nations instead of being dependent on just one or a few.
 - Unexpected events, whether natural disasters like **volcanic eruptions, tsunamis, earthquakes**, or pandemics; or human-caused issues like armed conflicts, can disrupt or stop trade from a specific country. This could negatively affect the economy of the country that relies on those supplies.

➤ Need:

- **Covid-19 Realisation:** With the spread of **Covid-19** globally, it has been realised that dependence on a single nation is not good for both the global economy and national economies.
 - Assembly lines are heavily dependent on supplies from one country (China).
 - The impact on importing nations could be crippling if the **source stops production** for involuntary reasons, or even as a conscious measure of economic coercion.
- **USA-China Trade Tensions:** The problems for the global supply chain can escalate when the United States and China both apply tariff sanctions on each other due to trade disputes.
- **India as an Emerging Supply Hub:** The businesses have started seeing India as a “hub for supply chains”, so there is a **need for robust supply chain**.
- **Chinese Import to India:**
 - As per the **Confederation of Indian Industry**, China’s share of imports into India in 2018 (considering the top 20 items supplied by China) stood at 14.5%.
 - In areas such as **Active Pharmaceutical Ingredients** for medicines such as paracetamol, India is largely dependent on China.
 - In electronics, China accounts for 45% of India’s imports.

➤ Initiatives:

- **Indo-Pacific Economic Framework for Prosperity (IPEF)**

- **Supply Chain Resilience Initiative (SCRI):** The **SCRI** aims to create a **virtuous cycle** of enhancing **supply chain resilience** to eventually attain strong, sustainable, balanced, and inclusive growth in the **Indo-Pacific region**.
- Since, India is looking to establish itself as a reliable presence in the **semiconductor supply chain** the Union Cabinet has approved a **Memorandum of Cooperation (MoC)** between India and Japan on developing a semiconductor supply chain partnership.
- In the **2023 G-7 Summit**, India made an important intervention on the topic of Enhancing **Supply Chain Resilience** and gave several suggestions on the issue.
- India with an aim to ensure a **stable and reliable supply** of critical minerals is stepping up its **critical mineral** acquisition plans in Africa, challenging China’s dominant position in the region.
- Other Initiatives:
 - **PM Gati Shakti National Master Plan**
 - **National Logistics Policy (2022)**
 - **Atmanirbhar Bharat initiative**
 - **PLI schemes in key sectors**
 - **Liberalized FDI policy**

What are Suggestions for India for Improving Supply Chain Resilience?

- **Diversification of Suppliers and Manufacturing Base:** Reduce **over-dependence** on a single source for raw materials, components, or finished goods. For instance, over **60% of electronic components** are imported, primarily from **East Asia**.
 - Encouraging **domestic manufacturing** and **diversifying import sources** across **multiple countries** to mitigate risks from geopolitical tensions or natural disasters. This aligns with the **Atmanirbhar Bharat (Self-reliant India) initiative**.
- **Integration of MSME in GVCs:** The **integration of Indian MSMEs** with Global Value Chains (GVCs) by building and **strengthening regional innovation systems** and by establishing a **multipurpose science and technology commission** in the clusters of SMEs.
- **Increase Share of Indian Fleet:** The **Indian fleet is just 1.2%** of the world’s fleet in terms of capacity and carries only 7.8% (for 2018-19) of **India’s EXIM trade** (Economic Survey 2021-2022). Efforts should be made to increase Indian fleet.

Note:



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- **Share in Global Trade:** As per **OECD**, India's share in world exports of goods and services **rose from 0.5% in the early 1990s to 2.1% in 2018**. However, to be a part of **global supply chain India needs to increase its share** gradually.
- **Investment in Logistics Infrastructure:** India's logistics costs are estimated to be around **13-14% of GDP**, compared to 8-11% in developed economies.
 - Therefore there is a need to **upgrade transportation networks**, including roads, railways, waterways, and ports.
- **Boosting Domestic Production of Critical Inputs:** Identifying and prioritising **critical raw materials** and components currently heavily imported like APIs.
 - Providing incentives and support for domestic production of these items to **reduce vulnerability** to external disruptions through mechanisms like PLI Scheme.
- **Strengthening Digital Integration:** Promoted digitalisation across the supply chain to improve **transparency, visibility, and risk management**.
 - This includes implementing **robust cyber security** measures and fostering collaboration through shared data platforms.

IPEF Ministerial Meeting 2024

Why in News?

Recently, India participated in the **Indo-Pacific Economic Framework for Prosperity (IPEF)** Ministerial Meeting, held in **Singapore** on 6th June 2024, showcasing the significant strides made in fostering economic engagement among partner countries in the **Indo-Pacific region**.

What are the Key Highlights of the Meeting?

- IPEF members signed 3 agreements focused on the **Clean Economy, Fair Economy, and the overarching IPEF Agreement**.
 - India **did not formally sign these agreements** as the domestic approval process is still underway.
- **Clean Economy Agreement:**
 - It aims to accelerate efforts towards **energy security, climate resilience, and reducing GHG emissions**.
 - India has taken a leading role in launching a new collaborative effort called a **"Cooperative Work Programme" (CWP)** that is focused on **recovering valuable resources from electronic waste**, also known as **e-waste urban mining**.

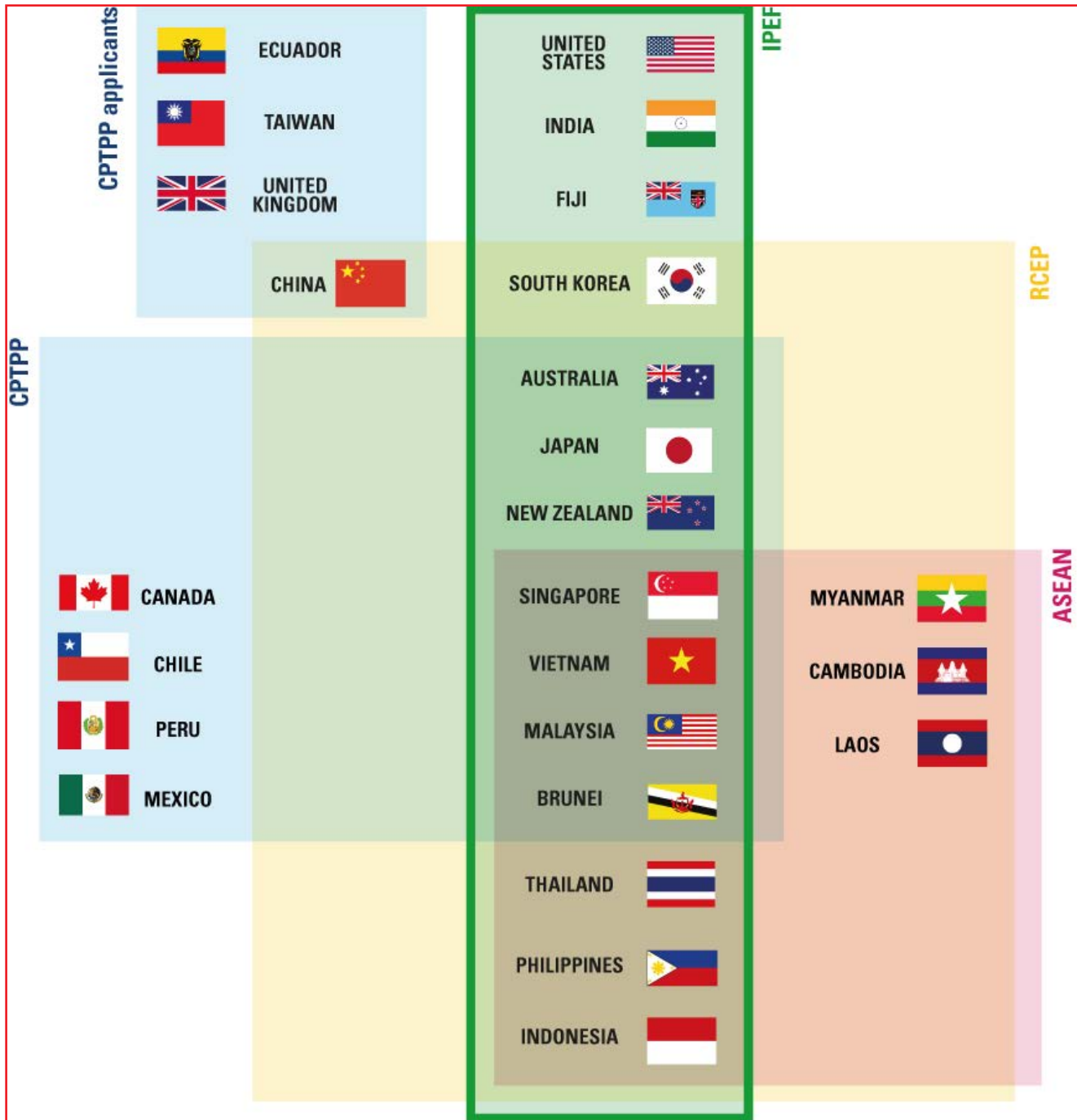
- **IPEF Catalytic Capital Fund:**
 - The fund was launched to support **clean economy infrastructure projects** in IPEF emerging and upper-middle-income economies.
 - The founding supporters such as Australia, Japan, Korea, and the US have provided **USD 33 million** as an **initial grant funding** to catalyse **USD 3.3 billion** in private investment.
- **Fair Economy Agreement:**
 - It aims to create a **more transparent and predictable business environment**, promote fair competition, and enhance efforts against corruption.
 - India highlighted a training program in **Digital Forensics & System-Driven Risk Analysis** that it will offer to other IPEF partners.
- **IPEF Upskilling Initiative:**
 - It provides **digital skills training, primarily to women and girls**, in IPEF partner countries.
 - In the last 2 years, it has provided **10.9 million** upskilling opportunities, of which **4 million** were in India.

What is IPEF?

- **About:**
 - IPEF was launched on 23rd May 2022 at Tokyo, Japan, comprising 14 countries. The IPEF seeks to **strengthen economic engagement and cooperation** among partner countries with the goal of **advancing growth, economic stability and prosperity** in the region.
- **Members:**
 - Australia, Brunei, Fiji, India, Indonesia, Japan, South Korea, Malaysia, New Zealand, Philippines, Singapore, Thailand, United States, and Vietnam.
 - These 14 IPEF partners represent **40% of global GDP** and **28% of global goods and services trade**.
- **Pillars:**
 - The IPEF is built on 4 main pillars: **(I) fair and resilient trade, (II) supply chain resilience, (III) clean economy** (renewable energy and reduction of carbon emissions), and **(IV) fair economy** (tax and anti-corruption policies).
 - India has joined **Pillars II to IV** of IPEF while it has an **observer status in Pillar I**.
 - **Fair and Resilient Trade (Pillar I):** Aims to promote economic growth, peace, and prosperity in the region.

Note:

- **Supply-Chain Resilience (Pillar II):** Seeks to make supply chains more resilient, robust, and well-integrated.
 - Focuses on improving logistics, connectivity, and investments in critical sectors.
 - Aims to enhance worker roles through upskilling and reskilling initiatives.
- **Clean Economy (Pillar III):** Aims to advance cooperation on **clean energy** and climate-friendly technologies.
 - Focuses on research, development, commercialisation, and deployment of clean energy.
 - Encourages investment in climate-related projects in the Indo-Pacific region.
- **Fair Economy (Pillar IV):** Focuses on implementing effective **anti-corruption** and tax measures.
 - Highlights India's strong steps in improving legislative and administrative frameworks to combat corruption.



Note:

CPEC and Emerging Challenges at LAC

Why in News?

Following their co-chairing of the **fifth Pakistan-China Foreign Ministers' Strategic Dialogue**, the two leaders expressed their commitment to continue supporting each other on matters of core interest including the **China-Pakistan Economic Corridor (CPEC)**.

- In a separate event, China has deployed advanced **J-20 stealth fighters** at a **Tibetan airfield** near the **Line of Actual Control (LAC)**, as part of its strategy to bolster its military presence amid ongoing tensions.

What is the China-Pakistan Economic Corridor (CPEC)?

➤ About:

- The CPEC is a major infrastructure and development project.
 - With a USD 50 billion investment in Pakistan, CPEC forms a crucial part of **China's Belt and Road Initiative**, aiming to establish a 3,000 km infrastructure link between **Gwadar** and **Karachi** ports in Pakistan and China's **Xinjiang Uygur Autonomous Region**.
- China-Pakistan plans to accelerate various projects under CPEC, including the Gwadar Port development, and the **Karakorum Highway**.

➤ Opposition to CPEC:

- India opposes the CPEC as it passes through **Pakistan-occupied Jammu and Kashmir (PoK)** which is an integral part of India.
- Civilians in **Pakistan's Balochistan province** have also opposed the CPEC project, citing **systematic abuses and suppression of basic freedoms**.



Note:

Deployment of J-20 Stealth Fighters near LAC by China

- Satellite imagery have shown six **J-20 fighters** at the airfield along with ground crew and support equipment.
 - China has also upgraded several airfields in the region, including **Hotan, Kashgar, and Gargunsa**, among others, by extending runways, building shelters, and storage facilities.
 - China's deployment of J-20s is seen as an attempt to offset India's air combat advantage in the region, given India's possession of **Rafale jets** and other advanced aircraft.
- The **Shigatse dual-use airport**, located merely 155 km from the LAC and close to **Doklam**, holds strategic importance for **China in the eastern sector facing India**.
- India, in response, has **Sukhoi-30MKI fighters** deployed in the eastern sector, along with a squadron of **Rafale jets stationed at the Hasimara air base in West Bengal**.



Colombo Process

Why in News?

Recently, India has **become chair of the regional grouping Colombo Process** for the **first time** since its inception in 2003.

- India would lead the grouping for the **period 2024-26**.

What is the Colombo Process?

- **About:**
 - The **Colombo Process comprises 12 Asian member states** and serves as a regional consultative forum. It aims to promote the sharing of best practices related to overseas employment for **countries in South and Southeast Asia** that send **migrant workers** abroad.
 - The 12 member states include Afghanistan, Bangladesh, Cambodia, China, India, Indonesia, Nepal, Pakistan, the Philippines, Sri Lanka, Thailand, and Vietnam.
 - **The founding states include** Bangladesh, China, India, Indonesia, Nepal, Pakistan, the Philippines, Sri Lanka, Thailand, and Vietnam.

Note:

- In the past, it has been **chaired by** Afghanistan, Nepal, Sri Lanka, the **Philippines, Indonesia**, and Bangladesh.
- The **decisions** under Colombo Process are made by **consensus** and are **non-binding**.
- **Objectives:**
 - Share experiences, lessons learned and best practices.
 - Consult on issues **faced by overseas workers**, and offer **practical solutions**.
 - **Optimise development benefits** from organised overseas employment.
 - Review and monitor the implementation of the **ministerial recommendations**.
- **Secretariat:** The **International Organisation for Migration (IOM)** provides technical and administrative support to the Colombo Process.
 - The Colombo Process Technical Support Unit (CPTSU), based in Sri Lanka, **provides technical support** to the Colombo Process in its thematic areas of focus.
- **Five Thematic Priority Areas:**
 - Skills and Qualification Recognition Processes
 - Fostering Ethical Recruitment Practices
 - Pre-departure Orientation and Empowerment
 - Promote Cheaper, Faster and Safer Transfer of Remittances
 - Labor Market Analysis
- **Achievements:**
 - A **regional workshop for employment agencies** in Asia on placing workers in Europe and ethical recruitment was held in Manila (2006).
 - A feasibility study to establish an **Overseas Workers Resource Centre (OWRC)** in one of the contractual labour destination countries in the **Gulf Cooperation Council (GCC)** has been completed.
 - Organised the first **"Asia-EU Consultation on Labour Migration"** held in Brussels in 2008 attended by Colombo Process countries and 16 EU member states.

International Organisation for Migration (IOM)

- It is part of the **United Nations System** as the leading inter-governmental organisation promoting since 1951 humane and orderly migration for the benefit of all, with 175 member states and a presence in 171 countries.

Pandemic Treaty

Why in News?

Recently, the **World Health Assembly (WHA)** in the annual meeting, agreed on a set of critical amendments to the **International Health Regulations (2005) (IHR)**, and made concrete commitments to completing negotiations on a global pandemic agreement by 2025.

- These amendments will strengthen global preparedness, surveillance and responses to public health emergencies, including pandemics.

What is the World Health Assembly (WHA)?

- **About:**
 - The World Health Assembly (WHA) is **WHO's decision-making body** attended by delegations from all of WHO's member states.
 - It is **held yearly** at the headquarter of WHO, i.e., Geneva, Switzerland.
- **Functions of WHA:**
 - **Deciding** on the Organization's policies.
 - **Appointment** of the Director-General of WHO.
 - **Administration** of financial policies.
 - **Review and approval** of the proposed programme budget.

What are the Key Amendments Agreed to IHR?

- **Definition:**
 - Introduction of a **definition of pandemic emergency** to enhance international collaboration in response to potential pandemics.
 - Definition includes criteria such as wide **geographical spread, exceeding health system capacity**, causing social and economic disruption, and requiring rapid international action.

Note:

- **Commitment to Solidarity and Equity:**
 - It includes establishing a **Coordinating Financial Mechanism** to support the identification and access to financing needed to address the needs and priorities of developing countries.
 - It will also include developing and **strengthening core capacities** and other pandemic emergency prevention, preparedness and response-related capacities.
- **Cooperation for Effective Implementation:**
 - It involves creation of a **States Parties Committee** to promote cooperation and effective implementation of the amended regulations
 - The creation of **National IHR Authorities** to improve coordination of implementation within and among countries.

What is the Need for Global Health Cooperation?

- **Curbing Infectious Diseases:**
 - Pandemics like **Covid-19** have highlighted the interconnectedness of our world. A disease outbreak in one country can rapidly spread across borders. Global cooperation allows for
 - **Information Sharing:** Early detection and sharing of disease outbreaks **enables a faster global response**. The **World Health Organization (WHO)**'s role in identifying and tracking **Covid-19 variants** is a prime example.
 - **Coordinated Research & Development:** Collaboration facilitates faster development of vaccines, diagnostics, and treatments.
- **Addressing Antibiotic Resistance:**
 - The **overuse and misuse of antibiotics** in one country can create resistant bacteria that spread globally. Global cooperation helps in
 - **Standardised Practices:** Establishing common guidelines for antibiotic use in humans and animals helps slow resistance.
- According to the WHO, **antimicrobial resistance** is a global health threat that could lead to millions of deaths each year if not addressed collaboratively.
- **Chronic Disease Management:**
 - **Non-communicable diseases** like heart disease and diabetes are a growing global concern. **Cooperation helps in knowledge sharing**.

- Sharing best practices in prevention, treatment, and lifestyle interventions allows countries to learn from each other. For example, the **Global Alliance for Chronic Diseases (GACD)**.

➤ **Health Equity and Access:**

- Many countries lack the resources to tackle health challenges effectively. Global cooperation promotes **technology transfer**.
- **Sharing knowledge and technology allows developing countries to improve their healthcare systems**. Initiatives like the **Medicines Patent Pool** facilitate access to affordable generic drugs.

What is the Existing Framework for Global Health Cooperation?

➤ **Multilateral Agencies:**

- Various multilateral organisations like **WHO**, **UNICEF**, **UNFPA**, and **UNAIDS** play crucial roles in **specific health areas like child health, reproductive health, and HIV/AIDS**.
- The WHO acts as the central coordinating authority on global health within the **United Nations** system.
 - It **sets international health standards**, provides technical assistance to countries, and monitors and coordinates the global response to health emergencies.

➤ **International Health Regulations (IHR):**

- This is a **legally binding agreement** between 196 countries. It outlines the rights and obligations of countries regarding public health events with international implications.

➤ **Global Health Initiatives:**

- These are targeted programs tackling specific health challenges. Examples include the **Global Fund to Fight AIDS, Tuberculosis and Malaria**, and **Gavi, the Vaccine Alliance**.

➤ **Public-Private Partnerships:**

- Collaboration between governments, NGOs, and the private sector allows for leveraging resources and expertise.
 - Example, **Bill & Melinda Gates Foundation**.

➤ **Regional Organizations:**

- Regional bodies like the **Pan American Health Organization (PAHO)** for the Americas and the African Union play a role in coordinating health efforts within their regions.

Note:



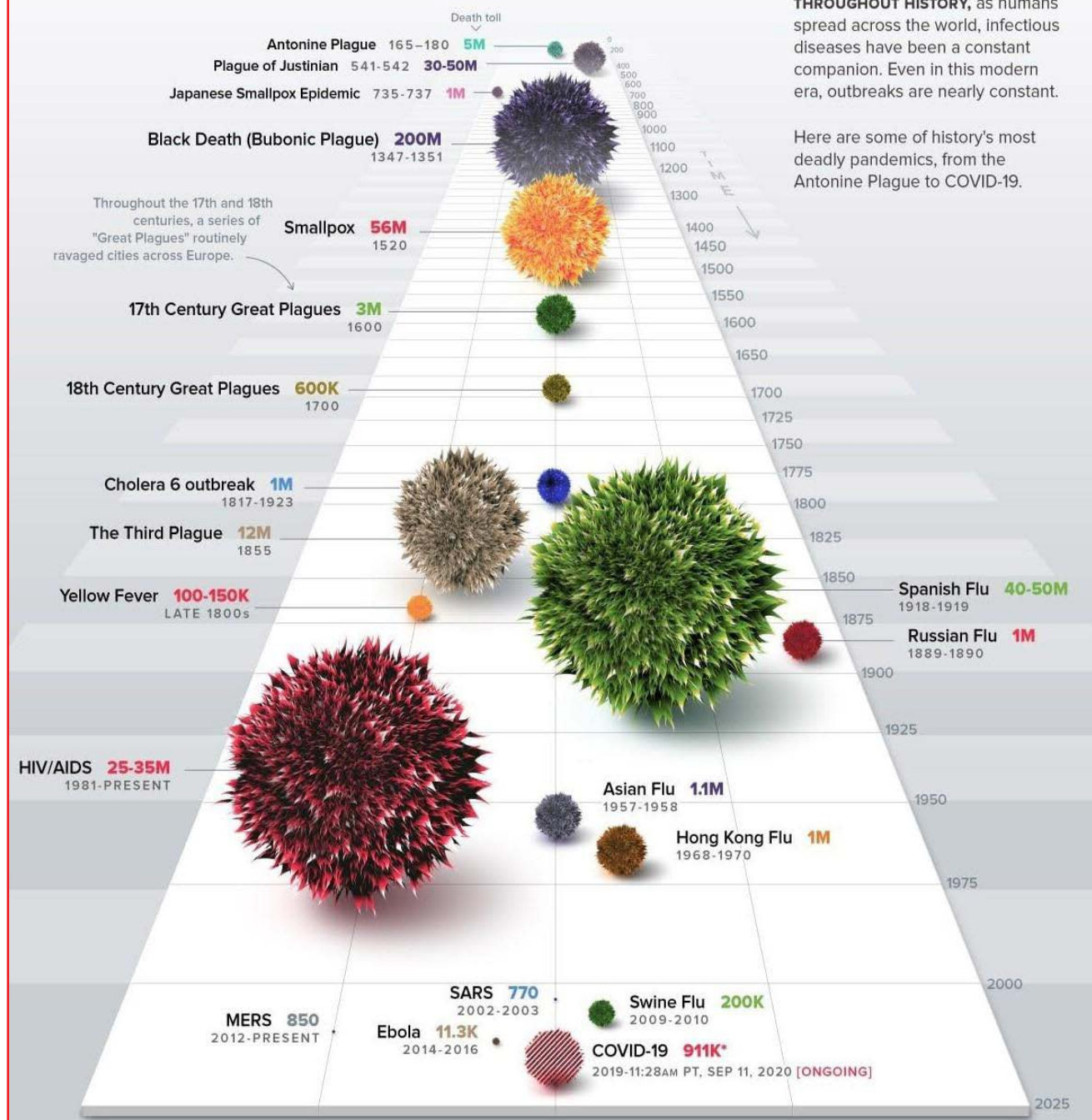
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HISTORY OF PANDEMICS

PAN-DEM-IC (of a disease) prevalent over a whole country or the world.

THROUGHOUT HISTORY, as humans spread across the world, infectious diseases have been a constant companion. Even in this modern era, outbreaks are nearly constant.

Here are some of history's most deadly pandemics, from the Antonine Plague to COVID-19.



Note:

Social Issues

Highlights

- Global Gender Gap Report 2024

- Urbanisation

Global Gender Gap Report 2024

Why in News?

Recently, the **World Economic Forum** released the **18th edition** of its annual **Global Gender Gap Report for 2024**, comprehensively benchmarking gender parity across **146 economies** worldwide.

What is the Global Gender Gap Index?

➤ About:

- It benchmarks countries on their progress towards gender parity in **four Key dimensions with Submatrices**.

The Global Gender Gap Index Framework



Subindex 1
Economic Participation and Opportunity



Subindex 2
Educational Attainment



Subindex 3
Health and Survival



Subindex 4
Political Empowerment

- On each of the four sub-indices as well as on the overall index the GGG index provides scores between 0 and 1, where 1 shows **full gender parity** and **0 is complete imparity**.
- It is the **longest-standing index**, which tracks progress towards closing these gaps over time since its **inception in 2006**.
- **Objectives:**
 - To serve as a compass to **track progress** on relative gaps between women and men in health, education, economy and politics.

- Through this **annual yardstick**, the stakeholders within each country are able to set priorities relevant to each specific economic, political and cultural context.

What are the Key Findings of the Report?

➤ Overall Findings:

- The **global gender gap score** in 2024 is **68.5%**, meaning **31.5%** of the gap remains unaddressed. **Progress** has been **extremely slow**, with only a 0.1% point improvement from 2023.
- At the current rate, it will take **134 years to reach full gender parity** globally far beyond the **2030 SDG target**.
- The gender gaps remain largest in **Political Empowerment (77.5% unaddressed)** and Economic Participation & Opportunity (39.5% unaddressed).

➤ Top-Ranking Countries:

- **Iceland (93.5%)** remains the **world's most gender-equal society** for the **15th consecutive year**. It is followed by **Finland, Norway, New Zealand** and Sweden in the top 5 rankings.
- **7 out of the top 10 countries** are from **Europe** (Iceland, Finland, Norway, Sweden, Germany, Ireland, Spain).
- Other regions represented are Eastern Asia and the Pacific (**New Zealand at 4**), Latin America and the Caribbean (**Nicaragua at 6**), and **Sub-Saharan Africa (Namibia at 8)**.
- **Spain and Ireland** made notable jumps into the top 10 in 2024, climbing 8 and 2 ranks respectively compared to 2023.

➤ Regional Performance:

- **Europe leads with 75% of its gender gap closed**, followed by Northern America (74.8%) and Latin America & Caribbean (74.2%).
- The Middle East and North Africa region ranks last at 61.7% of its gender gap closed.
- **Southern Asia** region ranks **7th out of 8 regions** with a gender parity score of **only 63.7%**.

Note:



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➤ Economic & Employment Gaps:

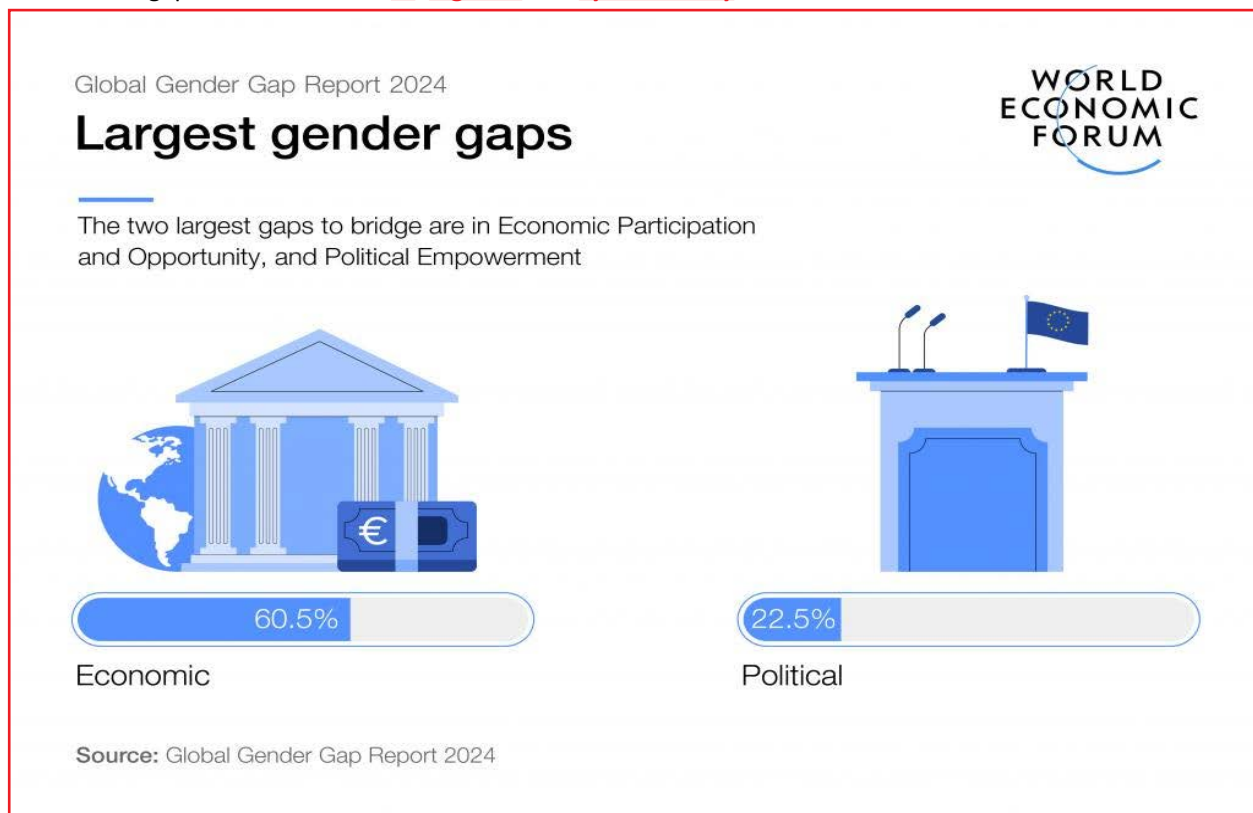
- **Women's workforce** representation lags behind men's across **nearly every industry** and economy at 42% overall and only 31.7% in senior leadership roles.
- The "leadership pipeline" shows a 21.5% point drop from entry-level to managerial level for women globally.
- Women's hiring into leadership roles deteriorated in 2023-24 due to worsening economic conditions.

➤ Care Burden Impact:

- Women's workforce participation is recovering from the recent surge in **caregiving responsibilities**, highlighting the urgent need for equitable care systems.
- Equitable care policies like **paid parental leave are increasing** but remain inadequate in many countries.

➤ Technology & Skills Gaps:

- Women remain underrepresented in **STEM** at 28.2% of that workforce versus 47.3% in non-STEM roles.
- Gender gaps exist in skills like **AI, big data and cybersecurity** which will be crucial for the future of work.



How has India Fared in the Gender Gap Report 2024?

- **India's Rank:** India has slipped two places in the global rankings to **129th in 2024** from **127th in 2023** out of **146 countries**.
 - **Within South Asia, India ranked fifth** after Bangladesh, Nepal, Sri Lanka, and Bhutan. Pakistan ranked last in the region.
- **Economic Parity:** India is among the countries with the **lowest levels of economic parity**, similar to Bangladesh, Sudan, Iran, Pakistan, and Morocco, with less than 30% gender parity in estimated earned income.
- **Educational Attainment:** India showed the **best gender parity** in **secondary education** enrolment.
- **Political Empowerment:** India ranked **65th globally** in **political empowerment of women** and **10th** in parity of years with female/male heads of state over the past 50 years.

Note:

- However, women's representation at the **federal level**, in Ministerial positions (6.9%), and in **Parliament** (17.2%) remains low.
- **Gender Gap Closure:** India has closed 64.1% of its gender gap as of 2024. The slip in ranking from 127th to 129th was primarily due to **small declines in 'Educational Attainment' and 'Political Empowerment'** parameters, although 'Economic Participation' and 'Opportunity' scores saw slight improvements.

Indian Initiatives to Reduce Gender Gap in Social, Economic and Political Life

- **Beti Bachao Beti Padhao**
- **Mahila Shakti Kendra**
- **Mahila Police Volunteers**
- **Rashtriya Mahila Kosh**
- **Sukanya Samriddhi Yojna**
- **Kasturba Gandhi Balika Vidyalyaya**
- **Political Reservation:** The government has reserved 33% of the seats in **Panchayati Raj Institutions** for women.
 - The **Constitution (106th Amendment) Act, 2023**, has also reserved **one-third of all seats** for women in **Lok Sabha**, **State legislative assemblies**, and the Legislative Assembly of the **National Capital Territory of Delhi**, including those reserved for SCs and STs.
- **Female Entrepreneurship:** To promote female entrepreneurship, the Government has initiated programmes like **Stand-Up India** and **Mahila-e-Haat** (an online marketing platform to support women entrepreneurs/**SHGs/NGOs**), Entrepreneurship and Skill Development Programme (ESSDP).

Urbanisation

Why in News?

Recently, Indian urban centres have been **grappling with significant challenges** such as water shortages, urban heating, and infrastructural strains **amidst rapid urbanisation**.

What is Urbanisation?

- **About:**
 - **Urbanisation** is the process of people moving from **rural areas** (the countryside) to urban areas (towns and cities). This trend has been happening for centuries, but it has accelerated in recent decades.

- **Urbanisation** is identified by the **United Nations** as one of the **four demographic mega-trends** alongside **population growth**, **ageing**, and **international migration**.
- **Types:**
 - **Planned Settlements:** Planned urban settlements in India are **developed by government agencies or housing societies** according to officially approved plans.
 - These plans consider various factors, including physical, social, and economic considerations, to ensure orderly development.
 - The objective is to create **sustainable and livable environments** with adequate infrastructure and services.
 - **Unplanned Settlements:** Unplanned settlements **arise without legal approval**, either on government land or private property, in a disorderly manner.
 - These areas consist of **permanent, semi-permanent, and temporary structures**, frequently found near city drains, railway tracks, low-lying areas prone to flooding, or on agricultural land and green belts surrounding cities.
- **Trends in Urbanisation:**
 - According to the **Asian Development Bank's** 2019 report, the global urban population has surged from 751 million in 1950 (30% of the world's population) to 4.2 billion in 2018 (55% of the world's population).
 - Projections indicate that **this figure will rise to 5.2 billion by 2030** (60% of the global population) and **6.7 billion by 2050** (68% of the global population).
 - India's urban population has grown steadily. According to the **2011 Census**, urbanisation increased from 27.7% in 2001 to 31.1% in 2011, representing a total of 377.1 million people and an annual growth rate of 2.76%.
 - This trend has shifted focus from **large Tier 1 cities (1,00,000 and above)** to **medium-sized towns**, influenced by various **push and pull factors** such as **employment**, education, and security.
 - According to **Ministry of Housing and Urban Affairs** in terms of the absolute number of persons living in urban areas, **Maharashtra** continues to **lead with 50.8 million persons** which comprises 13.5% of the total urban population of the country.

Note:



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- Uttar Pradesh accounts for about 44.4 million, followed by Tamil Nadu at 34.9 million.

➤ Reasons for Urbanisation:

- **Trade And Industry:** Trade and industry drive urbanisation by attracting labor, stimulating infrastructure development, and providing access to markets and innovation hubs.
- **Economic Opportunities:** Cities offer **more job opportunities** than rural areas. This is because they are home to businesses, factories, and other institutions.
- **Education:** Cities have **better schools and universities** than rural areas. This can attract people who want to improve their education and job prospects.
- **Better Lifestyle:** Cities provide more services like hospitals and libraries, and offer a livelier lifestyle with more social and cultural opportunities compared to rural areas.
- **Migration:** Migration significantly contributes to urbanisation in India, leading to the growth of informal settlements. Migrants often settle in unplanned colonies due to the **high cost of living** in more formal urban areas.
 - This has resulted in a significant number of informal settlements, such as **slums** and unauthorised colonies, which lack basic amenities like clean water and sanitation.

India's Initiatives Related to Urban Governance

➤ Institutions:

- **Ministry of Housing and Urban Affairs (MoHUA):** Formulates national policies and oversees central government schemes related to urban development.
- **State Departments of Urban Development:** Implement central government policies and enact state-specific urban development regulations.
- **Municipal Corporations/Municipalities:** They are responsible for local-level planning, development control, and service delivery within their jurisdictions.
- **Urban Development Authorities (UDAs):** Special agencies established for the development of specific urban areas or projects.

➤ Constitutional and Legal Frameworks:

- **(Articles 243Q, 243W):** Empowers local governments (Municipalities) for urban planning and development within their jurisdictions.
- **74th Constitutional Amendment Act, 1992:** Provided constitutional status to
- urban local bodies and added Part IX-A to the Constitution.
- **12th Schedule:** It contains the powers, authority and responsibilities of Municipalities.

➤ Government Initiatives:

- **Smart Cities**
- **AMRUT Mission** **Swachh Bharat Mission-Urban**
- **Pradhan Mantri Awas Yojana-Urban**
- **Aspirational District Programme**
- **Deen Dayal Antyodaya Yojana - National Urban Livelihood Mission (DAY-NULM)**

➤ India's Global Commitments Regarding Urban Development:

- The **SDGs Goal 11** promotes urban planning as one of the recommended methods for achieving sustainable development.
- The **UN-Habitat's New Urban Agenda** was adopted at Habitat III in 2016.
 - It puts forth principles for the planning, construction, development, management, and improvement of urban areas.
- The **UN-Habitat (2020)** suggests that the spatial conditions of a city can enhance its power to generate social, economic and environmental value and well-being.
- **UNFCCC Goal:** India, at the 26th session of the **United Nations Framework Convention on Climate Change** (COP 26) in November, 2021, announced its target to achieve **net zero by 2070**.
- India has ratified the Headquarters Agreement (HQA) between the Government of India and the **Coalition for Disaster Resilient Infrastructure (CDRI)**.

What are the Challenges Related to Urbanisation?

➤ Environment Related Challenges:

- **Air Pollution and Environmental Degradation:** Urban areas in India are grappling with **severe air pollution** levels, primarily due to vehicular emissions, industrial activities, and construction projects.
 - **Example:** According to the **World Air Quality Report 2023**, 9 of the top 10 most polluted cities are in India.

Note:

- **Urban Flooding and Drainage Infrastructure:** Inadequate stormwater drainage systems and encroachment on natural water bodies lead to frequent **urban flooding** during monsoons.
 - India has experienced major floods in recent years, notably in Hyderabad (2020 and 2021), Chennai (November 2021), Bengaluru and Ahmedabad (2022), parts of Delhi (July 2023), and Nagpur (September 2023), forcing many residents to evacuate.
- **Urban Heat Island Effect and Lack of Green Spaces:** Rapid urbanisation and loss of green spaces have led to the **urban heat island effect**, increasing temperatures and energy demand.
 - **Example:** The extreme **heatwave** in Delhi has driven the city's power demand to a record high of over 8,000 megawatts in May 2024.
- **Water Scarcity and Inadequate Water Management:** Many cities face **acute water shortages** due to rapid urbanisation, population growth, and depleting groundwater levels.
 - **Example:** Chennai faced a severe water crisis in 2019, with residents relying on water tankers and desalination plants. Also, the **recent water crisis in Bengaluru** highlights the depth of the issue.
- **Inadequate Housing and Slum Proliferation:** According to the Ministry of Housing and Urban Affairs, the urban housing shortage in India was around 18.78 million units between 2012-27, with over 65 million people living in **slums or informal settlements**.
 - It results in straining infrastructure, exacerbating poverty, hindering planned development, and reducing overall livability and social cohesion within urban areas.
- **Traffic Congestion and Mobility Challenges:** Rapid urbanisation and the influx of private vehicles have led to severe **traffic congestion**, increasing commute times and hampering productivity.
 - **Example:** In Bengaluru, the average traffic speed during peak hours is estimated to be around 18 km/h, resulting in significant economic losses due to lost productivity and fuel wastage.
- **Inadequate Solid Waste Management:** Indian cities struggle with the management of **solid waste**, leading to piling garbage and health hazards.
 - **Example:** According to the **Central Pollution Control Board**, Indian cities generate approximately 62 million tons of municipal solid waste annually, with only around 20% of it being processed or treated properly.



- **Issue of Cybersecurity and Resilient Digital Infrastructure:** With the increasing digitalization in major urban spaces, **digital threats** are on the rise and building resilient digital infrastructure is a critical issue.
 - The **ransomware attack** on AIIMS Delhi in 2022, highlights the vulnerability of urban digital systems.

What are the Steps Needed to Address Urban Challenges?

- **Environment Related Initiatives:**
 - **Sponge City Concept and Permeable Urban Landscapes:** Implementing the "Sponge City" concept, which involves the integration of permeable pavements, green roofs, rainwater gardens, and other water-absorbing features into urban landscapes.
 - **Distributed Waste-to-Energy and Decentralised Waste Management Systems:** Incentivizing community-based waste management initiatives and promoting **public-private partnerships** for waste collection, sorting, and processing.
 - **Smart Water Management and Recycling Infrastructure:** Deploying **smart water metering** and monitoring systems to detect leaks, optimize water distribution, and promote **efficient water usage**.
- **Urban Digital Twins and Predictive Modeling:** Developing **digital twins of urban areas**, which are virtual replicas of cities, to simulate and analyse various scenarios, infrastructure projects, and environmental impacts.
 - Integrating digital twins with urban governance platforms to enable **data-driven decision-making**, citizen engagement, and participatory urban planning processes.
- **Smart City Infrastructure:** Democratizing smart city technologies, such as **intelligent traffic management systems**, smart grids, and Securing **Internet of Things (IoT)**-enabled public services, to improve efficiency, reduce carbon emissions, and enhance the quality of life for citizens.
- **Cybersecurity and Digital Infrastructure Resilience:** Investing in robust cybersecurity measures, including advanced encryption, access controls, and real-time threat monitoring, to protect critical urban digital infrastructure from cyber threats.
- **Accessibility and Awareness:** The government's efforts to address urbanisation through various initiatives often face significant challenges in terms of accessibility. Therefore **better dissemination of information** and participative governance can be a tool of **inclusivity**.

Note:



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Science & Technology

Highlights

- *Chlorella Growth Factor*
- *Multi-drug Resistant Pathogens in ISS*
- *Atomic Clock*
- *Role of Nuclear Technology in Global Food Safety*
- *Dimensions of Colours*
- *Food Irradiation*
- *Genetically Modified Mosquitoes to Fight Against Malaria*

Chlorella Growth Factor

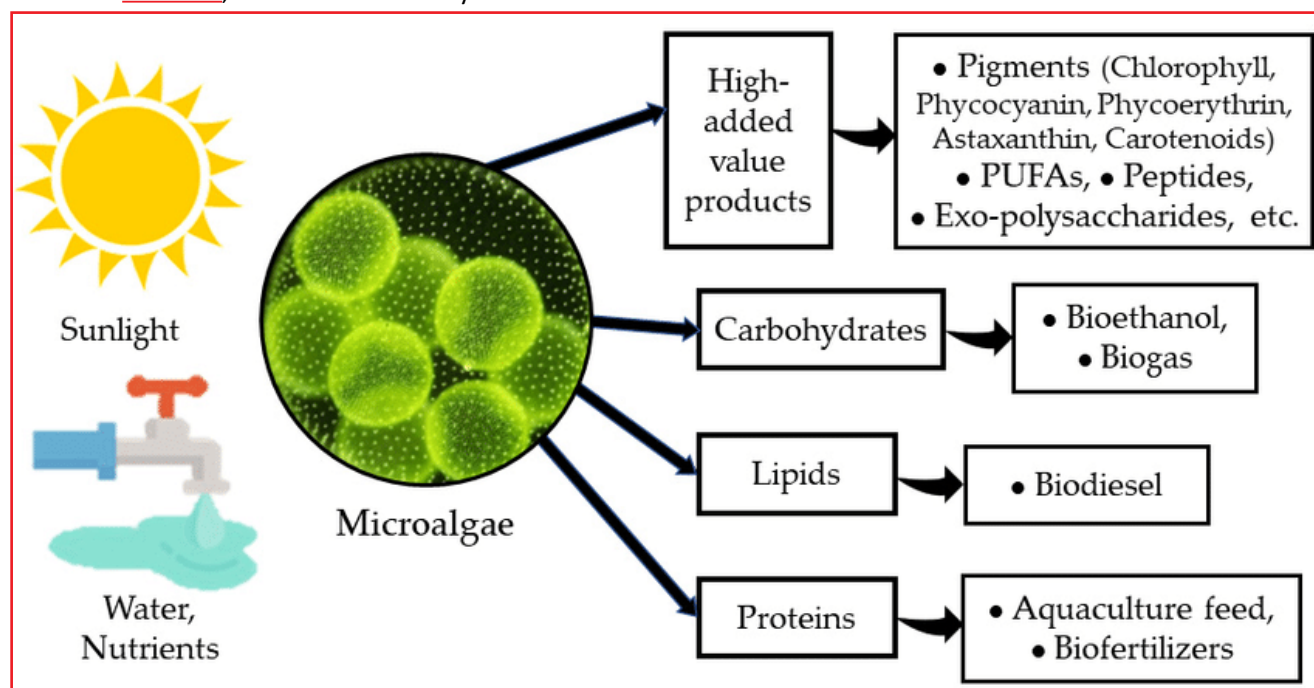
Why in News?

Recently, scientists at **CSIR-Indian Institute of Chemical Technology (IICT)** have spotlighted the potential of **Chlorella Growth Factor (CGF)**, a protein-rich extract derived from the microalgae '**Chlorella sorokiniana**', as an ideal ingredient for a wide range of food and feed applications.

What are Chlorella Growth Factor (CGF) and Chlorella Sorokiniana?

➤ Chlorella Growth Factor (CGF):

- **Nutritional Benefits:** CGF is rich in **amino acids** and proteins of high quality, making it a **promising alternative source** for both human and animal diets.
 - It contains essential **amino acids and nutrients** like peptides, nucleotides, polysaccharides, **vitamins**, and **minerals**, than commercial soy meal.



- **Production Method:** The extraction of CGF involves a **non-chemical autolysis process**, preserving the integrity of amino acids and other valuable components.

Note:

- **Application:** Adding CGF to chicken feed **improves egg quality**, showing promise as a better protein supplement for animals.
- **Sustainability:** Microalgae like *Chlorella sorokiniana* are considered “**under-exploited crops**” that **do not compete with traditional food crops** for space and resources, offering a sustainable solution to meet the increasing global demand for high-quality protein sources.

➤ **Chlorella Sorokiniana:**

- *Chlorella Sorokiniana*, an **oval-shaped single-celled algae**, is a standout in the microscopic realm, boasting a unique **ability to grow actively**.
 - Each cell is a **self-contained organism** with all the essential nutrients needed for life, making it complete and self-sustaining.
- *Chlorella Sorokiniana* can rapidly reproduce, **growing from one cell to 24 cells in just 24 hours** when exposed to plenty of sunlight and nutrients.

Microalgae

- **Microalgae** are **photosynthetic microorganisms** that can be found in **diverse natural environments**, such as water, rocks, and soil. They present **higher photosynthetic efficiency than terrestrial plants** and are responsible for a significant fraction of the world's oxygen production.
 - They thrive in various **aquatic environments**, including both freshwater and marine habitats. For example **Chlorella, Diatoms, etc.**
 - Marine microalgae play a pivotal role in the **oceanic food chain** and carbon dioxide absorption.
 - However, as **climate change** continues, **global warming** is causing surface ocean waters to warm, **resulting in reduced nutrient availability** due to less mixing between the surface waters and nutrient-rich deeper waters.

Macroalgae

- Macroalgae popularly **known as seaweeds are multicellular and macroscopic autotrophs** that are taxonomically **categorised into three distinct groups** based on the colour of the thallus namely *Chlorophyta* (green algae), *Rhodophyta* (red algae), and *phaeophyta* (brown algae).
 - **Seaweed** is the **primitive, non-flowering marine algae** without roots, stems and leaves, that play a major role in marine ecosystems.
 - Large seaweeds form dense **underwater forests known as kelp forests**, which act as **underwater nurseries** for fish, snails and sea urchins.
 - Some species of seaweeds include *Gelidiella acerosa*, *Gracilaria edulis*, *Gracilariacrasa*, and *Gracilaria verrucosa*.

Multi-drug Resistant Pathogens in ISS

Why in News?

Recently, a collaborative study between scientists from the **Indian Institute of Technology Madras (IIT-M)** and **NASA's Jet Propulsion Laboratory (JPL)** focused on understanding the behaviour of multi-drug resistant pathogens aboard the **International Space Station (ISS)**.

What are the Key Highlights of the Study?

- ***Enterobacter bugandensis*** associated with hospital-acquired infections and poses a significant treatment challenge due to its **broad resistance** to third-generation antibiotics like **cephalosporins** and **quinolones**.
 - It is listed by the **World Health Organization (WHO)** as a priority for developing **new antimicrobials**.

Note:

- The ISS's unique environment of **microgravity**, heightened **carbon dioxide**, and **increased radiation** revealed **accelerated mutations** that differentiate them **genetically** and **functionally** from their **Earth counterparts**.

Antimicrobial Resistant-Microbes

- **Antimicrobial-resistant microbes** occur naturally and are found in people, animals, food, and the environment (in water, soil and air).
- They can **spread between people and animals**, including from food of animal origin, and from person to person.
- AMR is facilitated by the **inappropriate use of medicines**, for example, using antibiotics for viral infections such as the flu.




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ANTIMICROBIAL RESISTANCE

The ability of microorganisms to resist the effects of antimicrobial drugs

CAUSES OF ↑ AMR

- Poor infection control/sanitation
- Antibiotic overuse
- Genetic mutations of microbe
- Lack of investment in R&D of new antimicrobial drugs

Microbes that develop AMR are called 'Superbugs'

IMPACTS OF AMR

- ↑ Risk of spreading infections
- Makes infections harder to treat; prolonged illness
- ↑ Healthcare costs

EXAMPLE

- Carbapenem antibiotics stop responding due to AMR in *K. pneumoniae*
- AMR *Mycobacterium tuberculosis* causing Rifampicin-Resistant TB (RR-TB)
- Drug-resistant HIV (HIVDR) making antiretroviral (ARV) drugs ineffective

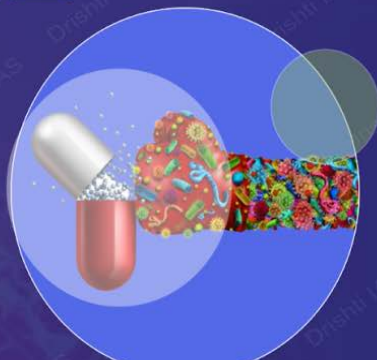
RECOGNITION BY WHO

- Identified AMR as **one of the top 10 threats** to global health
- Launched **GLASS** (Global Antimicrobial Resistance and Use Surveillance System) in 2015

INDIA'S INITIATIVES AGAINST AMR

- Surveillance of AMR in microbes causing **TB, Vector Borne diseases, AIDS etc.**
- **National Action Plan on AMR (2017)** with One Health approach
- **Antibiotic Stewardship Program** by ICMR

New Delhi metallo-β-lactamase-1 (NDM-1) is a bacterial enzyme, emerged from India, that renders all current β-lactam antibiotics inactive



Note:

International Space Station

- The ISS is a **large spacecraft** that **orbits Earth** at a **low altitude (approx 250 km)**, hosting astronauts from various countries who **live and work there**.
- It **serves as a research laboratory** where scientific experiments are conducted in microgravity conditions, advancing our understanding of space and benefiting life on Earth.
- The International Space Station is currently **managed by the US, Russia, Canada, Japan, and European space agencies**.
- Since 2000, the station evolved from an outpost into a highly capable **microgravity laboratory**.
- Since 2000, the ISS has transformed from a **basic outpost into an expansive microgravity research facility**, accommodating over 260 people from 21 countries, with plans for research until 2030.

Atomic Clock

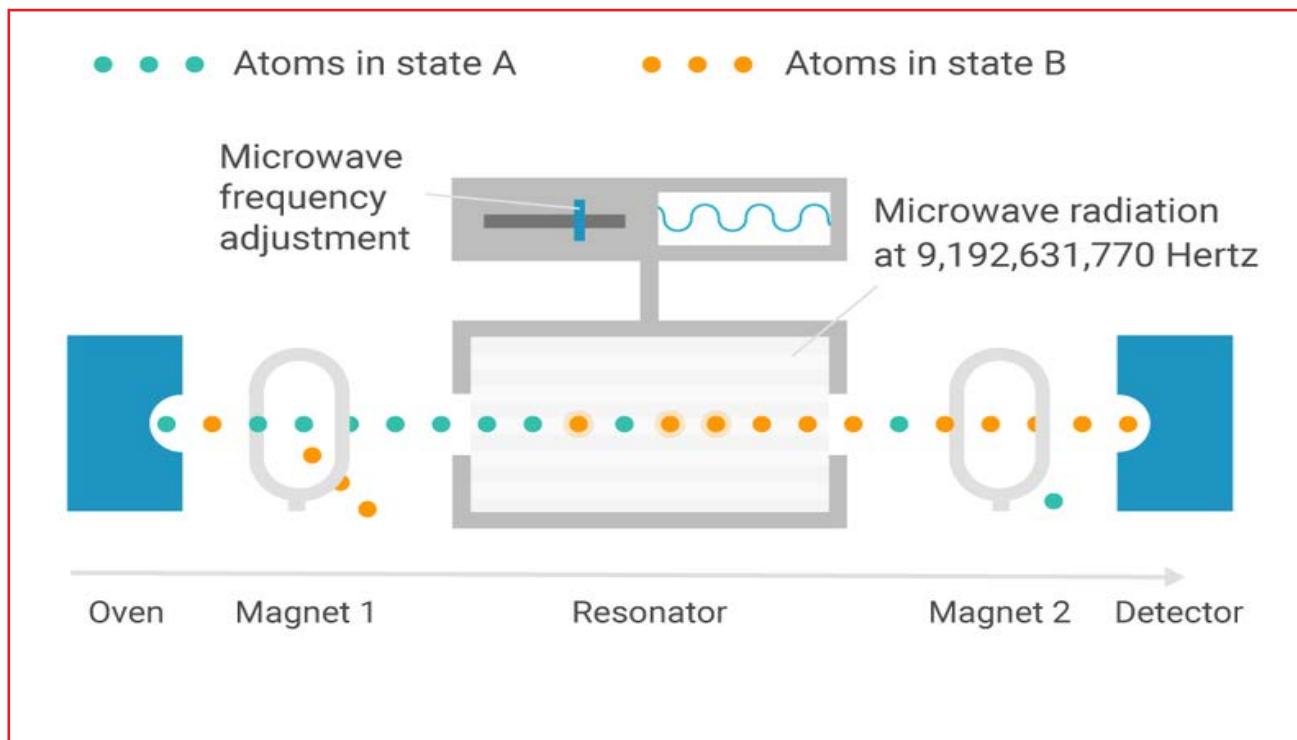
Why in News?

In a recent study published in the scientific journal **Nature**, a new type of portable **Optical atomic clock** was introduced for use on ships.

- This new **iodine clock** is **not as precise** as an optical atomic clock used in a laboratory but it is **more portable and durable**. It gains or loses a second every 9.1 million years.

What are Atomic Clocks?

- **About:**
 - It is an advanced timekeeping device that utilises the **natural vibrations of atoms** to measure time with **exceptional accuracy**.
 - It was developed by Louise Essen in 1955. Presently, **India has operational atomic clocks located in Ahmedabad and Faridabad**.



Note:

➤ **Key Features:**

- Atomic clocks are **farmore precise** than conventional clocks because atomic oscillations have a much **higher frequency** and are much **more stable**.
- **Atomic clocks** are very accurate, with traditional atomic clocks **losing or gaining one second over 300 million years**, while **optical atomic clocks** can maintain this **precision for 300 billion years**.
- A **caesium atomic clock** loses or gains a second every 1.4 million years.

➤ **Working:**

- **Caesium (Cs) atomic clocks** operate by causing **Cs atoms to transition to a higher energy level**, which is linked to the **frequency of microwave radiation** and the measurement of time in seconds.
- In this process, Cs atoms are placed in a cavity, and **microwave radiation** with a specific frequency is directed towards them. When the frequency of the radiation **matches the energy transition** of the Cs atoms, it creates a **resonance phenomenon**. The Cs atoms absorb this radiation and move to a higher energy state. This transition occurs precisely when the **frequency of the radiation is 9,192,631,770 Hz**.
 - This means that when a Cs-133 atom undergoes 9,192,631,770 oscillations between its energy levels, one second has elapsed.
- The **precision** of atomic clocks is achieved through a system that detects any deviations in the resonance frequency and makes adjustments to the microwave radiation to maintain resonance.

➤ **Optical Atomic Clock:**

- They are even **more accurate** than Atomic Clocks.
- These clocks use **lasers** to stimulate atomic transitions, producing **highly coherent light** where all emitted light waves have the same frequency and stable wavelengths.
- It is different from Atomic Clock due to:
 - **Higher Operating Frequency:** Optical atomic clocks operate at higher frequencies, allowing them to **complete more oscillations** in a given time frame compared to traditional atomic clocks.

- This enables them to **measure smaller increments of time more accurately** due to the increased number of cycles counted within that time period.

- **Narrower linewidth:** These have much **narrower linewidths** (range of frequencies) over which the atomic transition occurs. A narrower linewidth makes it easier to precisely tune the frequency of the optical light that triggers the resonance, leading to higher accuracy and more precise time measurements.

- The element **strontium (Sr)** is commonly used in **optical atomic clocks** due to its narrow linewidths and stable optical transitions.

What are the Applications of Optical Atomic Clocks?

- **Self-Reliance and National Security:** India's reliance on foreign atomic clocks, especially those from the US, poses a **risk to critical infrastructure like NavIC (Indian GPS)** in times of conflict.
 - Creating domestic atomic clocks will provide independent timekeeping, enhancing national security.
- **Enhanced Accuracy and Reliability:** Atomic clocks offer unmatched precision compared to conventional methods. By deploying them across the nation, India can **synchronise all digital devices with Indian Standard Time (IST)**, ensuring a unified and highly accurate time reference.
- Time synchronisation through optical atomic clocks will benefit various sectors:
 - **Telecommunications:** Precise timing **minimises errors** and facilitates seamless data transfer in communication networks.
 - **Financial Systems:** Accurate timestamps for financial transactions **safeguard against fraud, especially in high-frequency trading**.
 - **Cybersecurity:** Atomic clocks play a crucial role in India's digital economy by ensuring the **accuracy of timestamps for transactions**, which helps prevent fraud, maintain data integrity, and enhance cybersecurity measures.
 - **Critical Infrastructure and Power Grids:** Atomic clocks play a vital role in **synchronising critical infrastructure, including power grids**, transportation systems, and emergency services.

Role of Nuclear Technology in Global Food Safety**Why in News?**

Recently, an International Symposium on “**Safe Food for a Better Life**”, jointly organised by the **Food and Agriculture Organisation (FAO)** and the **International Atomic Energy Agency (IAEA)** emphasised the importance of **nuclear technologies** for measuring, managing and controlling food safety.

- Furthermore, the symposium highlighted the potential use of nuclear technology in ensuring food security.

Note:

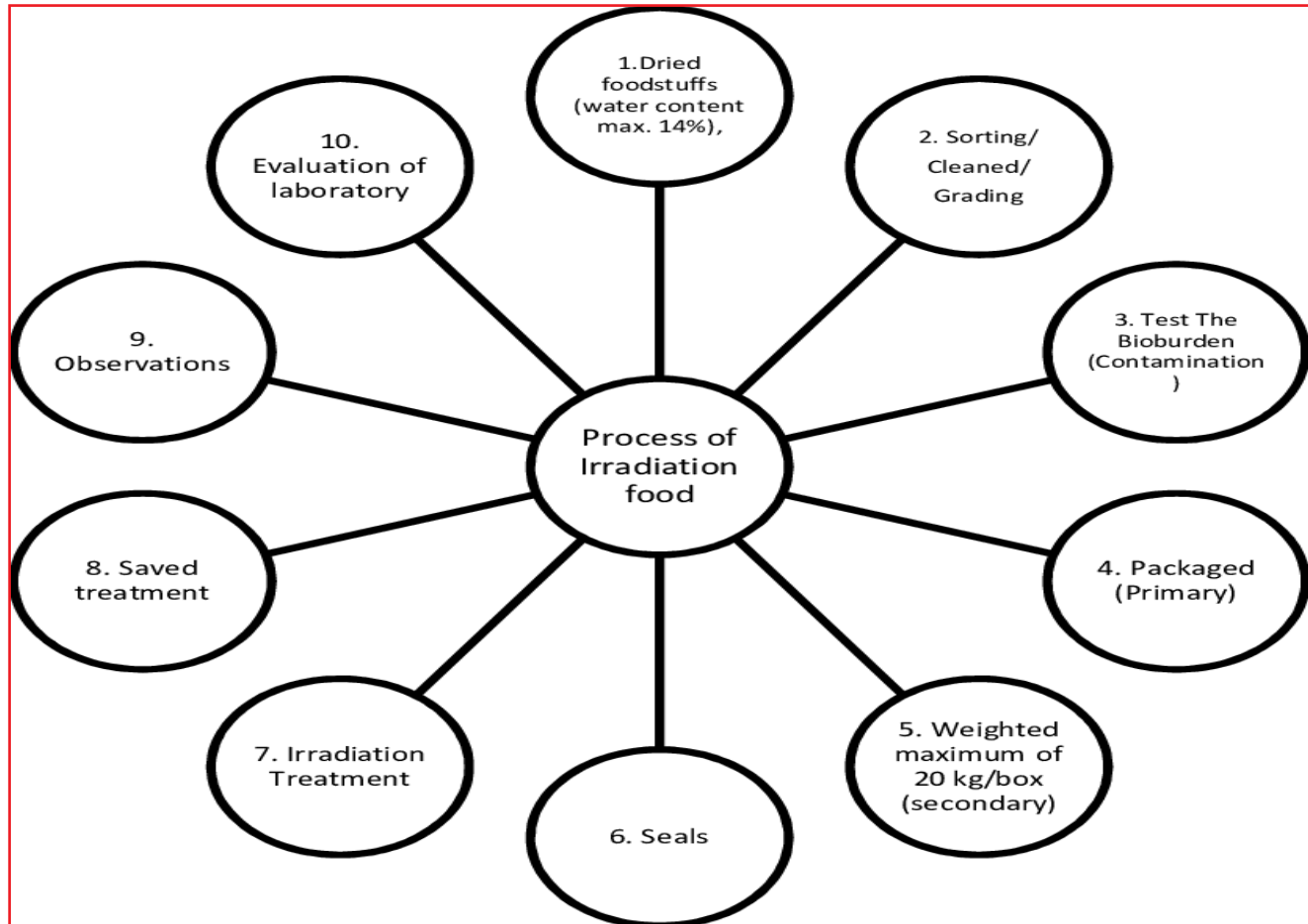


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What is the Application of Nuclear Technology on the Food Safety Standard?

➤ Complementary to One Health Approach:

- The One Health approach recognises the interconnectedness of human, animal, and environmental health; nuclear techniques can be used to detect and monitor contaminants, pathogens, and toxins in food and the environment.
- **Polymerase Chain Reaction (PCR)** tests is a molecular nuclear technique, to rapidly detect animal diseases in less than a day.



➤ Food Irradiation:

- **Food irradiation** is a process of **exposing food to ionising radiation** to eliminate harmful bacteria, pathogens, and pests; nuclear technology helps to **extend the shelf life** of food products and ensure their safety for consumption.
- **Stable isotope analysis** is a nuclear technique that is used to determine the **origin and authenticity** of food products and this helps to **detect adulteration and verify labelling claims**.

➤ Improved Soil and Water Management:

- Past nuclear fallouts are actually helping scientists when it comes to measuring and assessing soil erosion, radioactive nuclides left behind after nuclear events can help scientists determine the **health of soils and rate of erosion**.

➤ Pest Control:

- Nuclear techniques, such as the **Sterile Insect Technique (SIT)**, are used for pest control in agricultural production systems.
- This technique limits reproduction and suppresses insects and pests, thereby reducing the need for chemical pesticides, which can negatively impact food safety.

Note:

➤ **Plant Breeding and Genetics:**

- Nuclear technology applied in crop breeding facilitates the development of enhanced varieties capable of adapting to climate change.
- By subjecting seeds to irradiation by **gamma rays, X-rays, ions, or electron beams**, genetic alterations are initiated, expanding the genetic diversity available for breeding purposes.

What is the Need for Tech-Related Advancements in Food Security?

- **Climate Change:** Climate-induced challenges such as **droughts, floods**, and temperature fluctuations, can adversely affect crop production and food availability so **climate-smart agriculture (CSA)** needs to be promoted.
- **Food Waste:** According to the **FAO**, roughly **1/3rd of food** produced for human consumption is lost or wasted globally, which amounts to about **1.3 billion tons** per year and approximately **3.1 billion people** could not afford a healthy diet in 2020 (FAO, 2022).
- **Increasing Population:** The world's population is projected to reach **9.7 billion by 2050 (UN World Population Prospects, 2019)**, putting immense pressure on food production systems, thereby technological advancement is required.
- **Limited Resources:** With limited arable land and freshwater resources, technology can help maximise productivity through vertical farming, hydroponics, and efficient irrigation systems.

Note:

- **Atoms 4Food** is a joint initiative of the **International Atomic Energy Agency (IAEA)** and the **FAO** to tackle global hunger and enhance food security.
 - It was showcased at the **2023 World Food Forum in Rome**.
 - This project aims to leverage nuclear processes and cutting-edge technologies, tailoring solutions to address the specific needs of different countries.
- These technologies are employed to boost agricultural and livestock productivity, manage natural resources more effectively, reduce food losses, ensure food safety standards, improve nutritional value, and mitigate the challenges posed by climate change.
 - The **Joint FAO/IAEA Centre** of Nuclear Techniques in Food and Agriculture assists in safe and effective application of nuclear technologies for global food security and sustainable agricultural development.

What Challenges are Associated with using Nuclear Technology for Food Safety?

➤ **Geographical and Regional Variations:**

- **Diverse agro-climatic regions** and farming practices, can pose challenges in the uniform application and adaptation of nuclear techniques across the globe.
- The application of **isotopic techniques** for soil and water management may require **region-specific calibration** and adaptation due to variations in soil types, climatic conditions, and irrigation practices.

➤ **Limited Funding and Investment and Technology:**

- The development of **irradiation facilities** for food preservation and pest control requires significant capital investment, which may be a challenge due to budget constraints.
- Accessing advanced techniques like **accelerator-based mutation breeding** or specialised analytical equipment for food traceability may be difficult due to **technology transfer restrictions or high costs**.

➤ **Regulatory Challenges:**

- The use of nuclear technology in agriculture is subject to strict regulations and guidelines to ensure safety and security obtaining necessary approvals, licences, and compliance with regulatory requirements can be a **lengthy and complex process**.
- Various factors, including **intellectual property rights** and **technology transfer barriers**, hinder the adaptation.

➤ **Lack of Allied Infrastructure:**

- Lack of specialised laboratories and research facilities, to effectively utilise nuclear techniques in agriculture and shortage of trained personnel and expertise in this field, limiting the widespread application of these techniques.

What is Nuclear Energy?

- It is a form of energy released from the **nucleus or core of atoms**.
- It is known for its high energy density, meaning a **small amount of nuclear fuel can produce a large amount of energy**.
 - There are two primary methods for harnessing nuclear energy:

Note:

- **Nuclear Fission:** This process involves splitting the nucleus of an atom into two **smaller nuclei**, releasing a large amount of energy.
 - Nuclear power plants primarily use this method, **utilising uranium-235 or plutonium-239 as fuel**. When the nuclei of these heavy isotopes are bombarded with neutrons, they become unstable and split into smaller nuclei, releasing additional neutrons.
 - This chain reaction generates significant heat, which is used to produce steam, drive turbines, and ultimately generate electricity.
- **Nuclear Fusion:** This process involves combining the **nuclei of two light atoms to form a heavier nucleus**, which is the process that powers the sun and other stars.
 - While nuclear fusion holds great potential for providing clean and virtually limitless energy, achieving controlled nuclear fusion on Earth remains extremely challenging.

What is the Food and Agriculture Organization (FAO)?

- FAO is a specialised agency of the **United Nations** that leads international efforts to defeat hunger.
- **World Food Day** is celebrated every year around the world on 16th October to mark the anniversary of the founding of the FAO in 1945.
- With 194 member countries (including India) and the European Union, FAO works in over 130 countries worldwide.
- It is one of the UN food aid organisations based in Rome (Italy). Its sister bodies are the **World Food Programme** and the International Fund for Agricultural Development (IFAD).

Dimensions of Colours

Why in News?

Colour profoundly shapes contemporary human life by enriching the **aesthetic and symbolic aspects** of our surroundings, embracing **cultural diversity** in its interpretation, and deepening our comprehension of the world and our role within it.

What are Colours?

- **About:**
 - Colour is the result of processing **electromagnetic**

radiation by the human visual system.

- **Cone cells** in the **human eye** detect and transmit information about **light wavelengths to the brain**, allowing for the perception of colour.
- **Humans possess three types of cone cells**, enabling **trichromatic vision**, while some animals, like **birds and reptiles**, have four cone types (**tetrachromats**).
 - Human vision is limited to **wavelengths range** from 400 nm to 700 nm (**visible light**) while **honeybees can also 'see' ultraviolet light** and **mosquitoes and some beetles** can access information in **wavelengths of infrared radiation** (Humans sense it as heat).
- **Science of Colours:**
 - **Traditional colour theory**, which emphasises combining **3 primary fixed colours (red, green, and blue)**, to make other colours.
 - **Modern colour theory** argues that all the **colours can be produced by combining any three colours** in different ways.
- **Two Ways of Rendering Colours:**
 - **Additive Colouring:** Mixing **light wavelengths** to produce different colours, as seen in electronic displays like smartphone screens and TVs, utilising the **RGB** colour space.
 - **Subtractive Colouring:** Achieving colours by subtracting **specific wavelengths from white light**, commonly done with dyes, pigments, and inks.
- **Properties of Colour:**
 - **Hue:** Degree of similarity or difference to standard colours like red, orange, yellow, etc., influencing the perceived colour.
 - **Brightness:** Related to an object's luminance, reflecting the amount of light emitted or reflected.
 - **Lightness:** Perception of an object's brightness compared to a well-lit white object.
 - **Chromaticity:** Perception of colour quality irrespective of lighting conditions.
- **Significance of Colour:**
 - Colour significantly impacts how humans **perceive and interact with the world around them**.
 - Colour influences various aspects of **human culture**, including **art, social hierarchy, philosophy, trade, innovation, symbolism, politics, religion, and responses to phenomena like climate change (Green washing)**.

Note:



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- Both natural phenomena and **human-made objects like paintings**, gain **aesthetic appeal** and convey symbolic significance through colour.
- Certain colours convey **universal messages** (e.g., **red as a stop sign**).
- **Examples of Colour's Impact:**
 - Archaeological evidence suggests **early human societies used ochre pigment** for cultural practices, indicating their intelligence and artistic expression.
 - **Blue LEDs revolutionised industries** by completing the RGB colour space, enabling **energy-efficient lighting** solutions and advancements in consumer electronics.

Why do Patterns and Colours Appear When We Close Our Eyes?

- The appearance of patterns and colors when eyes are closed or in a dark room is an **entoptic phenomenon** called **closed eye visualization** or **phosphenes**.
- As part of normal cellular function, atoms in the **retina absorb** and **emit tiny particles** of photons, and the optic nerve relays these light signals to the brain.
- Even in the **absence of photons**, neurons in the thalamus, visual cortex, and retina are always active and can **activate other visual neurons** and creating patterns and colors.
- Depending on where a **phosphene originates** (retina, thalamus, or visual cortex), it can **take on various shapes, patterns**, and colors.
- Phosphenes can also be generated by mechanical stimulation, metabolic stimulation like (**low blood pressure**), magnetic or electrical stimulations, and certain drugs like **psilocybin**.
- When the **brain cannot make sense** of the reconstructed image, it quickly **labels** it as a **phosphene**.

Food Irradiation

Why in News?

The government of India plans to use **radiation processing** (Food Irradiation) to extend the shelf life of a 100,000 tonne onion **buffer stock** this year, aiming to prevent shortages and price hikes.

- India, a major onion exporter, is facing a **16% decline in onion output** for the 2023-24 season, bringing production down to an estimated 25.47 million tonnes.

Note: In India, irradiated food is regulated in accordance with the **Atomic Energy (Control of Irradiation of Food) Rules, 1996**.

What is Food Irradiation?

- **About:**
 - Food irradiation is the process of exposing food and food products to **ionising radiation, such as gamma rays, electron beams, or X-rays**.
 - It is used in food processing to help ensure food safety.
- **Need:**
 - **Seasonal overstocking and long transport times** lead to food waste.
 - India's hot, humid climate is a breeding ground for **spoilage-causing insects and microbes**.
 - **Post-harvest losses** in India amount to about **40-50%** in food and food grains, mostly caused by insect infestation, microbiological contamination, sprouting, ripening, and poor shelf life.
 - **Seafood, meat, and poultry** can harbour harmful bacteria and parasites that make people sick.
- **Applications:**
 - It prevents spoilage, kills germs, stops pests (eliminates bugs in stored food), delays sprouting, etc.

Onion Production in India

- India is the **second-largest** (after China) onion-growing country in the world, famous for its pungent onions available year-round.
- **Major Onion Producing States:**
 - Maharashtra, Karnataka, Orissa, Uttar Pradesh, Gujarat, Andhra Pradesh, and Tamil Nadu are the major onion-producing states.
 - Maharashtra **ranks first in Onion production with a share of 42.53%** followed by Madhya Pradesh with a share of 15.16% in 2021-22 (3rd Advance Estimate).
- **Export Destination:** Major export destinations of Indian onion include Bangladesh, Malaysia, the United Arab Emirates, Sri Lanka and Nepal.

Note:

Genetically Modified Mosquitoes to Fight Against Malaria

Why in News?

Djibouti, a nation in East Africa, is taking a bold step in the fight against **malaria** by deploying **genetically modified (GM) mosquitoes**.

- This pilot program, launched in May 2024, marks a significant moment in the battle against this deadly disease.

Why Genetically Modified (GM) Mosquitoes for Malaria Control?

➤ About:

- GM mosquitoes are bred in a lab with two genes: a **self-limiting gene to prevent female offspring from surviving to adulthood**, and a **fluorescent marker gene for identification in the wild**.
- GM mosquitoes are **engineered to reduce the population of female *Anopheles stephensi* mosquitoes**, which are responsible for transmitting malaria.
- By targeting the vector population, the **aim is to interrupt the transmission cycle of malaria**.

➤ Need of GM Mosquitoes:

- **Surge in Malaria Cases:** Djibouti has witnessed a dramatic rise in malaria cases in recent years. An **invasive mosquito species (migrated to Africa from South Asia and the Arabian Peninsula), *Anopheles stephensi***, particularly adept at thriving in urban environments like **Djibouti City**.
- **Limitations of Traditional Control Methods:** Existing control methods like **insecticide-treated bed nets** and indoor spraying are becoming less effective due to mosquito resistance.

➤ Working Mechanism:

- **Targeting the Females:** The released mosquitoes are all male and carry a self-limiting gene. When they mate with female ***A. stephensi* mosquitoes**,

their **offspring (which would be female) inherit the gene and are unable to survive to adulthood**.

- Over time, this process aims to significantly reduce the overall population of female mosquitoes, thereby interrupting malaria transmission.
- **Environmental Concerns:** Some environmental groups have expressed concerns about the **potential unintended consequences of releasing GM mosquitoes into the ecosystem**.
 - GM mosquitoes **may develop unforeseen survival skills** or adaptability. Like **resistance seen in *Bt cotton***, GM mosquitoes could **evolve resistance to gene-editing mechanisms**, posing challenges to their effectiveness.
 - Mosquitoes **contribute to pollination by consuming nectar**, which could impact plants reliant on them.
 - A decrease in mosquito populations could disrupt **local food webs and biodiversity**.

Note:

- GM mosquitoes have been successfully **used in parts of Brazil**, the Cayman Islands, Panama, and India to control ***Aedes aegypti* mosquitoes**. Since 2019, over 1 billion mosquitoes have been released.
- Djibouti's initiative follows **Burkina Faso's release of GM mosquitoes in West Africa**, highlighting a growing trend in using **biotechnology to combat malaria**.

Malaria

- **Malaria** is a life-threatening disease caused by the ***Plasmodium* parasite**, transmitted through the bites of infected **female *Anopheles* mosquitoes**.
- It is most **common in tropical and subtropical regions**, with symptoms including fever, chills, headache, and fatigue. Severe cases can lead to organ failure, coma, and death.
- India is implementing various initiatives to control vector-borne diseases, particularly malaria. These efforts include the **National Vector-Borne Disease Control Programme**, the **National Malaria Control Programme**, the **National Framework for Malaria Elimination 2016-2030**.

Note:

World Malaria Day



It is observed to **raise awareness** about malaria, increasing **public understanding** of malaria & promoting **prevention measures**. Malaria is a **preventable** and **treatable** disease.



Theme 2023 "Time to deliver zero malaria: invest, innovate and implement"



Did You Know?



247 M
New cases of malaria in **2021**



95%
Malaria cases in **WHO African region**



6,19,000
Malaria-related deaths in **2021**



Symptoms



High Fever



Diarrhoea



Chills



Muscle Pain



Headaches



Nausea & Vomiting



Sweating



Dry Cough

What should you keep in mind?

M

Make people
aware of
symptoms

A

Always use
mosquito nets

L

Long sleeve
clothes- Go for
protective
clothing

A

Apply
Mosquito
repellents

R

Remove
Standing
Water

I

Implementing
and accepting
GOI guidelines
against malaria

A

Avoid
travelling to
areas with
a malaria
outbreak

Read more: [Genetically Modified Mosquitoes](#)



Note:

Environment and Ecology

Highlights

- Rising Global Temperatures
- Western Ghats Eco-Sensitive Area
- The Global Nitrous Oxide Budget 2024
- UNESCO's State of Ocean Report 2024
- Indian House Crows
- Greater Adjutant Stork
- Nagi and Nakti Bird Sanctuaries Recognised as Ramsar Sites
- World Environment Day 2024
- Conservation Breeding in Indira Gandhi Zoological Park (IGZP)
- Philippines Halted Production of GM Crops
- KAZA Summit 2024 and Wildlife Product Trade
- Migratory Diadromous Fishes
- Amazon Forest Fire

Rising Global Temperatures

Why in News?

The world is witnessing a **concerning trend of record-breaking temperatures** across the globe, exacerbated by **global warming**. From the scorching 56.7°C recorded in Death Valley, California over a century ago to the recent 52.9°C reading in Delhi, temperature extremes are becoming more prevalent as the planet continues to heat up.

- If the 52.9°C recorded at a station in Delhi is verified, it would be an all-time high for India.

Note:

- The Mungeshpur weather station in Delhi recorded a record high temperature of 52.9°C, the highest ever in India. However, the **India Meteorological Department (IMD)** later clarified that the extreme temperature was due to an **error in the sensor or local factors**.

What is the Historical Context of Global Temperature Records?

- **Historical High:** The highest temperature ever recorded on Earth was 56.7°C in Death Valley, California, in 1913.
 - **United Kingdom:** Surpassed 40°C for the first time in July 2022.
 - **China:** Recorded its highest temperature of 52°C in a northwestern town last year.
 - **Europe:** Sicily, Italy, reached 48.8°C in 2021, a record for the continent.
 - **India:** Rajasthan's Phalodi recorded the highest temperature of 51°C in 2016.

- **Global Trends:** An analysis shows nearly **40% of the Earth experienced its highest-ever daily temperature between 2013 and 2023.**

- This includes diverse regions, from **Antarctica** to various parts of Asia, Europe, and the Americas.
- **Global average temperatures are currently about 1.61°C** higher than pre-industrial levels.

How Global Warming is Exacerbating Global Temperatures?

- **Definition:** Global warming refers to the long-term increase in Earth's average surface temperature due to human activities, primarily the emission of **greenhouse gases (GHG)** like **carbon dioxide (CO₂)** and **methane (CH₄)**.
- **Greenhouse Gases and Temperatures:** GHG **trap heat in the Earth's atmosphere**, preventing it from escaping into space.
 - Increased concentrations of these gasses enhance this effect, leading to more heat being retained and higher global temperatures.
- **Global Temperature Rise:** The planet's average surface temperature has **risen about 1°C since the late 19th century**, a change driven largely by increased GHG emissions into the atmosphere and other human activities.
 - The **past decade has seen many of the warmest years on record, with 2023 and 2024** showing unprecedented temperature increases.

Note:

- The period from May 2023 to April 2024 was the warmest 12-month period, with global temperatures about 1.61°C above pre-industrial levels.

Cities experience higher temperatures

For two consecutive days, Delhi reported daytime temperature above 50°C, the highest ever recorded in the city

- Altered thermodynamic, aerodynamic properties of the cities tend to trap more heat, making cities warmer than their rural and suburban counterparts

- Climate change too is causing a significant increase in temperature

- Urbanisation and global warming together play a pivotal role in the overall warming in any city

- All 141 cities show an increase in night-time land surface temperature, with an average increase of 0.53°C per decade

- Urbanisation alone is causing additional warming of about 60%, while the climate change

is responsible for the remaining smaller share

- Tier-II cities in the eastern part of the country have stronger urbanisation-driven warming than even large metros and mega cities

- Tailored city specific action plans are needed for sustainable urban growth for cities with a large heat exposure



Sizzling: Cities are experiencing higher temperatures than non-urban and rural areas

- **India Compare to Global Warming Trends:** India's warming is **less than the global average**.
 - Indian temperatures have increased by **0.7 degrees Celsius since 1900**, while global land temperatures have risen by 1.59°C. When including oceans, global temperatures are now at least 1.1°C higher than pre-industrial levels.

Note:

- **Global Warming and Heatwaves:** Global warming is causing an increase in global temperatures and the frequency of **heatwaves**.
 - In India Heat waves typically occur from March to June, and in some rare cases, even extend till July. On an average, five-six heat wave events occur every year over the northern parts of the country.
 - **Heatwaves in India are becoming more severe**, with heatwave conditions even in **February, a winter month** for which heatwave thresholds are not defined.
 - The current high temperatures in Delhi and North India seem **abnormal compared to the average temperatures from 1981-2010**.
 - In the future, temperatures of 45°C and above may become the new normal, and a reading of 50°C will no longer be seen as unusual.
- **Geographical Variability:** Global warming is not causing a uniform rise in temperatures everywhere. Some regions experience faster warming due to factors like:
 - **Polar Amplification:** The **Arctic** and other polar areas are warming much faster due to melting sea ice and permafrost.
 - **Land vs Water:** Land warms faster than oceans, so continental interiors warm faster than coastal regions.
 - **Elevation:** Higher elevations experience slower warming as the atmosphere traps less heat.
 - **Ocean Currents:** Regions influenced by warm currents like the **Gulf Stream warm faster**.
 - **Landlocked Countries:** Landlocked areas have less evaporative cooling and the continental effect, leading to more extreme temperature swings.
- **Urban Heat Islands (UHIs):** UHIs are **metropolitan areas significantly warmer than surrounding regions** due to heat-absorbing surfaces and energy use.
 - As global temperatures rise, **UHI intensity is expected to increase, amplifying heatwaves in cities**.
 - The higher urban temperatures also drive greater fossil fuel-powered cooling, further contributing to **GHG emissions** and warming.

- Populations in UHIs are especially vulnerable to the health risks posed by the compounded effects of UHIs and climate change.

What are the Consequences of Rising Global Temperatures?

- **Sea Level Rise:** As temperatures rise, glaciers and **ice sheets melt**, adding water to the oceans and **causing sea levels to rise**. This inundates coastal areas, displaces communities, and disrupts ecosystems.
 - **Global sea level** has risen by about 8 inches since 1880 and is projected to rise by at least another foot by 2100. In a **high-emissions scenario, it could potentially rise as high as 6.6 feet**.
- **Ocean Acidification:** The oceans absorb a significant amount of the CO₂ released into the atmosphere. This makes the **oceans more acidic**, harming marine life and disrupting ocean ecosystems crucial for the health of the planet.
 - **Hurricanes** are expected to become stronger and more intense as the climate warms, leading to increased storm intensity and rainfall rates.
- **Droughts and Heat Waves:** **Droughts** and heat waves are expected to become more intense, while cold waves are expected to become less intense and less frequent.
- **Wildfire Season:** **Wildfire** season has been **prolonged and intensified due to warming temperatures and long-term drought**, increasing the risk of fires.
 - Human-caused climate change has **already doubled the area of forest burned** and is projected to further increase the amount of land consumed by wildfires in Western states by around 2050.
- **Biodiversity Loss:** Rising temperatures and changing weather patterns disrupt **ecosystems and habitats**, pushing many plant and animal species towards extinction.
- **Climate change:** Extreme weather disrupts food production, leading to shortages and price hikes that harm vulnerable populations.
 - Rising temperatures worsen air quality, increase heat-related illnesses, and facilitate disease spread.
 - The economic consequences are severe, with high costs for repairing infrastructure, declining agricultural yields, and escalating disaster relief.

Note:



GEO-ENGINEERING



Geoengineering means manipulating the earth's climate to lower its temperature to counter global warming

TYPES OF GEO-ENGINEERING

CARBON DIOXIDE REMOVAL

Technology/ Method Proposed	Proposed Effects/actions	Potential Side Effects	Feasibility/Cost Effectiveness
Land Use Management	Afforestation/ Reforestation	Minimum Side Effects	High feasibility, Low Cost
Bio-energy with carbon capture and storage (BECCS)	Biomass harvested and used as fuel	Potential land use conflict	Comparatively expensive
Direct CO ₂ Capture	Industrial Process	Minimal	High technical feasibility
Fertilization of the ocean	Increased CO ₂ absorption by promoting algae growth	High potential for adverse side effects	Feasible but not cost-effective
Accelerated Weathering	Pulverization of silicate rocks	Potential respiratory health impact	Could be combined with crop production, a feasible option at scale

SOLAR RADIATION MANAGEMENT

Stratospheric aerosol Injection	For reflecting sunlight back into space	Likely impact on the hydrological cycle	Feasible and potentially highly effective
Marine cloud brightening	Seeding of marine clouds with seawater aerosol	Likely impact on precipitation pattern	Low to medium cost and feasible at scale
Giant defectors in outer space	Mirror placed in near earth orbit	Regional climate effects	Capital-intensive and long gestation
Surface albedo approaches	Painting the roof of the building bright white, Installing desert reflector	Major Impact on Desert Ecosystem	High labor and maintenance cost

REGULATION

- No specific international or Indian regulations on geoengineering.

INDIA'S EFFORTS

- **Department of Science and Technology:**
 - ◆ Geoengineering climate-modelling research programme (since 2013)

IIsc:

- ◆ Initiative to understand the implications of solar geoengineering for developing countries
- ◆ Scientists simulated injecting 20 million tonnes of sulphate aerosols into the Arctic stratosphere



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Note:

Western Ghats Eco-Sensitive Area

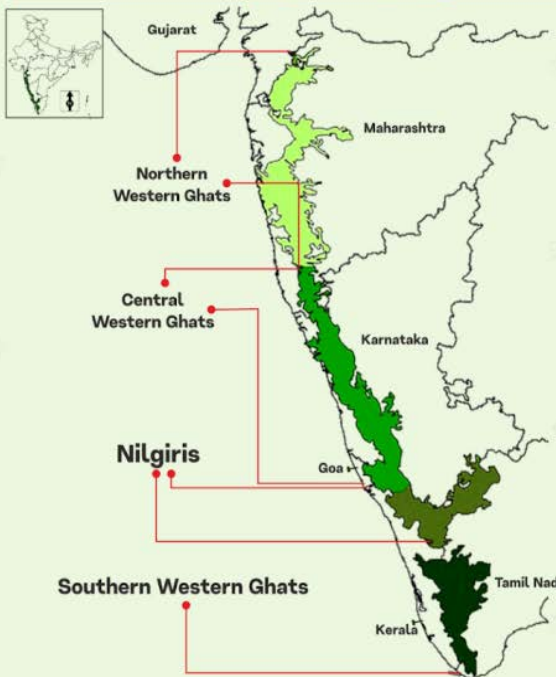
Why in News?

Recently, Karnataka, Maharashtra, and Goa, three of the six states where the Centre has proposed **eco-sensitive areas (ESAs)** to protect the **Western Ghats** have requested a reduction in the extent of these ESAs to permit development projects.

What is the Western Ghats Eco-Sensitive Area?

Western Ghats

One of the four biodiversity hotspots of India; recognised as a UNESCO WHS (2012)



Names

- Sahyadri - northern Maharashtra; Sahya Parvatham - Kerala

Diverted views about Mt. type

- View 1: Block Mt. formed due to down warping of a part of land into Arabian Sea
- View 2: Not true mt. rather the faulted edge of Deccan Plateau

Major Rocks

- Basalt, granite gneiss, khondalites, metamorphic gneisses, crystalline limestone, iron ore

Geographical Extent

- Satpura (in north) to the end of TN at Kanyakumari (in south)

Mt. Ranges

- Nilgiri ranges, Shevaroy and Tirumala range
- Highest peak - Anamudi (Kerala)

Rivers (originating)

- West-flowing: Periyar, Bharathappuzha, Netravati, Sharavathi, Mandovi
- East-flowing: Godavari, Krishna, Kaveri, Tunga, Bhadra, Bhima, Malaprabha, Ghataprabha, Hemavathi, Kabini

Endemic Species

- Nilgiri tahr (IUCN Status - EN)
- Lion-tailed macaque (IUCN Status - EN)

Imp Protected Areas

- Biosphere Reserves - Agasthyamala and Nilgiri
- NP - Silent Valley, Bandipur, Eravikulam, Wayanad-Mudumalai, Nagarhole
- TR - Kalakad-Mundanthurai, Periyar

Imp Passes

▪ Thal Ghat Pass (Kasara Ghat)	▪ Amba Ghat Pass
▪ Bhore Ghat Pass	▪ Naneghat Pass
▪ Palakkad Gap (Pal Ghat)	▪ Amboli Ghat Pass

Significance

- Hydroelectricity production
- Influences Indian monsoon weather patterns
- Carbon sequestration (neutralise ~4 MT of carbon every year)
- One of the 8 global hottest hotspots of biodiversity (due to richness in species and endemism)
- Rich in iron, manganese and bauxite ores, timber, pepper, cardamom, oil palm and rubber
- Sizeable indigenous population (including PVTGs)
- Important tourism/pilgrimage centres

Major Threats

- Mining, Industrialisation
- Massive extraction of forest produce
- Human-wildlife conflict, encroachment, illegal hunting
- Livestock grazing, deforestation
- Large hydropower projects
- Climate change

Imp Committees

- Gadgil Committee (2011) (Western Ghats Ecology Expert Panel)
 - ↳ Recommendation: All of WG be declared as Ecological Sensitive Area (ESA) with only limited development allowed in graded zones.
- Kasturirangan Committee (2013)
 - ↳ Recommendation: Instead of whole, only 37% of the total area of WG be brought under ESA + complete ban on mining, quarrying and sand mining be imposed in ESA.



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Note:

➤ **About:**

- In 2013, the government constituted a **High-Level Working Group** under the Chairmanship of **Dr. Kasturirangan** to make recommendations for conserving and protecting the biodiversity of **Western Ghats** while allowing for **sustainable and inclusive development** of the region.
 - Previously, the **Madhav Gadgil Committee (2011)** also gave its recommendations of conservation of Western Ghats.
- The Committee had recommended that identified geographical areas falling in the **six States** of Kerala, Karnataka, Goa, Maharashtra, Gujarat and Tamil Nadu be declared as ESA.
 - The Committee recommended bringing **just 37% of the Western Ghats** under the ESA, down from the 64% suggested by the Gadgil Committee report.

➤ **Response from States:**

- All the involved States recognised a need to protect the Western Ghats, however, they **expressed their concerns** related to the **allowed activities and extent** of the area mentioned in the draft notification.
- These states argue for the **rationalisation of ESAs** to facilitate **development works**.
- **Karnataka opposed the K Kasturirangan panel report** which proposed 20,668 km² as ESA, **citing adverse effects on local livelihoods**.
- **Goa** also requested a reduction of about 370 km² from the proposed 1,461 km² of ESAs.

Note:

- In order to **protect biodiversity** in areas having ecological significance, **MoEF&CC notifies Ecologically Sensitive Areas (ESA)**, which have unique biological resources, which **require special attention** for their conservation.
- Additionally, to manage and conserve biodiversity, the MoEF&CC also designates **Eco-Sensitive Zones (ESZs)** around **Protected Areas**.
 - Since 2002, these zones have served as **buffers** to provide **extra protection for wildlife**, acting as “**shock absorbers**” to transition from highly protected areas to regions with less protection.

ESZs vs Protected Areas		
Feature	Protected Area	Eco-Sensitive Zone (ESZ)
Primary Purpose	Strict conservation of biodiversity and ecosystems	Act as a buffer zone to protect nearby protected areas
Location	Designated areas with high ecological value	Established around protected areas (national parks, wildlife sanctuaries)
Level of Protection	Highest level of protection	Regulations on activities to minimise impact on protected area
Developmental Activities	Highly restricted (research, limited recreation)	Varied - some prohibited, some regulated, some promoted (sustainable practices)
Livelihoods	Local communities often restricted	May accommodate traditional practices and sustainable livelihoods
Size	Variable, can be large	Typically smaller than protected areas, up to 10 km radius

Note:

Recommendations of Committees on Western Ghats

- **Western Ghats Ecology Expert Panel, 2011 (headed by Madhav Gadgil):**
 - All of the Western Ghats be declared as ESA with only limited development allowed in graded zones.
 - Classify the Western Ghats into **ESA 1, 2 and 3** with ESA-1 having a high priority where almost all developmental activities are restricted.
 - Specified the **system of governance to be a bottom-to-top approach** (right from Gram sabhas) rather than a top-to-bottom approach.
 - **Western Ghats Ecology Authority (WGEA)** to be constituted as a statutory authority under the MoEF&CC, with the powers under Section 3 of the **Environment (Protection) Act, 1986**.
 - The report was criticised for being more environment-friendly and **not in tune with the ground realities**.
- **Kasturirangan Committee, 2013:** It sought to **balance the development and environmental protection** in contrast to the Gadgil report:
 - Instead of the total area of Western Ghats, **only 37%** of the total area to be brought under ESA.
 - **Complete ban on mining**, quarrying and sand mining in ESAs.
 - **No thermal power projects** to be allowed and hydropower projects be allowed only after detailed study.
 - Red industries i.e. which are highly polluting to be strictly banned.
 - Exclusion of inhabited regions and plantations from the purview of ESAs making it a **pro-farmer approach**.

What are the Major Concerns of Declaring Eco-Sensitive Areas?

- **Balancing Conservation and Development:** ESAs often lie in areas with **potential for economic growth**. This can lead to **conflict between conservation goals and development projects**, with local communities potentially losing out on economic opportunities

- **Impact on Local Livelihoods:** Regulations in ESAs can **restrict traditional practices** and livelihoods of communities residing there. This can cause resentment and hinder cooperation with conservation efforts.
- **Inconsistent Policies and Implementation:** The policies and implementation of ESAs can **vary across regions and states**, leading to confusion and challenges in enforcement. This inconsistency can also create loopholes for activities that might harm the environment
- **Lack of Awareness and Participation:** Sometimes, local communities and stakeholders may **not be fully aware** of the importance of ESAs or properly involved in the decision-making process. This lack of participation can breed resistance and hinder the effectiveness of the program.

The Global Nitrous Oxide Budget 2024

Why in News?

According to a new study by the **Global Carbon Project (GCP)** titled, "**Global Nitrous Oxide Budget (1980-2020)**", the emissions of nitrous oxide have been rising continuously between 1980 and 2020.

- A study found that in 2021 and 2022, nitrous oxide was released into the air faster than ever before, even though we need to cut **greenhouse gasses** to fight **global warming**.

About GCP Study

- **Global Carbon Project (GCP)** is an **organisation** established in 2001 which conducts studies that seek to quantify global greenhouse gas emissions and their causes.
 - This study by GCP analyses the **impact of human activity on greenhouse gas emissions** and earth systems and **quantifies emissions of carbon dioxide, methane and nitrous oxide (3 major greenhouse gases)** to inform public policy and international action.
- It involved the examination of global data for all major economic activities that lead to nitrous oxide emissions from **18 anthropogenic and natural sources** and **3 absorbent "sinks" of global nitrous oxide**.

Note:



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Absorbent "Sinks" of Nitrous Oxide:**➤ Soils:**

- Soils act as a significant **sink for N_2O** . Microbial processes in soils can consume and **reduce N_2O emissions**.
- **Denitrifying bacteria convert N_2O to nitrogen gas (N_2)** under anaerobic conditions, effectively **removing it from the atmosphere**. The balance between nitrification (which produces N_2O) and denitrification determines the net soil sink capacity.

➤ Oceans:

- Deeper and **subsurface oceans absorb N_2O from the atmosphere**, through dissolution at the air-sea interface. **Marine phytoplankton and other organisms** play a role in consuming dissolved N_2O .

➤ Stratosphere:

- In the stratosphere, **N_2O reacts with ozone (O_3)**, leading to the formation of **nitrogen oxides (NO_x)** and ultimately **nitrogen gas (N_2)**.
- N_2O stays in the atmosphere for **longer than the average human lifespan (117 years)**, making it an effective sink for this greenhouse gas, impacting climate and ozone for a longer time.

What are the Key Findings of the Study?**➤ Alarming Rise in Nitrous Oxide (N_2O) Emission:**
 N_2O emissions from human activities have **increased by 40%** (3 million metric tons of N_2O per year) between 1980 and 2020.

- **Top 5 Emitters of N_2O** were China (16.7%), India (10.9%), US (5.7%), Brazil (5.3%) and Russia (4.6%).
 - Thus, **India is the 2nd largest emitter** of N_2O globally after China.
- In **Per-Capita terms**, **India has the lowest per capita emission of 0.8 kg N_2O /person** lower than China (1.3), US (1.7), Brazil (2.5) and Russia (3.3).
- The concentration of atmospheric **N_2O reached 336 parts per billion in 2022**, a 25% rise over pre-

industrial levels, more than what was estimated by the **Intergovernmental Panel on Climate Change (IPCC)**.

- The study points out that currently, **no technologies exist that can remove N_2O from the atmosphere**.

➤ Sources of Nitrous Oxide Emissions:**○ Natural Source:**

- **Natural sources** such as **oceans, inland water bodies and soil** contributed **11.8%** of the global emissions of N_2O between 2010 and 2019.

○ Human-Driven Source (Anthropogenic):

- **Agricultural activities** were responsible for **74%** of human-driven nitrous oxide emissions.

➤ This was mainly due to the application of chemical fertilisers and the use of animal waste on croplands.**➤ The growing use of nitrogen fertilisers in the production of food worldwide is increasing concentrations of N_2O .**

- Other significant sources include **industry, combustion, and waste treatment**.

- The **growing demand for meat and dairy products** has also contributed to an increase in emissions **through the increase in manure production**, which also causes N_2O emissions.

➤ Rate/Growth of Emissions:

- **Emissions from agriculture continue to grow**, while those from other sectors, such as fossil fuels and the chemical industry, are not growing or declining globally.

- Emissions from **aquaculture are only a tenth of those from the use of chemical fertilisers on land** but are growing rapidly, particularly in China.

➤ Emission Pattern in Regions: Among the 18 regions considered in this study, only **Europe, Russia, Australasia, Japan and Korea** had **decreasing nitrous oxide emissions**.

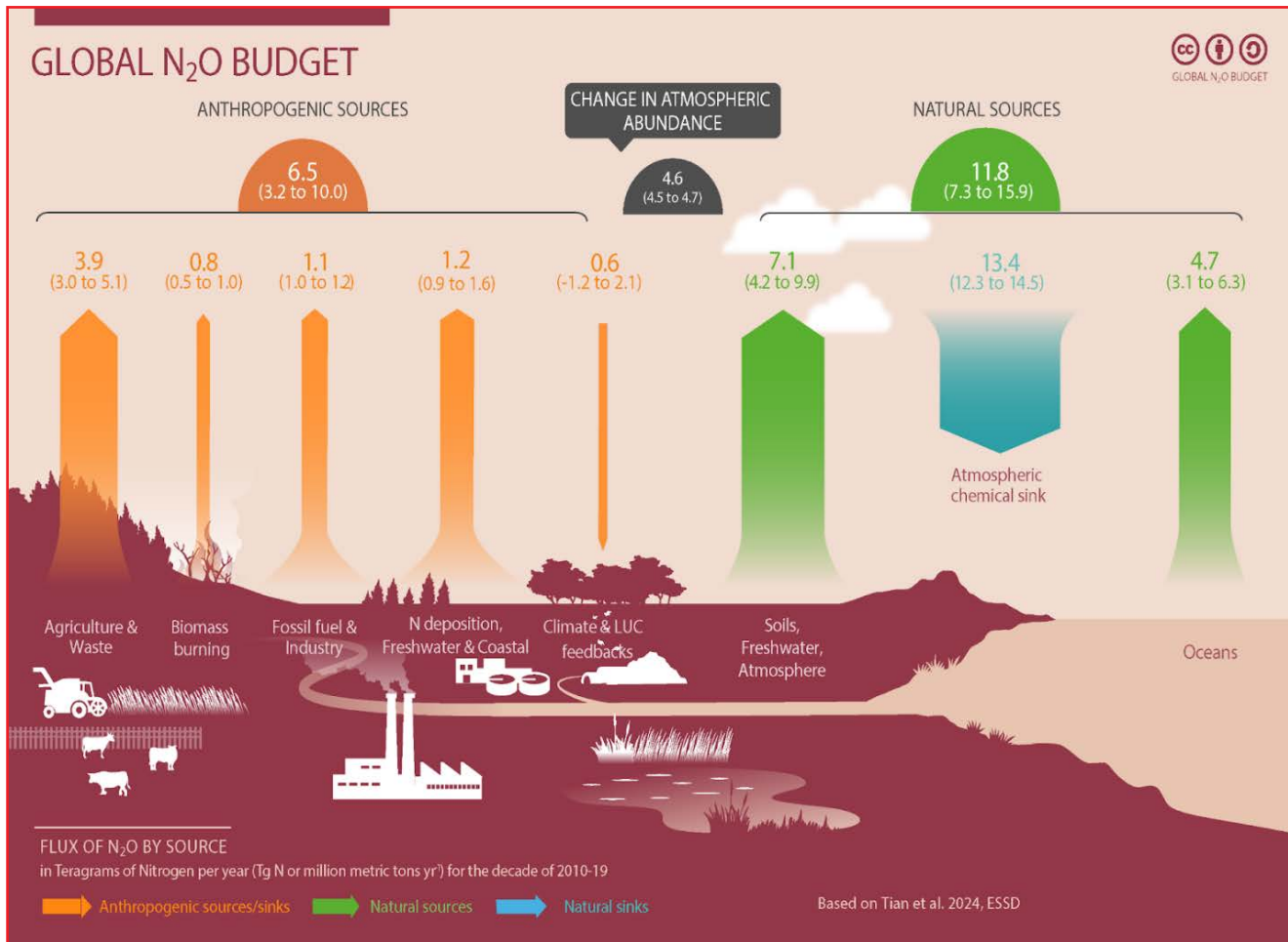
- Europe had the largest rate of decrease between 1980 and 2020, resulting from reduced fossil fuel and industry emissions.

- **China and South Asia** had the **largest increases** in N_2O emissions from 1980 to 2020 at **92%**.

Note:



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Key Fact about Nitrous Oxide (N₂O)

- Nitrous oxide, commonly known as **laughing gas or happy gas**, is a **colourless, odourless, and non-flammable gas**.
- While nitrous oxide is not flammable, it supports combustion to the same extent as oxygen.
- It leads to a **state of euphoria**, explaining its nickname, 'laughing gas.'
- It is **soluble in water**. Its vapours are heavier than air.
- **Applications:**
 - It is commonly used by **dentists and medical professionals** to sedate patients undergoing minor medical procedures.
 - The gas is also used as a **propellant in food aerosols**.
 - It is used in the **automotive industry** to enhance engine performance.

What are the Implications of Rising Nitrous Oxide Emissions?

- **Intensified Global Warming:** N₂O is around **300 times more effective than carbon dioxide (CO₂) at trapping heat over 100 years**. This magnifies its impact on global warming and its **rapid growth** adds considerably to atmospheric heat.
- **Threat to Ozone Layer:** N₂O breaks down in the stratosphere, **releasing nitrogen oxides that damage the ozone layer**, which shields us from harmful **ultraviolet (UV) radiation**.
 - This increased UV radiation can lead to a rise in skin cancer, cataracts, and harm to ecosystems reliant on UV protection.
- **Challenge to Food Security:** **Agricultural sector**, particularly the **use of nitrogen-based fertilisers**, is a major contributor to N₂O emissions and the **growing demand for food** will likely lead to a **further increase in N₂O emissions**, creating a **conflict between food security and climate goals**.

Note:



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- **Challenge to Paris Climate Agreement:** The increasing level of N₂O emissions will pose a challenge in achieving the goals of the **Paris Climate Agreement** (keeping global warming below 2°C compared to pre-industrial times).

What are the Proposed Solutions to Mitigate Nitrous Oxide Emissions?

- **Innovative Agricultural Practices:**
 - **Precision Agriculture:** Utilising technologies like **soil sensors** to **optimise fertiliser application** reduces unnecessary nitrogen input, thereby minimising N₂O formation.
 - A study by Journal Nature found that **precision agriculture techniques can decrease N₂O emissions by up to 50%**.
 - **Nitrification Inhibitors:** These additives **slow the conversion of ammonium in fertilisers to nitrate**, a readily available form for N₂O-producing microbes.
 - **Cover Cropping:** Planting cover crops during fallow periods helps retain soil moisture and nitrogen, reducing the risk of N₂O release.
 - **Using Anti-Methanogenic Feed:** Using Anti-methanogenic feed like 'Harit Dhara' (HD), or developing similar **anti-nitrogen feed** for cattle will help to reduce methane and nitrogen emissions.
 - Additionally, adopting a **cyclic method to generate fuel gas from cattle dung**, instead of allowing nitrogen emissions from anaerobic degradation, can also minimise N₂O formation.
 - **Using Nano-Fertilisers:**
 - Nano fertilisers can deliver nutrients directly and slowly to plant roots, **minimising excess nitrogen** and **reducing nitrous oxide emissions**. They enhance nutrient absorption, potentially requiring less fertiliser overall. By delivering nutrients slowly and directly to plant roots, they can minimise the surplus nitrogen available for conversion.
- **Effective Policy Measures:**
 - **Emission Trading Schemes:** Implementing a **cap-and-trade system for N₂O emissions** can incentivise industries and farmers to adopt cleaner practices.
 - The successful implementation of such schemes in the **European Union** for other greenhouse gasses offers valuable lessons.
 - **Targeted Subsidies:** Governments can provide financial support for farmers transitioning to sustainable practices that minimize N₂O emissions.
 - **China's successful reduction in N₂O emissions** since the mid-2010s has been partly attributed to **targeted subsidies for improved fertiliser management**.

- **Research and Development:** Increased funding for research on N₂O mitigation strategies, including **improved fertilisers and waste management techniques**, is crucial for long-term progress.
- **Addressing Emissions from Other Sources:**
 - **Industrial Processes:** Implementing **stricter regulations and promoting cleaner technologies** can minimise N₂O emissions from industrial sources such as **nylon production** and **nitric acid manufacturing** can curb rising nitrous oxide emissions.
 - **Combustion:** As per the IPCC Climate Change 2021 report, **optimizing combustion processes in vehicles and power plants** can help reduce N₂O emissions as a by-product.
 - **Waste Management:** As per the **World Bank** report, technological advancements in waste-to-energy conversion and the effective **treatment of wastewater and agricultural waste** can significantly decrease N₂O emissions from these sources.

UNESCO's State of Ocean Report 2024

Why in News?

Recently, the **UNESCO** State of Ocean Report 2024 highlighted the need for enhanced **oceanographic research** and **data collection** to address escalating ocean crises, including **warming, acidification, deoxygenation** and rising sea levels.

What are the Key Findings of the State of Ocean Report 2024?

- **Inadequate Data and Research:** The report identifies a **critical gap in data and research** on accelerating **ocean warming**.
 - There is an urgent need for regular data to monitor ocean warming and its impacts, supporting the challenge for healthy and resilient oceans.
- **Ocean Warming:** The upper **2,000 meters of oceans** warmed at a rate of about **0.32 Watt/m² from 1960 to 2023**, which has accelerated to **0.66 Watt/m² in the past two decades**.
 - This warming trend is expected to continue, causing **irreversible changes** over the centennial to millennial timescale.
- **Earth Energy Imbalance (EEI):** Increased **greenhouse gas emissions** from human activities has resulted in the increased uptake of the EEI by oceans.
- **EEI is the balance between incoming energy from the Sun and outgoing energy from the Earth.**

Note:



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- About **90 % of the EEI** is being absorbed by oceans, resulting in a cumulative increase in **ocean heat content (OHC)** in the **upper 2,000 m** of the water column.
 - OHC is the **total amount of heat stored** by oceans.
- This warming may **prevent ocean layer mixing**, potentially reducing oxygenated deep waters and leading to **deoxygenation**.
 - Deoxygenation can have **long-term negative impacts** on the health of **coastal and large marine ecosystems** and **coastal communities**.
- **Ocean Acidification**: There has been a **mean global increase** in **ocean acidification** in all ocean basins and seas.
 - The open ocean has been experiencing a **continuous decline in pH** (increase in acidic levels), with an average global surface ocean pH decline of 0.017-0.027 pH units per decade since the late 1980s.
 - Coastal waters can turn acidic due to **natural processes**, such as freshwater influx, biological activity, temperature change and climate patterns like **El Nino Southern Oscillation (ENSO)**.
 - Human activities like **nutrient input from agricultural and industrial activities** also influence the chemistry of coastal areas.
 - However, **limited long-term observations**, particularly in coastal areas, hinder a complete understanding of this phenomenon.
- **Continuation of Sea Level Rise**: The global mean sea level from 1993 to 2023 **increased at a rate of about 3.4 mm/yr**.
 - The world will have to improve the **space-based and in situ observing systems** for monitoring sea level rise at global, regional, and coastal scales.
- **Marine Carbon Dioxide Removal (mCDR)**: The report acknowledges the growing interest in **mCDR technologies** aimed at capturing and **storing atmospheric carbon dioxide**.
 - Examples like **altering the chemical composition of seawater** so that oceans absorb more carbon dioxide from the atmosphere or **adding nutrients such as iron** to encourage the growth of **microscopic plankton** that can sink to the seafloor and be stored for centuries or longer.
 - There has been an increased interest in **mCDR technologies** with the growing number of start-ups developing mCDR techniques, alongside **funding** by the United States and the **European Union for mCDR research** announced in 2023.
 - There has been some challenges like the **limited use of mCDR** and how they will interact with the **ocean carbon cycle**, possibly causing **unintended consequences** such as threat to marine life in the long term.

What are the Impacts of the Global Warming on the Indian Ocean?

- **Cyclones and Marine Heatwaves**: The Indian Ocean is **warming faster** than other oceans, with the potential for **irreversible changes** like cyclones and heatwaves.
 - The **Indian Ocean** plays a significant role in the **formation of monsoons and pre-monsoon cyclones** that bring rain and pose threats to South Asia, East Africa, and West Asia.
 - The North Indian Ocean doesn't generate as many cyclones as the Pacific or **Atlantic Ocean**, but their **numbers and rapid intensification** have been growing making them the deadliest storms by mortality.
 - For example, the 2019 **Cyclone Fani** in Odisha, India, caused widespread destruction with its **high winds and storm surge**.
 - **Marine heatwaves** are becoming more **frequent and intense**, causing **coral bleaching** and harming marine life.
 - For instance, a **2010 marine heatwave in the Indian Ocean** caused widespread **coral bleaching in the Lakshadweep Islands**.
- **Altered Ocean Circulation and Marine Life**: Warming can **weaken upwelling**, a process that brings cooler, nutrient-rich waters to the surface. This can **harm fish populations** that depend on these nutrients.
 - For example, a decline in upwelling in the **Arabian Sea** can negatively impact the **sardine fishery**.
 - As the ocean absorbs more carbon dioxide, it becomes more **acidic**, harming **organisms with calcium carbonate shells and skeletons**, such as coral reefs and shellfish.
 - The **Great Barrier Reef in Australia** is already experiencing significant damage due to **ocean acidification**, and similar threats are faced by coral reefs in the Indian Ocean.
 - Warmer water holds less oxygen. **Increased stratification** due to warming can prevent deep ocean mixing, leading to **oxygen depletion in deeper layers**. This can create **dead zones** where marine life cannot survive.
- **Human Populations at Risk**: Disrupted fisheries, cyclones, and **droughts** all threaten food security for millions of people who depend on the Indian Ocean for their livelihood.
 - Rising sea levels due to **global warming** threaten coastal communities with inundation and erosion. Low-lying areas in India, such as Mumbai and Kolkata, are particularly vulnerable.
 - **Tourism and recreation industries** that rely on healthy coral reefs and beaches will be negatively impacted by bleaching and coastal degradation.

Note:



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GEO-ENGINEERING



Geoengineering means manipulating the earth's climate to lower its temperature to counter global warming

TYPES OF GEO-ENGINEERING

CARBON DIOXIDE REMOVAL

<i>Technology/ Method Proposed</i>	<i>Proposed Effects/actions</i>	<i>Potential Side Effects</i>	<i>Feasibility/Cost Effectiveness</i>
Land Use Management	Afforestation/ Reforestation	Minimum Side Effects	High feasibility, Low Cost
Bio-energy with carbon capture and storage (BECCS)	Biomass harvested and used as fuel	Potential land use conflict	Comparatively expensive
Direct CO ₂ Capture	Industrial Process	Minimal	High technical feasibility
Fertilization of the ocean	Increased CO ₂ absorption by promoting algae growth	High potential for adverse side effects	Feasible but not cost-effective
Accelerated Weathering	Pulverization of silicate rocks	Potential respiratory health impact	Could be combined with crop production, a feasible option at scale

SOLAR RADIATION MANAGEMENT

Stratospheric aerosol Injection	For reflecting sunlight back into space	Likely impact on the hydrological cycle	Feasible and potentially highly effective
Marine cloud brightening	Seeding of marine clouds with seawater aerosol	Likely impact on precipitation pattern	Low to medium cost and feasible at scale
Giant defectors in outer space	Mirror placed in near earth orbit	Regional climate effects	Capital-intensive and long gestation
Surface albedo approaches	Painting the roof of the building bright white, installing desert reflector	Major Impact on Desert Ecosystem	High labor and maintenance cost

REGULATION

- No specific international or Indian regulations on geoengineering.

INDIA'S EFFORTS

- **Department of Science and Technology:**
 - ◆ Geoengineering climate-modelling research programme (since 2013)

IIsc:

- ◆ Initiative to understand the implications of solar geoengineering for developing countries
- ◆ Scientists simulated injecting 20 million tonnes of sulphate aerosols into the Arctic stratosphere



Note:

What are the Steps Taken by India to Mitigate the Effects of Oceanic Heatwaves?

- **Monitoring and Research:**
 - [Indian National Centre for Ocean Information Services \(INCOIS\)](#)
- **Cyclone Preparedness:**
 - [National Disaster Management Authority \(NDMA\)](#)
 - [IMD Cyclone Warnings](#)
- **Additional Measures:**
 - [National Missions on Climate Change](#)
 - [Coalition for Disaster Resilient Infrastructure](#)
 - [Renewable Energy Target](#)
 - [National Hydrogen Mission](#)

Indian House Crows

Why in News?

Recently the **Kenyan government** has announced an **action plan to eliminate** a million **Indian House Crows (*Corvus splendens*)** by the end of 2024.

- This decision stems from the birds' significant **negative impact** on local ecosystems and their nuisance to the public, particularly in the Kenyan coastal region.

What is the Kenyan Government Action Plan?

- **Invasive Species Issue:** The Indian House Crow is described as an **invasive alien species** from India and parts of Asia, introduced to East Africa via shipping activities.
- **Ecological Impact:** The crows prey on **endangered local bird species**, destroy nests, and eat eggs and chicks, leading to a **decline in indigenous bird** populations.
 - This decline **disrupts the ecosystem**, allowing **pests** and **insects** to proliferate, further harming the environment.
- **Historical Effort:** A similar effort in Kenya over 20 years ago managed to reduce their numbers temporarily.
- **Government and Community Response:** An action plan to combat the crow menace includes mechanical and targeted methods for culling the birds, and **use of licensed poison** for population control.

What are the Key Facts About Indian House Crows?

- **Species:** *Corvus splendens*
- **Common names:** Indian house crow, house crow, Indian crow, grey-necked crow, Ceylon crow, Colombo crow
- **Family:** Corvidae
- **Taxonomy:** The nominate race of *Corvus splendens* (*C. splendens*) exists in **India, Nepal** and **Bangladesh** and has a grey neck collar.
- **Conservation Status:**
 - **IUCN Status:** Least Concerned
 - **Wildlife Protection Act:** Schedule II



Key Points About Kenya

- **Kenya** is located in **East Africa**. Its terrain rises from a low coastal plain on the Indian Ocean to mountains and plateaus at its centre.
- Kenya shares **common borders with** five countries namely: **Tanzania** in the South, **Uganda** in the West, **South Sudan** in the North West, **Ethiopia** in the North and **Somalia** in the East
- Kenya is located **between the Indian Ocean and Lake Victoria**.
- **Lake Turkana**, the world's largest desert lake, is part of the Omo-Turkana basin, which stretches into four countries: **Ethiopia, Kenya, South Sudan and Uganda**.
- **UN-Habitat** maintains its headquarters at the United Nations Office in Nairobi, Kenya.

Note:



Greater Adjutant Stork

Why in News?

The **Greater Adjutant Stork**, locally known as 'Garuda' once commonly found in southern Asia and mainland southeast Asia, is now restricted to a small area Assam in India.

- This **large bird is known for its distinct appearance**, with a long neck, large bill, and a prominent gular pouch.

Note:



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What are the Key Facts about Greater Adjutant Stork?

- **Scientific Name:** *Leptoptilos dubius*
- **Genus:** It is a member of the stork family, *Ciconiidae*. There are about **20 species** in the family. They are **long-necked large birds**.
- **Habitat:** There are only **3 known breeding grounds**, one in **Cambodia** and **two in India (Assam and Bihar)**.
 - In India, they are found with the largest colony located in **Assam** and a smaller one around **Bhagalpur**.
 - In Assam, their habitat is primarily in the **Brahmaputra valley**, specifically in the districts of **Guwahati, Morigaon, and Nagaon**.



- **Protection Status:**
 - **IUCN Red List:** Endangered
 - **Wildlife (Protection) Act 1972:** Schedule IV
- **Diet:**
 - **Principally carnivorous**, feeding on fish, frogs, snakes, other reptiles, eels, birds, offal and carrion.
 - It shares the habit of scavenging with vultures.
- **Significance:**
 - **Religious Icon:**
 - They are considered the mount of Vishnu, one of Hinduism's prime deities.

Note:

- Some worship the bird and call it “**Garuda Maharaj**” (Lord Garuda) or “Guru Garuda” (Great Teacher Garuda).
- **Helpful for Farmers:**
 - They help farmers by killing rats and other farm pests.

What are the Threats and Conservation Efforts Related to Greater Adjutant Storks?

➤ **Threats:**

- **Habitat Loss:** Urbanization is destroying wetlands, which are essential for these storks to forage for food. Many are now forced to rely on garbage dumps, which is not a healthy long-term solution.
 - Eg: Garbage dumping site near the **Deepor Beel Wildlife Sanctuary (Ramsar site)**.
- **Encroachment and drainage projects** are destroying crucial wetland ecosystems.
 - For example, In Guwahati, private landowners are **cutting down roosting trees (which they need for nesting)**, further squeezing their habitat.
- **Seasonal Challenges:** The **breeding season (October-February)** coincides with **abundant fish** and prey availability in wetlands.
 - During the non-breeding season, these **storks rely on urban waste disposal sites** for food.
- **Human Disturbance:** Local communities often **drive the birds away due to the strong odor** of their droppings and the presence of rotting meat brought to feed their hatchlings.
- **Conservation Efforts:**
 - **Working with the Locals:** In Assam, local communities play a significant **role in the conservation of Hargila**. Conservationists have engaged villagers, particularly women, in protecting **nesting sites and raising awareness** about the importance of these birds.
 - **Protection of Nesting Sites:** Efforts have been made to **protect and restore nesting sites by planting trees and safeguarding existing ones** where the

storks nest. Community-based organizations are working to monitor and protect these sites from disturbances.

- **Awareness Campaigns:** Educational programs and awareness campaigns are being conducted to change public perception and encourage coexistence with these storks.

Nagi and Nakti Bird Sanctuaries Recognised as Ramsar Sites

Why in News?

Recently, on **World Environment Day**, the **Nagi and Nakti Bird Sanctuaries** in Bihar have been recognised as **wetlands of international importance** under the **Ramsar Convention**.

- This brings the total number of such wetlands in **India to 82**.

What are the Key Characteristics of Nagi and Nakti Bird Sanctuaries?

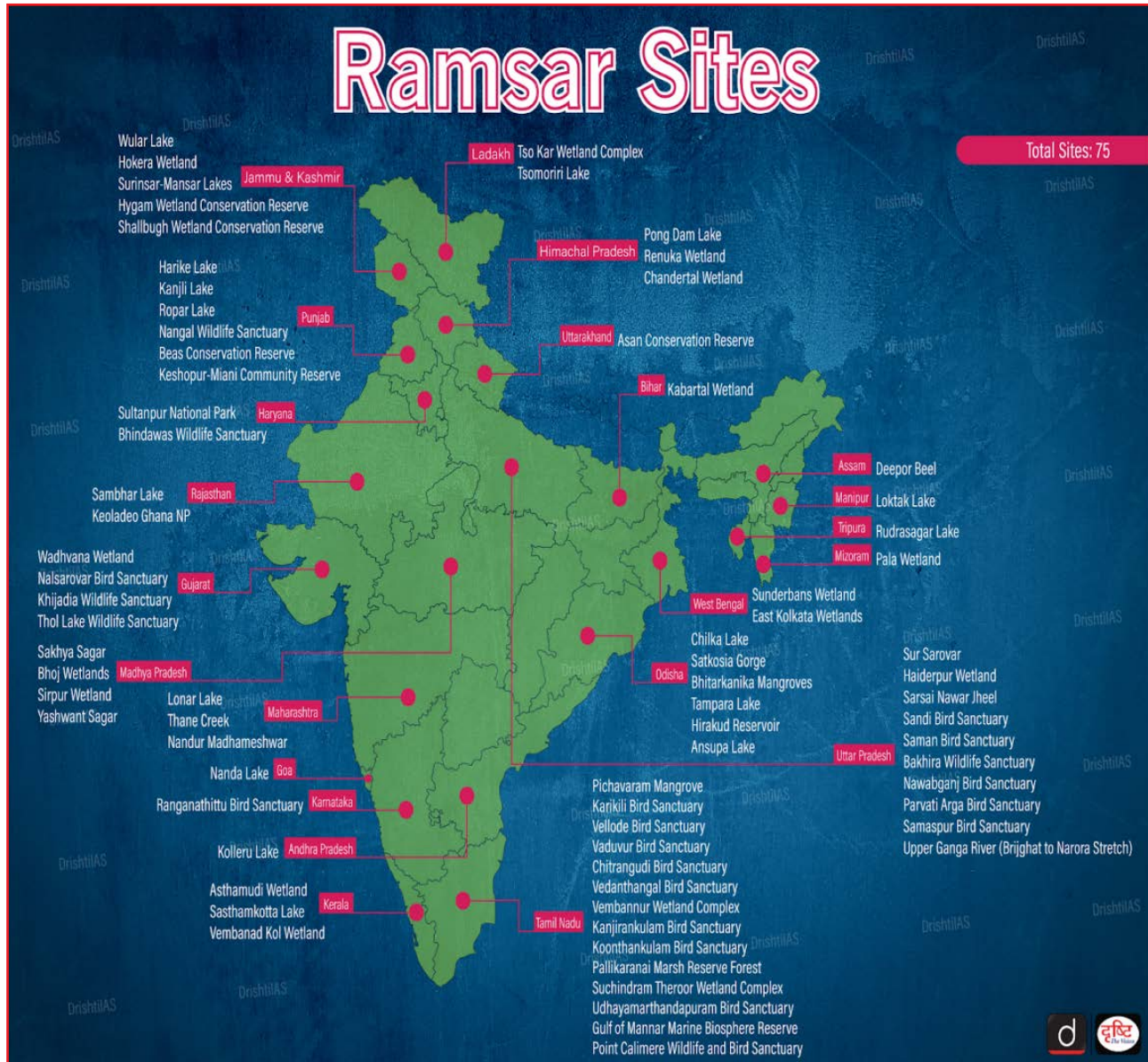
➤ **Geographical Setting:**

- Both the bird sanctuaries are built on **human-made wetlands** primarily developed for irrigation through the construction of the **Nakti Dam**.
- Both sanctuaries were designated as Bird Sanctuaries in 1984 due to their importance as **wintering habitats** for migratory species.
 - The catchment area features **dry deciduous forests** surrounded by hills.

➤ **Flora and Fauna:**

- These wetlands provide habitats for over 150 species of birds, mammals, fish, aquatic plants, reptiles, and amphibians.
- They host globally threatened species such as the endangered **Indian elephant** and the vulnerable native **catfish**.
- According to the **Asiatic Waterbird Census 2023**, the Nakti Bird Sanctuary reported 7,844 birds, the highest in the survey, followed by the Nagi Bird Sanctuary with 6,938 birds.

Note:

**Note:**

- The **Kanwar Lake** in Bihar's Begusarai district was designated as the state's first Ramsar Site in 2020.

What is the Ramsar Convention?

- The **Ramsar Convention** is an international treaty signed in 1971 in Ramsar, Iran, under the auspices of **UNESCO**, aimed at conserving wetlands of international importance.
 - In India, it came into force on 1st February 1982, under which wetlands of international importance are declared as Ramsar sites.
- **Montreux Record** is a register of wetland sites of International Importance where changes in **ecological character** have **occurred**, are occurring, or are likely to occur as a result of **technological developments**, **pollution** or other human interference.
 - It is maintained as **part of the Ramsar List**.

Note:



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RAMSAR CONVENTION

About

- Also known as the Convention on Wetlands.
- An intergovernmental treaty, adopted in 1971, in Ramsar, Iran.
- Entered into force in 1975.
- Wetlands that are of international importance are declared as Ramsar sites.
- Largest Ramsar Site in World: Pantanal: South America

Montreux Record

- Adopted in Montreux (Switzerland) in 1990.
- Identifies Ramsar sites that need priority conservation attention at national or international level.

Wetlands

- A place in which the land is covered by water – salt, fresh, or somewhere in between – either seasonally or permanently.
- Take many forms including rivers, marshes, bogs, mangroves, mudflats, ponds, swamps, billabongs, lagoons, lakes, and floodplains.
- World Wetlands Day: **2nd February**



India & Ramsar Convention

- Came into force in India: **1982**
- Total Number of Ramsar Sites: **75**
 - Chilika Lake (Odisha), Keoladeo National Park (Rajasthan), Harike Lake (Punjab), Loktak Lake (Manipur), Wular Lake (Jammu and Kashmir), etc.
- Related Framework in India
 - The Ministry of Environment, Forest and Climate Change (MoEF&CC) has notified Wetlands (Conservation and Management) Rules, 2017 under the provisions of the Environment (Protection) Act, 1986 as regulatory framework for conservation and management of wetlands.
 - The 2017 Rules decentralise wetlands management and provide for the constitution of the State Wetlands Authority or Union Territory Wetlands Authority.

Key Facts

- Largest Ramsar Site: Sunderbans, West Bengal
- Smallest Ramsar Site: Vembannur Wetland Complex, Tamil Nadu
- State with the maximum number of Ramsar Sites: Tamil Nadu (14)
- Wetlands in Montreux Record:
 - Keoladeo National Park: Rajasthan
 - Loktak Lake: Manipur



Note:

- **World Wetlands Day** is celebrated every year on the **2nd February** across the globe.
- **India's Initiatives for Ramsar Sites:**
 - **Wetlands (Conservation and Management) Rules, 2017.**
 - **National Plan for Conservation of Aquatic Ecosystems (NPCA)**
 - **Amrit Dharohar Capacity Building Scheme**
 - **National Wetland Conservation Programme (NWCP):** It was launched in 1985, to tackle threats to vulnerable wetland ecosystems and enhance their conservation.

World Environment Day 2024

Why in News?

- World Environment Day is celebrated on **5th June** every year to encourage awareness and environmental protection.
- In a remarkable initiative **to combat deforestation and restore biodiversity**, two environmentalists have spearheaded the **creation of India's first biospheres within tiger reserves.**

Note:

India's First Biosphere in a Tiger Reserve

- Recently two environmentalists, **Jai Dhar Gupta** and **Vijay Dhasmana** created India's first **biosphere** in a **tiger reserve**, called the **Rajaji Raghati Biosphere (RRB)** within the **Rajaji National Park** in Uttarakhand.
- The biosphere is a **35-acre private forest initiative** aimed at identifying and **reviving rare and endangered species of native trees** while protecting the area from poachers and mining.
- The land earmarked for RRB was previously barren and in a state of degradation.
- They are also developing a second biosphere above the **Koyna River** in the buffer zone of the **Sahyadri Tiger Reserve** near Pune, Maharashtra, along the **Western Ghats**.

'Ek Ped Maa Ke Naam' Campaign

- It was launched by the Acting Prime Minister of India on World Environment Day on 5 June 2024 by planting a Peepal tree at Buddha Jayanti Park in Delhi.
- He urged the country to protect Mother Nature by making sustainable lifestyle choices and contributing in making our planet better.

What are the Key Facts About World Environment Day?

- **About:**
 - The **United Nations Assembly** established **World Environment Day** in **1972**, which was the first day of the **Stockholm Conference** on the human environment.
 - **World Environment Day (WED)** is celebrated every year with a specific **theme** and slogan that **focuses on the major environmental issues of that time**.
 - WED 2024 is hosted by **Saudi Arabia**.
 - **India** hosted the 45th celebration of World Environment Day in 2018 under the **theme 'Beat Plastic Pollution'**.
 - WED celebration in 2021 kicked off the **UN Decade on Ecosystem Restoration (2021-2030)** which is a global mission to revive billions of hectares, from forests to farmlands, from the top of mountains to the depth of the seas.

➤ The theme for 2024:

- Land Restoration, Desertification and Drought Resilience
- Year 2024 also marks the 30th anniversary of the **UN Convention to Combat Desertification (UNCCD)**.
- Significance of Land Restoration:
 - **Reverses Environmental Damage:** Combats land degradation, drought, and desertification.
 - **High Return on Investment:** Each dollar invested can yield up to USD 30 in benefits from healthy ecosystems.
 - **Boosts Communities:** Creates jobs, reduces poverty, and improves livelihoods.
 - **Strengthens Resilience:** Helps communities better withstand extreme weather events.
 - **Combats Climate Change:** Increases carbon storage in soil and slows the pace of warming.
 - **Protects Biodiversity:** Restoring just 15% of degraded land could prevent a significant portion of expected species extinction.

What is India's Contribution Towards Environmental Sustainability?

- **Mission LiFE**
- **National Mission for Green India (GIM):** It aims to increase forest/tree cover on 5 million hectares of land and improve the quality of forest/tree cover on another 5 million hectares.
- **National Afforestation Programme (NAP):** Under this, 21.47 million hectares of land have been afforested as of 2020.
- **National Biodiversity Action Plan**
- **Nagar Van Yojana (Urban Forest Scheme):** It focuses on developing mini urban forests or "Nagar Vans" within cities and towns.
- **School Nursery Yojana:** It encourages schools to develop their own nurseries.
- **CAMPA Funds:** The **Compensatory Afforestation Fund Management and Planning Authority (CAMPA)** has been established to promote afforestation and regeneration activities etc.
 - These programs promote tree plantation on waste, vacant, and barren lands.

Note:



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➤ **Wetland Conservation:**

- India expanded its **Ramsar Site** count to **80** in January 2024 by designating new sites in Karnataka and Tamil Nadu.
 - 11 wetlands were added in August 2022 to commemorate India's 75th Independence anniversary.
- The **Wetlands of India Portal** serves as a knowledge hub for wetland managers and stakeholders, providing valuable information and resources.

➤ **Forest and Wildlife Conservation:**

- India ranks **third** globally in **net forest area gain** over the past 15 years.
- The **Forest Cover** of India is **7,13,789 sq. km**, which is 21.71% of the total geographical area of the country, as per the **India State of Forest Report (ISFR) 2021**.
- India celebrated **50 years of Project Tiger** and **30 years of Project Elephant**, demonstrating its commitment to species conservation.
- The **'Green Credit Program'** has been introduced to incentivize tree plantation and restoration of degraded forest lands, contributing to climate action initiatives.

➤ **Mangrove Restoration:**

- The Government of India has implemented **promotional and regulatory measures** to protect and enhance **mangrove forests** in coastal States/ Union Territories.
- A Central Sector Scheme called **'Conservation and Management of Mangroves and Coral Reefs'** is being implemented under the **National Coastal Mission Programme**.
- The **Mangrove Initiative for Shoreline Habitats and Tangible Incomes (MISHTI)** was announced in the **Union Budget 2023-24** to promote and conserve mangroves.

➤ **Ban on Single-use Plastic:**

- The Government has introduced amendments to the **Plastic Waste Management Rules, 2016**, through the **Plastic Waste Management (Amendment) Rules, 2024**.
- The rules prohibit the manufacture, import, stocking, distribution, sale, and use of identified **single-use plastic (SUP)**.

➤ **Push to Renewable Energy:**

- The **National Green Hydrogen Mission** was launched in January 2023 with a Rs 19,744 crore

investment, will be a game-changer for India's clean energy future.

- The mission aims to make India a **self-reliant (Aatma Nirbhar) leader in green hydrogen production and technology**.
- This green push will significantly **reduce dependence on fossil fuels, decarbonize the economy**, and inspire a global clean energy transition.

➤ **Global Initiatives of India:**

- India is a member of the **Global Alliance for Circular Economy and Resource Efficiency (GACERE)** and the Steering Committee of the **International Resource Panel (IRP)**.
 - These platforms advocate for a global and just **circular economy transition** and sustainable natural resource management.
- The sixth Assembly of the **International Solar Alliance (ISA)** was hosted in New Delhi on 31st October 2023, with participation from ministers and delegates from **116 Member** and Signatory countries.

Report of Ministry of Coal on Environment Day

- Coal and Lignite PSUs under the **Ministry of Coal** are **implementing measures to reclaim mined-out areas** through **extensive plantation efforts** in and around **coal-bearing regions**.
- The Ministry of Coal has released a **report** titled **"Greening Initiative in Coal & Lignite PSUs"** highlighting the efforts of PSUs in restoring and rejuvenating mined-out lands.
 - The report underscores the significant role that the **coal sector** can play in advancing the goals of **land restoration** and promoting **environmental sustainability**.
 - Coal/Lignite PSUs have created a **green cover** of about 50,000 hectares in and around coal mining regions. This includes **reclaiming de-coaled land, and planting trees within mine leaseholds**, and outside leaseholds, which is estimated to create a **carbon sink** potential of around 2.5 million tonnes of CO₂ equivalent per year.
 - The initiative aims to boost India's green cover to support achieving the **Nationally Determined Contribution (NDC)** target of creating a carbon sink of 2.5 to 3.0 billion tonnes by 2030.

Note:

AQ-AIMS and Air-Pravah App

On World Environment Day, the **Ministry of Electronics and Information Technology (MeitY)** launched a significant step towards better air quality awareness and monitoring in India.

- **AQ-AIMS (Indigenous Air Quality Monitoring System):** This cost-effective, Indian-made system replaces expensive, complex traditional methods.
- **Air-Pravah App:** This mobile app provides **real-time Air Quality Index (AQI) data**, along with features like:
 - Easy setup
 - Live data visualisation
 - Unit conversions for easy understanding
 - AQI comparisons over time or location
 - Multi-device support for convenient access
 - Data analysis tools for deeper insights
 - Remote monitoring for centralised data management
 - Automatic updates for the latest information
- **Benefits:**
 - Affordable and user-friendly air quality monitoring.
 - Faster environmental clearances with accurate data.
 - Potential for improved public health through informed decisions (e.g., wearing masks during high pollution).
- **Technical Details:**
 - AQ-AIMS is validated for monitoring PM (various sizes), SO₂, NO₂, O₃, CO, CO₂, temperature, and humidity.
 - Developed through a collaborative effort between C-DAC Kolkata, TeXMIN (ISM Dhanbad), and JM EnviroLab Pvt Ltd under the 'AgriEnlcs' program.

Conservation Breeding in Indira Gandhi Zoological Park (IGZP)

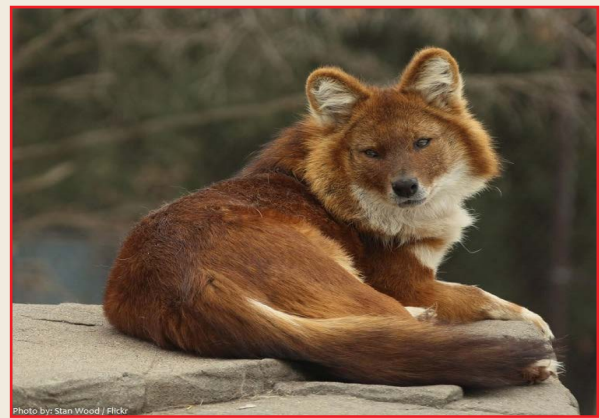
Why in News?

Recently, the **Indira Gandhi Zoological Park (IGZP)** in Visakhapatnam has been at the forefront of **wildlife conservation** in India, particularly in the successful breeding and nurturing of **Striped hyenas** and **Asiatic wild dogs (Dhole)**.

What are the Key Points About Indira Gandhi Zoological Park (IGZP)?

- It is an **ex-situ facility established in 1977**, located amidst **Seethakonda Reserve Forest** in the Visakhapatnam district of Andhra Pradesh.
 - It is surrounded by **Eastern Ghats** on three sides and the **Bay of Bengal** on the fourth side.
- It is a large category zoo recognised by the **Central Zoo Authority**.
 - Due to its close proximity to **Kambalakonda Wildlife Sanctuary** it is also home to many free-ranging animals and birds.
- **IGZP has successfully bred** striped hyenas, **wild dogs**, **Indian grey wolves**, **ring-tailed lemurs**, **Indian bison**, **blue and gold macaws**, jungle cats, and **eclectus parrots**.

Asiatic Wild Dogs (Dhole)



- **About:**
 - **Dhole (*Cuon alpinus*)** is a wild carnivorous animal and is a member of the family **Canidae** and the class **Mammalia**.
- **Habitat:**
 - Historically widespread across southern Russia to southeast Asia, they are now mainly found in south and southeast Asia, with northern populations in China.
 - In India, they are clustered in the **Western and Eastern Ghats**, central India, and northeast India.
- **Conservation:**
 - **Wildlife Protection Act, 1972:** Schedule II
 - **International Union for Conservation of Nature's Red List:** Endangered
 - **The Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES):** Appendix II
 - The creation of reserves under **Project Tiger** provided some protection for dhole populations sympatric with tigers.

Note:



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Striped Hyenas

➤ About:

- The Striped hyenas (*Hyaena hyaena*) are **one of the three hyena species**.
 - Other hyena species include Brown hyenas, and Spotted hyenas (the largest).
- They are **smaller and less social than the more well-known Spotted hyena**.

➤ Challenges to Conservation: Habitat loss, human-wildlife conflict, poaching, and illegal wildlife trade.

➤ Protection Status:

- **IUCN Status:** Near Threatened
- **Wildlife Protection Act, 1972:** Schedule I



Philippines Halted Production of GM Crops

Why in News?

Recently, a court in the Philippines has canceled the permits that allowed for the commercial cultivation of **Genetically Modified (GM) Golden Rice** and **Bt Eggplant** in the country.

- Critics argue that the decision could harm children with **vitamin A deficiency**, but the court's concerns about safety violations are being ignored.

Note:

- In 2013, the **World Health Organization (WHO)** identified **vitamin A deficiency** as a public health issue that impacted approximately one third of children between the ages of 6 and 59 months, with the highest prevalence in sub-Saharan Africa (48%) and South Asia (44%).

What is GM Golden Rice and Bt Eggplant?

➤ GM Golden Rice:

- It was first developed in the late 1990s by researchers at the **Swiss Federal Institute of Technology** and the **International Rice Research Institute**.
- **Golden rice** is a type of rice that has been genetically modified to have **higher amounts of iron and zinc**, as well as **beta-carotene**, which the body can turn into **vitamin A**.
- This rice gets its name from its distinctive **yellow colour**.
- This was developed to **address vitamin A deficiency**, a significant public health issue in many developing countries.
 - Vitamin A deficiency is a major cause of **blindness** and increases the risk of death from **common childhood illnesses**, especially in low- and middle-income countries.
- **Golden Rice** has the potential to provide up to **50% of the recommended daily intake of vitamin A**, helping to address this critical public health issue.

➤ Bt Eggplant:

- It was **developed by the Indian seed company Mahyco** (Maharashtra Hybrid Seeds Company) in collaboration with the University of Agricultural Sciences, Dharwad.
- Bt eggplant is a genetically modified variety of **eggplant (Brijal)** that has been engineered to produce a protein from the **Bacillus thuringiensis (Bt) bacteria**, which is **toxic to certain insect pests**.
 - This helps **reduce the need for pesticide applications**.
- It was **approved for cultivation in Bangladesh in 2013**, making it the first GM food crop to be approved in South Asia.
- In India, the **commercial release of Bt eggplant was halted in 2010** due to concerns raised by environmental activists and some state governments.

Note:

What are Genetically Modified (GM) Crops?

➤ About:

What is a GM crop?
A crop which has a gene artificially inserted into it from another species, even unrelated, to give it some desired properties. GM crops are mostly either pest-resistant or herbicide-tolerant.

GM CROPS IN INDIA A PRIMER

When did India get its first GM crop?
The first GM crop variety approved for commercialisation was Bt cotton. Bollgard-I, which provided immunity against the pink bollworm and developed by Monsanto, was given the go ahead in 2002. Monsanto released Bollgard-II in 2006. India has become the world's largest producer of cotton partly due to Bt cotton, which accounts for over 90% of the total cotton acreage in the country.

Are there other GM crops in India?
No, the government has not approved commercial cultivation of other GM crops, though efforts have been made for brinjal and mustard.

➤ Cultivation: Global Scenario and India:

- According to the **International Service for the Acquisition of Agri-biotech Applications (ISAAA)**, the global area under GM crops reached **191.7 million hectares in 2020**.
- **India first and only commercially approved** the cultivation of **Bt cotton**, a GM crop, in 2002.
- Since then, the area under Bt cotton has grown significantly, reaching **11.6 million hectares in 2020**, which is **94% of the total cotton area** in the country.

➤ GM Organism (GMO) vs Transgenic Organisms:

- GMO and transgenic organism are two terms that are used interchangeably.
- Although both have altered genomes, a **transgenic organism is a GMO containing a DNA sequence or a gene from a different species**.
 - While a GMO is an animal, plant, or microbe whose DNA has been **altered using genetic engineering techniques**.
- Thus, **all transgenic organisms are GMOs**, but not all GMOs are transgenic.

➤ Potential Benefits of GM Crops:

- **Increased Productivity:** GM crops can be **engineered to have higher yields**, improved resistance to pests and diseases, and **better tolerance to environmental stresses** like drought, salinity, or extreme temperatures.
- **Enhanced Nutritional Value:** GM crops can be modified to **have increased levels of vitamins, minerals**, or other beneficial compounds, potentially **improving food security and nutrition**.
- **Reduced Reliance on Pesticides:** GM crops with built-in pest resistance can **reduce the need for chemical pesticides**, leading to lower environmental impact and reduced agricultural costs.

➤ Potential Concerns:

- **Environmental Risks:** There are concerns about the potential for **GM crops to have unintended ecological consequences**, such as the development of **herbicide-resistant weeds** or the impact on non-target organisms.
- **Human Health Risks:** Long-term **effects of consuming GM foods on human health are not yet fully understood**, and there are concerns about potential allergenicity or toxicity.
- **Impact on Non-target Organisms:** The possibility of unintended consequences on **beneficial insects and other organisms** in the ecosystem due to GM crops needs careful evaluation.
- **Ethical and Socioeconomic Considerations:** There are debates around the **concentration of ownership and control of GM technologies**, as well as the **impact on small-scale farmers** and traditional agricultural practices.
 - **Self-Terminating seeds** (sterile seeds after plant harvest) produced by GM technology **will make it impossible for farmers to use their traditional right to save the seed** of their harvest for planting in the next crop season.

Note:



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Genetically Modified Crops

About

- Genetic modification of plants involves **adding a specific stretch of DNA into the plant's genome**, giving it new or different characteristics
- Also called **Transgenic crops**

Global Cultivation

- Top 5 GM growing countries - **USA, Brazil, Argentina, India and Canada**
- Major GM Crops - **Soybean, maize, cotton and canola**

Concerns

- Manipulation of GM Seed Cost
- Seeds don't create viable offsprings
- Insect-resistant plants harm non-targeted species too
- Intermixing violates natural plants' intrinsic values

Objective

- Increase yield
- Increase tolerance to herbicides
- Improve nutritional value
- Provide resistance to disease/drought

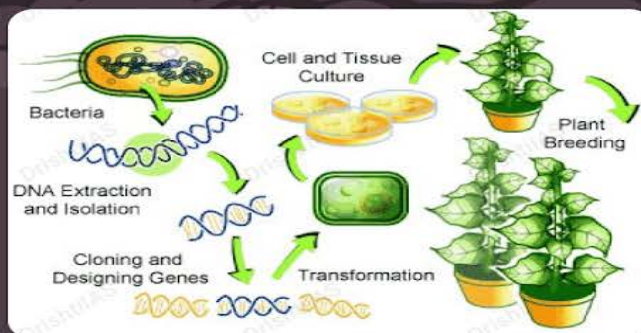
GM Crops in India

- Bt cotton** - **only one GM crop approved**, (90% of India's total cotton acreage) (resistance against pink bollworm)
- Ht Bt cotton** - resistance against **glyphosate** (herbicide)
- DMH-11 mustard** - **recommended for commercial use** (high yield)
- Golden rice** - probably the best variety of GM rice (**Vitamin A**)



GM Crop Regulation

- Statutory Provision:**
 - Rules for Manufacture, Use, Import, Export and Storage of Hazardous Microorganisms (HM) Genetically Engineered Organisms or Cells, 1989** under the Environment Protection Act (1986).
- Statutory Bodies:**
 - Genetic Engineering Appraisal Committee (GEAC)** (under MoEF&CC) - **administers commercial release of GMC**
 - Recombinant DNA Advisory Committee (RDAC)**
 - Institutional Biosafety Committee (IBSC)**
 - Review Committee on Genetic Manipulation (RCGM)**
 - State Biotechnology Coordination Committee (SBCC)**



Cartagena Protocol on Biosafety (2000)

- It seeks to protect biological diversity from the potential risks posed by **Living Modified Organisms** resulting from **modern biotechnology**.
- India is a signatory** to this protocol.

Fortification of Food

- It refers to **addition of key vitamins and minerals** such as iron, iodine, zinc, Vitamin A & D to **staple foods such as rice, milk and salt** to improve their nutritional content.
 - Example, the **addition of iodine to salt** is crucial for preventing thyroid-related disorders.
- These nutrients **may or may not have been originally present in the food** before processing.
- It can be **used to address the issue of high levels of malnutrition** among women and children in India.
 - In India, **every second woman in the country is anemic and every third child is stunted**.
- **Rice Fortification:**
 - **Fortifying rice is a cost-effective way to increase its vitamin and mineral content like iron, folic acid, and Vitamin B-12 and other micronutrients like zinc.**
- **Initiatives:**
 - **Nationwide Fortification Regulations:** In 2016, the FSSAI implemented regulations to **fortify staple foods like wheat flour, rice, milk, and edible oil**. This adds essential nutrients like iron, vitamin B12, folic acid, vitamins A & D, and iodine to commonly consumed items.
 - **Pilot Programs:** **Milk Fortification Project**.

What is the Regulatory Framework for GM Crops in India?

- **Genetic Engineering Appraisal Committee (GEAC)** is responsible for evaluating and approving the cultivation of GM crops.
 - The committee is also responsible for appraisal of proposals relating to release of **genetically engineered (GE) organisms** and products into the environment including experimental field trials.
 - GEAC is chaired by the **Special Secretary/ Additional Secretary** of MoEF&CC and co-chaired by a representative from the **Department of Biotechnology (DBT)**.
- GM foods are also subjected to regulations by the **Food Safety and Standards Authority of India (FSSAI)** under the Food Safety and Standards Act, 2006.
- Acts and Rules that Regulate GM Crops in India:
 - **Environment Protection Act, 1986 (EPA)**,
 - **Biological Diversity Act, 2002**,

- **Plant Quarantine Order, 2003**,
- **GM policy under Foreign Trade Policy, Food Safety and Standards Act, 2006**,
- **Drugs and Cosmetics Rule (8th Amendment), 1988**.

KAZA Summit 2024 and Wildlife Product Trade

Why in News?

Recently, the **2024 Heads of State Summit** for the **Kavango-Zambezi Trans-Frontier Conservation Area (KAZA-TFCA)** took place in Livingstone, Zambia, where member states renewed their calls to withdraw from the **Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)**.

- The call came in backdrop of **repeated denying of permission** to sell off their **abundant ivory** and other wildlife products.

What are the Key Issues Discussed at the 2024 Summit?

- **The KAZA-TFCA Initiative:**
 - KAZA-TFCA spans **across five southern African nations namely**, Angola, Botswana, Namibia, Zambia, and Zimbabwe along the Okavango and Zambezi river basins.
 - About 70% of KAZA land is under conservation made up of 103 wildlife management areas and 85 forest reserves.
 - This region harbours over **two-thirds of Africa's elephant population** (approx 450,000) with Botswana (132,000) and Zimbabwe (100,000) alone holding significant portions of this population.
- **Historical Dispute with CITES:**
 - Like this summit, at the 2022 **Conference of Parties** in Panama, southern African countries advocated for **legalising the ivory trade** to finance conservation and reduce **human-wildlife conflicts**.
 - Despite having large elephant populations and related challenges, their **proposal was rejected**, as these countries accused it of prioritising **anti-trade ideologies** over **scientific conservation methods**.
- **Key Issues Discussed at the 2024 Summit:**
 - Delegates at the Livingstone Summit **emphasized the economic pitfalls of existing CITES restrictions**, advocating for **wildlife product sales rights** while highlighting **elephant mortality rates** and the loss of economic potential from ivory stockpiles.

Note:



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- The **ban on ivory and wildlife product trade affects conservation funding**, as revenue from sales could aid **wildlife management**.
- Delegates argued that **decisions are not based on scientific evidence** but on populism and political agendas, undermining the effectiveness of CITES in promoting sustainable conservation.
- The summit **featured renewed appeals to exit CITES**, with proponents suggesting it could prompt CITES to **reconsider or empower KAZA states** to autonomously handle their wildlife resources.
- In response to increasing **restrictions on trophy hunting** imports by western countries, **Zimbabwe and other KAZA states are exploring alternative markets**, particularly in the East.
 - **Trophy hunting involves selectively hunting wild animals**, often large mammals, to obtain body parts like antlers or horns, **serving as symbols of achievement or for display**.

What is Ivory?

- Elephants' **ivory tusks**, akin to oversized teeth, consist mainly of durable dentine encased in resilient enamel.
- Both **male and female African elephants have tusks**, but only some male Asian elephants do.
- **World Wildlife Fund (WWF)** highlights the issue of ivory poaching, noting that "**ivory**" **encompasses** materials from various species like **mastodons, mammoths, hippos, narwhals, and walruses**, which are not included in the US elephant ivory ban but may be regulated by other laws like CITES.
- Every ivory item, from tusks to trinkets, comes from an elephant killed by poachers, with about **20,000 elephants killed annually** to meet mainly Asian demand for ivory.

What are the Causes of the Wildlife Product Trade?

- **Organised Commercial Illegal Sourcing:** Organized crime engages in remote operations, including elephant and tiger poaching, often merging with other **criminal networks, exploiting power dynamics**, illicit weapons, and **money laundering** avenues.
- **Black Markets Create New Demands:** When legal sales drop, illegal traders may find new ways to keep **selling the product**, like rare animals or **endangered species trophies**, where scarcity can make illegal markets more appealing to buyers.

- **Supplementary Livelihoods and Opportunism:** While big criminal groups might be behind some trafficking, many poor people are just trying to make ends meet.
- **Corruption:** It significantly undermines efforts to disrupt and deter wildlife trafficking, ranging from **bribery at inspection points** to higher-level influence on permit issuance and legal decisions.
- **Cultural Roots of Poaching:** Wildlife poaching isn't solely driven by financial motives but can also be **cultural**.
 - For example, In **Chinko reserve in the Central African Republic** elephant hunting represents **cultural heritage**, symbolising courage and masculinity.
- **Existence of Legal Market for Wildlife Product:** Legal Market for Wildlife Product (E.g, **Lao PDR permits trade in bear bile**) makes it **difficult to recognise the product's origin as collected from wild or originated from illegal poaching**.
 - Japan is the world's most significant legal legal ivory market.

What are the Measures Needed to Tackle Wildlife Crime?

- **Banning Illegal Wildlife Products:** This approach aims to **reduce demand by making possessing or trading goods** derived from illegally obtained wildlife illegal.
- **Effective Funding for Wildlife Protection:** The funds should go directly to support agencies that protect wildlife, such as park rangers and anti-poaching teams.
- **Public Awareness and Empowerment:** Educating people about the consequences of wildlife trafficking and teaching them about the value of wildlife can lower the demand for illegal products.
- **Ivory Specific Measures:**
 - Both sides could agree on an **independent scientific review** to assess the **sustainability of a potential ivory trade from KAZA countries**.
 - CITES and KAZA countries could **collaborate** on exploring alternative sources of income for conservation, such as promoting ecotourism ventures and carbon offset programs within the KAZA region.
 - Best Practice:
 - **Trade Records Analysis of Flora and Fauna in Commerce's (TRAFFIC)** technical expertise supported a **World Wide Fund for Nature (WWF)** campaign in Thailand, significantly **reforming Thai legislation** and nearly **eliminating the domestic ivory market**.

Note:

- In China the office of WWF, alongside other **NGOs**, also played **crucial role in implementing a domestic ivory ban**.
 - **Gabon, Congo, and the USA** have recently **destroyed stockpiles of confiscated ivory** to prevent its return to the black market and to condemn ivory trade and poaching publicly.

Legal Frameworks for Wildlife Conservation

- **Global Wildlife Conservation Efforts (India being Party):**
 - **Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES)**
 - **Convention on the Conservation of Migratory Species of Wild Animals (CMS)**
 - **Convention on Biological Diversity (CBD)**
 - **The Wildlife Trade Monitoring Network (TRAFFIC)**
 - **United Nations Forum on Forests (UNFF)**
 - **International Union for Conservation of Nature (IUCN)**
 - **Global Tiger Forum (GTF)**
- **Legal Framework in India:**
 - **Wildlife (Protection) Act, 1972**
 - **Environment Protection Act, 1986**
 - **The Biological Diversity Act, 2002**

Migratory Diadromous Fishes

Why in News?

A recent study has raised concerns about the effectiveness of **Marine Protected Areas (MPAs)** in safeguarding the habitats of **rare migratory fish species**.

- The study found that a significant portion of **these protected areas do not align with the core habitats of the target species**, raising questions about the efficacy of current conservation efforts.

What are the Findings of the Study about Diadromous Fish Species?

- **About Study:**
 - The study examined 11 rare and data-poor **diadromous fish species**. These species **migrate between saltwater and freshwater environments**.

Findings:

- The researchers found that only **55% of the modelled core habitats** for these species overlapped with the designated MPAs.
 - And, of **these protected areas, only 50% had measures in place for the protection of the fish**.
- Less than 30% of endangered species, such as the **Mediterranean twaite shad**, had their core habitats within the MPAs.
- Species like **European eel** and **European smelt**, which had nearly 70% of their core habitats within MPAs.

Challenges faced by these fishes:

- **Diadromous fish are highly sensitive to a range of anthropogenic pressures** such as agricultural and pollutant runoffs, habitat destruction, barriers to migration, fishing, bycatch, and **climate change**.
- **Barriers to migration, such as dams, weirs, and locks**, can have a significant impact on these fish as they move between **freshwater and marine habitats throughout their life cycle**.

Impact of Climate Change:

- **Fish are Swimming Further North in the Ocean** because warmer waters are pushing them towards cooler areas.
- **Southern Populations of these Fish are Declining Significantly** due to factors like habitat loss or changes in food availability.
- **The Timing of their Migrations is also Changing**, which can harm the survival of their young and make it harder for them to find food.

What are Diadromous fishes?

About:

- These are a group of fish that **migrate between freshwater and saltwater** environments throughout their lives.
- This unique life cycle allows them to **take advantage of the different resources** available in each habitat.

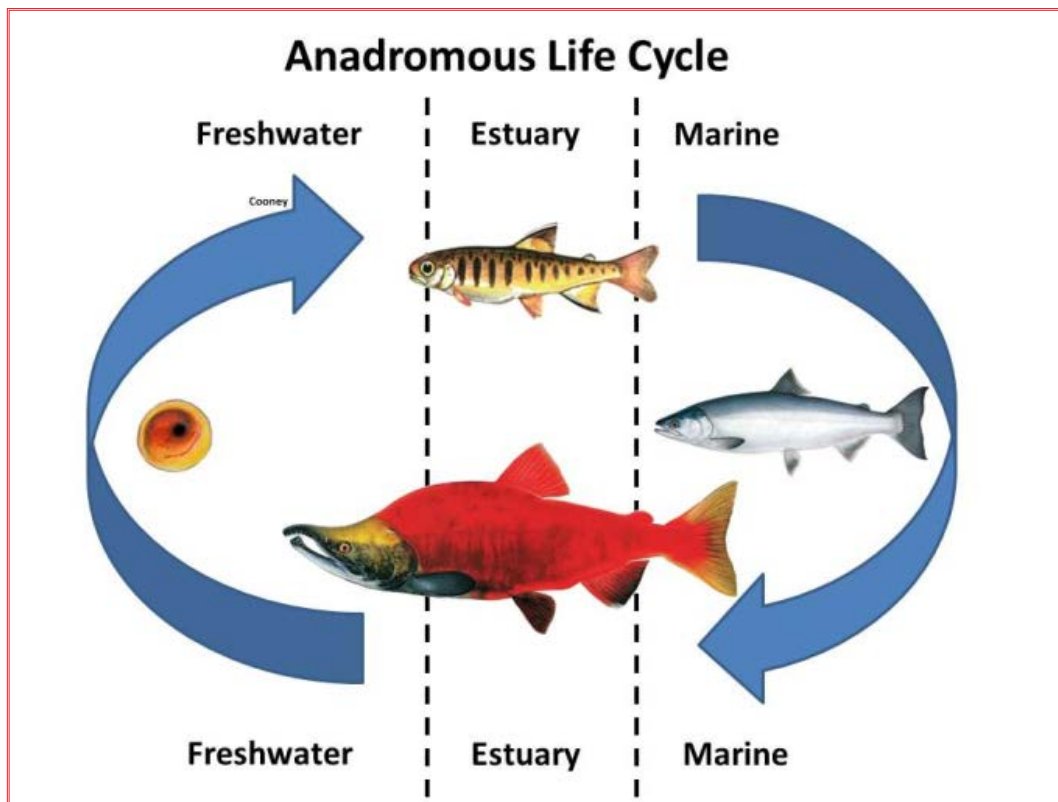
Types:

- **Anadromous Fish:** These fish spend most of their lives in the **ocean but return to freshwater** rivers and streams to spawn (release or deposit eggs).
 - Examples: salmon, trout, and shad.

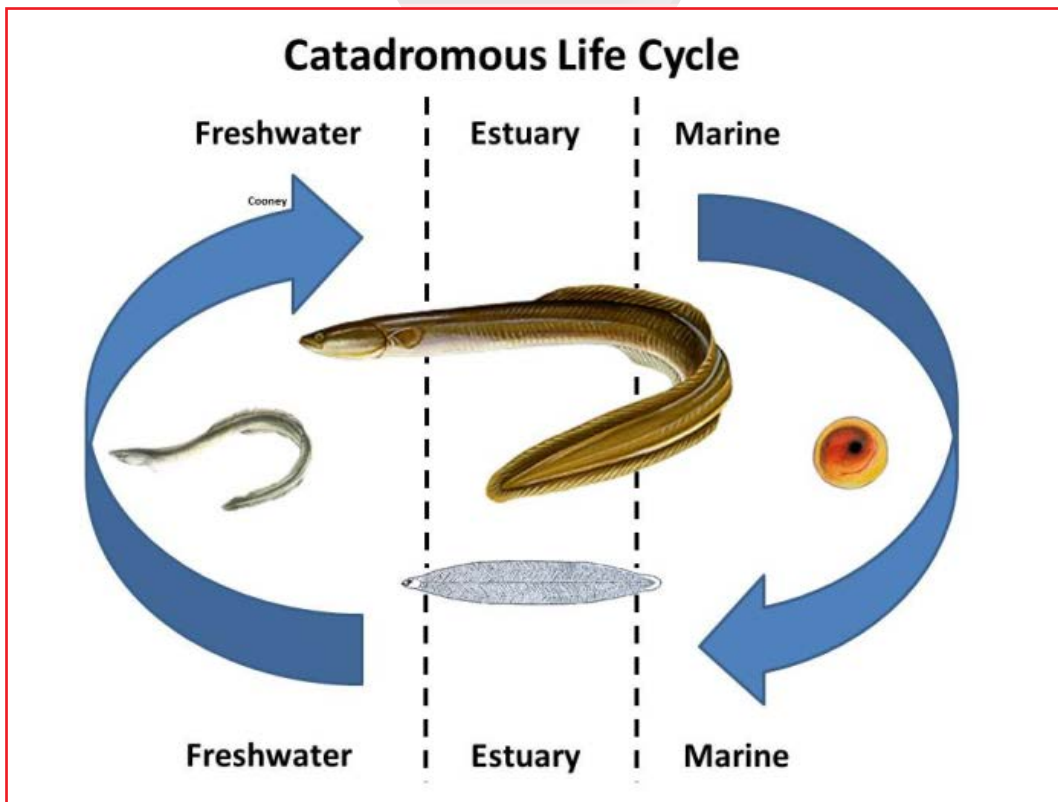
Note:



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- **Catadromous Fish:** These fish spend most of their lives in **freshwater** but **migrate to the ocean** to spawn.
 - Example: Eel



Note:



Read more: [Marine Protected Areas](#), [International Marine Protected Areas Congress](#)

Amazon Forest Fire

Why in News?

Recently, Brazil's Amazon rainforest has experienced its largest **forest fires** on record in the first four months of 2024.

- A record drought in the Amazon region, driven by the **El Nino climate** phenomenon and global warming, has contributed to dry conditions fueling the fires.

What are Key Facts About the Amazon Rainforests?

- **About:**
 - These rainforests spans around 8 countries, representing an area **twice the size of India**.
 - Comprising about **40% of Brazil's total area**, the Guiana Highlands bounds it to the north, the Andes Mountains to the west, the Brazilian central plateau to the south, and the Atlantic Ocean to the east.
- **Characteristics:**
 - These are large **tropical rainforests** occupying the drainage basin of the Amazon River and its tributaries in northern South America and covering an area of 6,000,000 square km.
 - They are very wet places, receiving more than **200 cm of rainfall per year**, either seasonally or throughout the year.
 - The temperatures are **uniformly high**, ranging between **20°C and 35°C**.

Note:



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- Such forests are found in Asia, Australia, Africa, South America, Central America, Mexico and on many of the Pacific Islands.

➤ **Significance:**

- These rainforests host more than **400 different indigenous groups** and **around 300 indigenous languages** are spoken signifying its cultural and linguistic diversity.
- Despite covering only around 1% of the Earth's surface, the Amazon rainforest is **home to 10% of all the wildlife species** found on the Earth.
- The **Amazon rainforest** is crucial in **curbing global warming** due to the vast amount of greenhouse gas it absorbs.



Note:

What are the Causes of the Amazon Forest Fires?

➤ Deforestation and Slash-and-Burn Practices:

- Ranchers and farmers often use **slash-and-burn techniques** to clear land for cattle grazing or agriculture.
- After cutting trees, they intentionally set fires to **clear the remaining vegetation** and prepare the land. These fires can often spread uncontrollably during dry seasons.

➤ El Nino and Droughts:

- Research suggests a **link between El Nino events** (periods of warmer Pacific Ocean temperatures) and increased fire activity in the Amazon.
- The **peak fire season** in the Amazon often **coincides with El Nino events**. For instance, the severe fires in 2019 and 2023 coincided with El Nino-related **droughts**.

➤ Climate Change and Accidental Ignitions:

- **Climate change** is causing a **rise in global temperatures** and altering weather patterns. Studies suggest that climate change can lead to drier conditions in the Amazon, increasing the risk of fires.
- **Accidental ignitions** from discarded cigarettes sparks from machinery, or lightning strikes can also contribute to fires.

➤ Industrial Farming:

- Rising global demand for food, especially meat, has led to Brazil becoming the **world's biggest beef exporter**, and the **second-biggest exporter of soya beans**, mainly used for livestock feed. This results in further deforestation required to meet the exports needs.

Forest Fire in India

➤ Recent Status:

- In 2024, according to the **Forest Survey of India** data, the highest number of **forest fires** have been reported from Mizoram (3,738), Manipur (1,702), Assam (1,652), Meghalaya (1,252), and Maharashtra (1,215).
- Since early March 2024, satellite data shows numerous fire incidents along the **Konkan belt in Maharashtra**, south coastal Gujarat, southern Rajasthan, Madhya Pradesh, Odisha, Jharkhand, and parts of South India.
- Also, in May 2024, a forest fire broke out in the Tuti Kandi area of Shimla (**Himachal pradesh**), as well as **Uttarakhand**, threatening the ecologically sensitive Himalayan fauna.

➤ Causes:

- A majority of forest fires are caused by **human activities** such as discarded **cigarettes, campfires**, burning of debris, and other similar processes.
- The **exceptionally hot and dry weather conditions** experienced in southern India, particularly during the early phase of the summer season, have created a conducive environment for the spread of forest fires.
- The **dry vegetation of forests**, including the leaves of chir forests, is particularly **prone to igniting** and spreading fires.



Note:

Security

Highlights

- Rise of Minilateralism

Rise of Minilateralism

Why in News?

Recently, the rise of **Chinese aggression** in the **Indo-Pacific** region has prompted the formation of the **Squad** highlighting the growing importance of “**minilateralism**.”

- A squad is a **multilateral group** consisting of the US, Japan, Australia, and the Philippines.

What is Minilateralism?

- **About:**
 - Minilaterals refer to **informal and more targeted initiatives** intended to **address specific threats**, contingencies, or security issues with a small number of states (usually three or four) sharing the same interest in resolving it within a finite period.
 - These arrangements focus **on a specific purpose** rather than broad inclusivity without a permanent or formal institutional structure.
 - **Outcomes** and commitments within minilaterals are **non-binding and voluntary**, relying on the willingness of the participating states.

Minilateral Grouping Type	Examples of Institutions in the Recent Spotlight
Partnership Minilaterals	Quad; Australia-UK-US trilateral security mechanism (AUKUS); Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP); India-Japan-Australia trilateral; India-Israel-UAE-US mechanism (I2U2)
Single-Power Led Minilaterals	Belt and Road Initiative (BRI); Lancang-Mekong Cooperation (LMC); Mekong-US Partnership (MUSP)
Sectoral Minilaterals	Digital Economy Partnership Agreement (DEPA); Brunei-Indonesia-Malaysia-Philippines East ASEAN Growth Area (BIMP-EAGA)
Issue-Based Minilaterals	Just Energy Transition Partnerships (JETPs); Malacca Straits Patrols (MSP); Japan-UK-Italy Global Combat Air Program (GCAP)

➤ Reasons for Rise of Minilateralism:

- The **evolving global order** and the changing nature of threats have **posed challenges** to the continued relevance of multilateral frameworks **in resolving local conflicts and issues**.
- The **inconsistency in US global leadership** and the **rise of a multipolar world**, along with geopolitical rivalry between the US and China, have highlighted fissures in multilateral organisations.

Note:

- For instance, the **UN Security Council's** permanent membership reflects **outdated power structures** and ineffectiveness.
- Global institutions like the **World Trade Organization (WTO)** have **struggled to reach consensus on complex issues** due to diverse memberships and conflicting priorities.
- **Global problems** can have **regional variations**. Minilateral organizations can tailor solutions to the needs of a smaller group facing a particular challenge.
- The improvement of **information and communications technology** has facilitated the growth of minilaterals.
 - Informal communication methods have made it easier for states to engage in **flexible and targeted cooperation, supporting the growth of minilateralism**.
- The fallout of the **Covid-19** pandemic has further driven the emergence of **strategic minilaterals** and targeted ones focused on various issues, including **supply chain resilience**.
 - **Example**, India set up an **electronic platform** to help member countries of the **South Asian Association for Regional Cooperation (SAARC)** to fight the **Covid-19** pandemic.
- **Contrast with Multilateralism:**
 - Multilateralism involves a **formal effort by three or more states** to build trust and avoid conflict through the **institutionalisation and observation** of rules and norms for a common vision of regional or international order.
 - Multilateral frameworks, such as the **World Trade Organization (WTO)**, emphasise **broad and inclusive participation**, unlike the more focused and flexible nature of minilaterals.
- **Contrast with Regional Organisations:**
- **Minilateralism** focuses on **urgent, specific issues** and forms **flexible, ad-hoc coalitions**, like the Quad for **Indo-Pacific security** and economic concerns.
- **Regional organizations** address a **broad range of issues**, including **economic integration** and **security**, through structured and formal cooperation, such as the **European Union (EU)**.

Squad and QUAD

- **Formation and Role of the 'Squad':**
 - To enhance the **Philippines' maritime security**, defense ministers from the **US, Japan, Australia**, and the **Philippines** convened in Hawaii to discuss advancing maritime cooperation. This new grouping has been **informally named 'Squad'**.
 - It aims to strengthen **collaborative efforts** to counter Chinese aggression in the **South China Sea (SCS)**.
 - This formation is particularly significant given the **physical confrontations between Chinese and Philippine forces**, which have heightened tensions and prompted calls for **proportional countermeasures** by the Philippines.
- **Comparison with the Quad:**
 - The **Quad**, comprising the **US, Japan, Australia, and India**, aims to ensure a **secure and stable Indo-Pacific broadly**, while the 'Squad' specifically addresses the security dynamics in the SCS.

What are the Advantages of Minilaterals?

- Minilaterals allow countries with shared interests and values to **bypass stagnant frameworks** and resolve issues of common concern. For example, the **Bangladesh-Bhutan-India-Nepal (BBIN) Motor Vehicles Agreement (MVA)** was conceived even the **SAARC failed to facilitate a similar initiative**.
- Minilaterals provide a **flexible and modular approach** to international cooperation. They can be **formed quickly** to address **specific issues** and are not bound by the extensive formalities of multilateral frameworks.
 - This flexibility is evident in trade agreements like the **Trans-Pacific Partnership (TPP)** and the **Regional Comprehensive Economic Partnership (RCEP)**, which were concluded as minilateral agreements.
- The **voluntary and non-binding nature** of minilaterals allows for rapid decision-making and adaptation to changing circumstances.
- Minilaterals facilitate the creation of **issue-specific partnerships** and **strategic alliances**, particularly in regions like the **Indo-Pacific**.

Note:



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- Examples include the **Quadrilateral Security Dialogue (Quad)** and the **Trilateral Cooperation and Oversight Group (TCOG)**, which address regional security concerns more effectively than larger, more formal organisations.
- In case of disasters, **regional minilateral forums can promptly come to the rescue of affected nations.**
 - For example, India has sent the **Indian Naval Ship (INS) Kesari**, carrying **food items and medical assistance teams**, to countries in the **southern Indian Ocean** to deal with Covid-19 pandemic as part of a **Mission Sagar initiative**.

What are the Issues Associated With Minilateralism?

- Minilaterals can lead to **forum shopping**, undermining **critical international organisations**, and **reducing accountability** in global governance.
 - By promoting voluntary commitments rather than legally binding ones, minilaterals may **weaken the enforcement** of international norms and standards.
- Preference for minilaterals may **reduce the incentive for countries to engage with multilateral frameworks.**

- This can impact the relevance and effectiveness of organizations like the **World Health Organization (WHO)** and the **United Nations Children's Fund (UNICEF)**, which rely on multilateral cooperation for their programs.
- Minilateral success often **depends on leadership, political will**, and bilateral relations among members.
 - **Changes in political leadership or strained relations can derail minilateral initiatives**, as seen with the **initial failure of the Quad** due to leadership changes in Japan and Australia.
- Minilateral alliances may have **negative impacts** on countries **not part of the negotiations**, reducing their incentive to engage with existing multilateral efforts.
 - This was observed in the **Doha trade negotiations**, where the focus on plurilateral initiatives hindered broader multilateral progress.

Note:

- **Forum shopping** happens when people choose specific groups where they can push their policies forward, based on the **favourable rules or characteristics** of those places.

Note:

Disaster Management

Highlights

- Cyclone Triggered Landslides in Northeast India

Cyclone Triggered Landslides in Northeast India

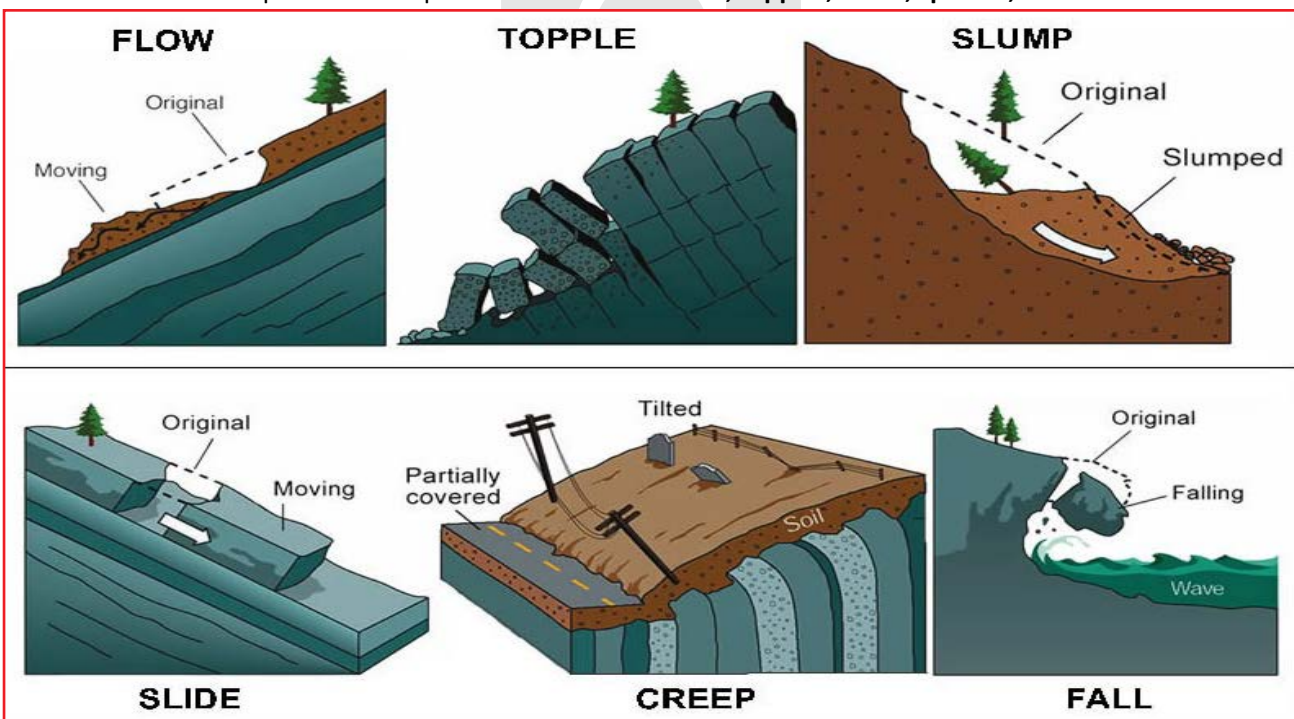
Why in News?

Recently, the **Cyclone Remal** caused landslides in the northeastern region of India causing several casualties, highlighting the need for multi-hazard disaster resilience. While early warnings for cyclones have improved, **landslides** still remain a challenge.

What is a Landslide?

➤ About:

- A landslide can be defined as the **movement of a mass of rock, debris, or earth down a slope**.
- They are a **type of mass wasting**, which denotes any downward movement of soil and rock under the direct influence of gravity.
- Landslide encompasses five slope movement modes: **falls, topples, slides, spreads, and flows**.



➤ Causes:

- **Slope movement** occurs when forces acting downward (mainly due to gravity) exceed the strength of the earth materials that compose the slope.
- Landslides are caused due to three major factors: **geology, morphology, and human activities**.
 - **Geology** refers to characteristics of the material. The earth or rock might be **weak or fractured**, or different layers may have different strengths and stiffness.

Note:

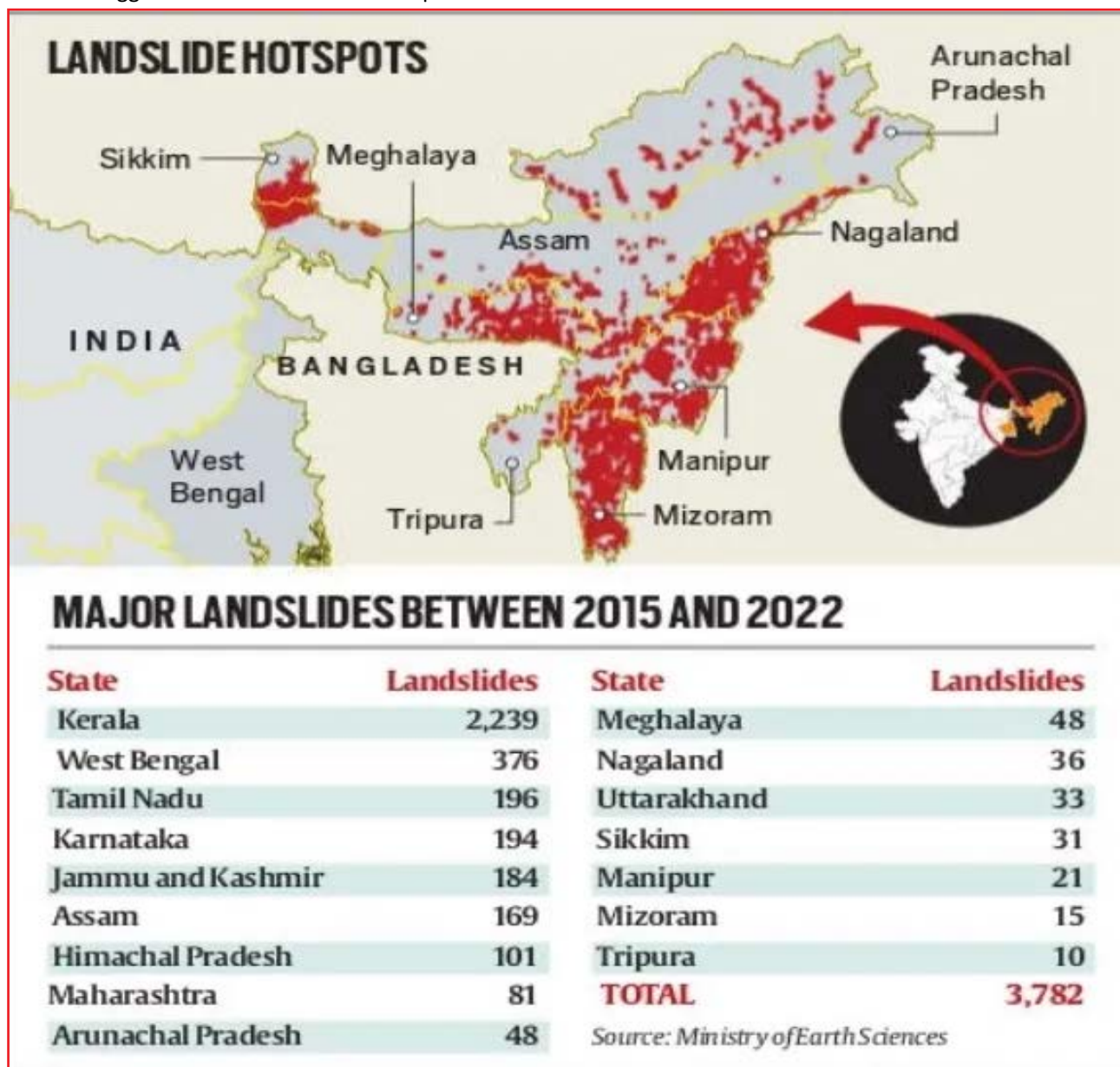


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- **Morphology** refers to the structure of the land. For example, slopes that lose their **vegetation to fire or drought** are more vulnerable to landslides.
- **Vegetation holds soil** in place, and without the root systems of trees, bushes, and other plants, the land is more likely to slide away.
- Human activities like **mining and construction** increase the risk of a landslide.

How Vulnerable is India to Landslides?

- **Landslide-Prone Area:**
- According to the Geological Survey of India (GSI), roughly **13% of India's landmass**, translating to approximately **4.2 lakh km²**, is prone to landslides. This encompasses almost all hilly regions spread across **15 states** and **4 Union Territories**.
 - **Natural causes** like **heavy rainfall** is the most common trigger for landslides in India. **Earthquakes** can also trigger landslides but are less frequent.



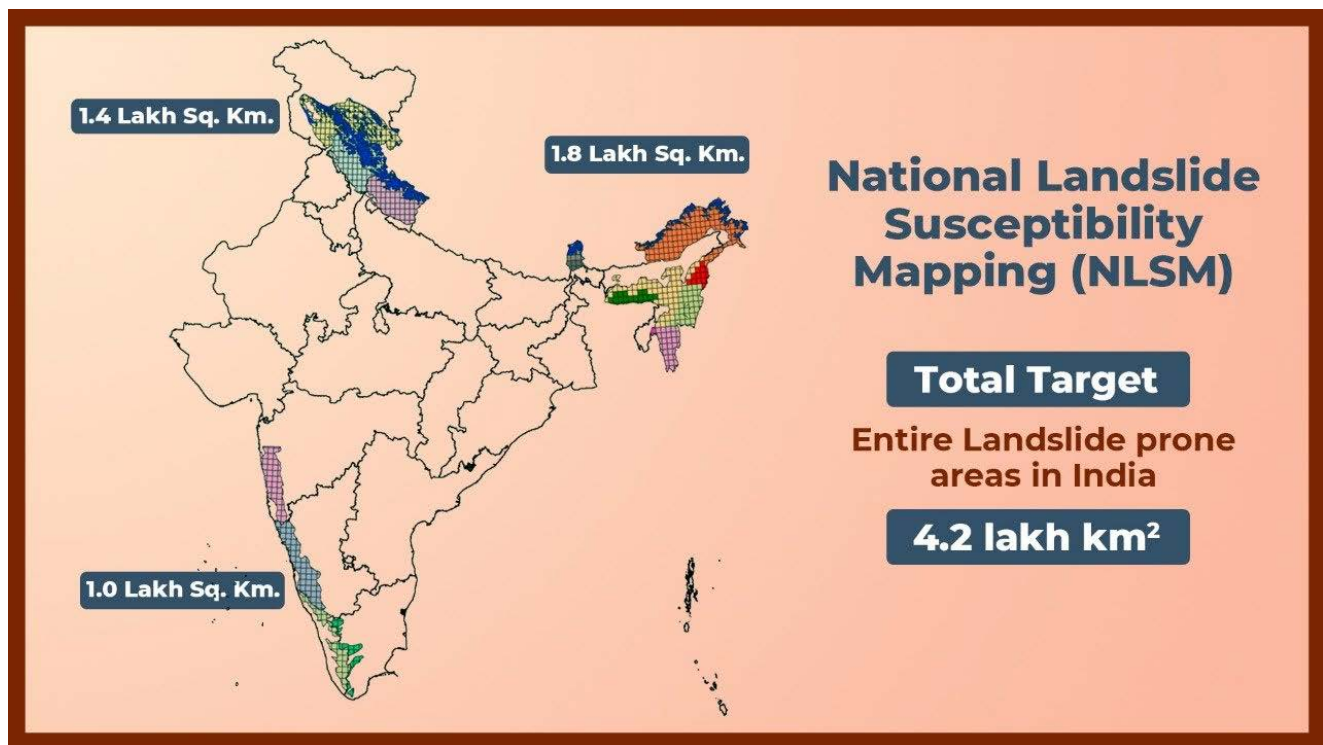
Note:

➤ **High Vulnerability in Northeast:**

- The **Northeast region** bears the brunt of India's landslide vulnerability. Around **42% of the country's total landslide-prone area** falls within this region, concentrated in hilly states like **Meghalaya, Mizoram, Assam, and Nagaland**.
- The Northeast region experiences a **disproportionately high frequency** of landslides. During the period **2015-2022, 10% of all major landslides** in India occurred in the Northeast, translated to an average of 54 major landslides per year in the region.

➤ **Causes of Vulnerability:**

- In the **Northeastern Himalayas**, presence of **young, weak rocks** and **steep slopes** make it landslide-prone. **Heavy monsoon rains** further weaken the soil which is further affected by deforestation. Sometimes, **Earthquakes and climate change** add to the region's landslide problems.
- **Human Factors** like **unregulated construction in hilly areas, infrastructure development projects**, and certain agricultural practices can significantly increase the risk of landslides.
 - A recent example is the collapse of a stone quarry in **Aizawl, Mizoram** during Cyclone Remal, which highlights the extent of unregulated construction that can lead to fatalities during landslides.



What are the Government Initiatives to Mitigate the Risk of Landslides?

➤ **National Landslide Risk Management Strategy (2019):**

- This strategy by the **National Disaster Management Authority (NDMA)** outlines a **comprehensive approach to landslide risk reduction** highlights issues of inadequate **urban planning** and the absence of a comprehensive land use policy.

➤ **Landslide Atlas of India:**

- Scientists did a risk assessment on the basis of 80,000 landslides recorded between 1998 and 2022 in 147 districts in 17 states and two Union Territories to build a **Landslide Atlas** of India.

Note:

➤ **Early Warning System Development:**

- These systems often use rainfall data (earthquake related landslides can't be predicted) and real-time monitoring to predict potential events.
- For example, pilot programs for rainfall-based early warning systems are underway in states like Nagaland and Sikkim.
- **Central Building Research Institute (CBRI)** and IIT Roorkee are installing early warning systems at different locations in Sikkim, Uttarakhand, and Kerala.

What are the Major Challenges in Mitigating Landslide Risks in India?

➤ **Limited Understanding of Landslide Prone Areas:**

- Detailed geological mapping and risk assessments are often lacking, hindering efforts to prioritise mitigation measures.

➤ **Unsustainable Land-Use Practices:**

- Deforestation, unplanned development on slopes, and poor construction practices further increases landslide risks.

➤ **Resource Constraints:**

- Implementing **robust mitigation measures** like retaining walls, drainage systems, and slope stabilisation can be expensive.
- India **lacks a comprehensive network of sensors** (rain gauges, tiltmeters, etc.) to detect **early warning signs** of landslides.

➤ **Public Awareness and Preparedness:**

- Communities living in landslide-prone areas are **not adequately informed** about the risks and the ways to prepare for them.



Note:

Geography

Highlights

- Regional Rapid Transit System (RRTS)
- Earth Habitable 4 Billion Years Ago
- Rangelands and Pastoralism
- Tonga Volcano Impacting Weather
- Lost Nile Branch Key to Pyramid Construction

Regional Rapid Transit System (RRTS)

Why in News?

Currently, the **National Capital Region Transport Corporation (NCRTC)** is developing 900 **Rainwater Harvesting (RWH)** pits along the Delhi-Ghaziabad-Meerut **Regional Rapid Transit System (RRTS)** corridor in a move to ensure environmental sustainability.

What is Rainwater Harvesting?

- Rainwater Harvesting & Conservation is the activity of **direct collection of rainwater**. The rainwater collected can be **stored for direct use** or can be recharged into the Groundwater.
- **There are two main techniques of rainwater harvesting:**
 - Storage of rainwater on surface for future use.
 - Recharge to groundwater.

How do the RRTS Pits Capture and Store Rainwater?

- The pits are strategically placed for **maximum water collection** and **over 75%** of these systems are already **operational**.
- The pits are expected to **recharge millions of cubic meters** of groundwater, contributing significantly to water table levels.
- The design consists of **two small water chambers** constructed face-to-face underground, connected by a central **rainwater harvesting pit**.
- During rainfall, water flows from the viaduct (bridge-like structure) into these chambers. The collected water is **filtered through three layers** of gravel and sand before being absorbed into the ground through the central pit.

- The **depth of the pits varies between 16 and 22 meters**, depending on the local groundwater level.
- Rainwater harvesting is also being incorporated at each RRTS station, with two pits being built near every entry and exit gate.

What are the Key Facts Regarding the RRTS?

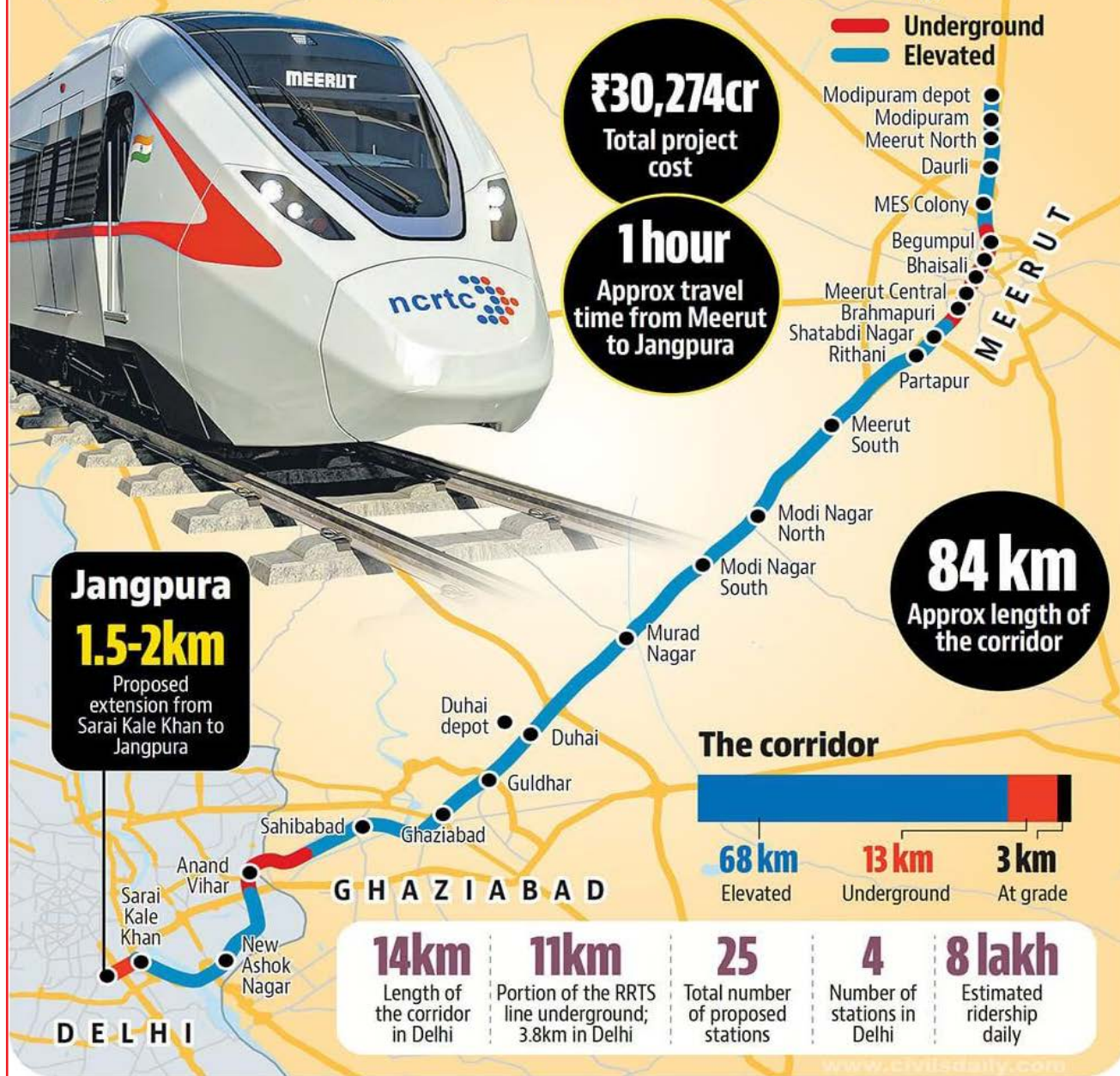
- **Background:**
 - In 2005, a **government task force** was formed to create a **comprehensive transportation plan** for the Delhi **National Capital Region (NCR)**.
 - This plan called the **Integrated Transport Plan for NCR 2032**, identified a need for a special rapid transit system to connect major cities within the region.
 - The task force **identified 8 corridors** and **prioritized three corridors** for this "Regional Rapid Transit System" (RRTS): Delhi-Meerut, Delhi-Panipat, and Delhi-Alwar.
- **About RRTS:**
 - RRTS is a **brand-new mode of public transportation** designed specifically for the NCR.
 - Delhi-Meerut corridor RRTS is a **rail-based, semi-high-speed, high-frequency** commuter transit system.
 - The Delhi-Ghaziabad-Meerut corridor has a total length of **82-km long**, with **22 stations**.
- **Advantages of RRTS:**
 - **High Speed & Capacity:** Unlike traditional railways or metros, RRTS trains will travel at much **faster speeds (over 160 km/h)** and carry a large number of passengers, **reducing congestion, high-frequency** operations with trains every 15 minutes.
 - **Dedicated Corridor:** RRTS trains operate on a **separate, elevated track**, free from traffic congestion on roads, ensuring reliable travel times.

Note:

- **Environmental Impact:** RRTS is estimated to **significantly reduce air pollution** in the region, by encouraging more people to use public transportation
- **Economic Growth:** Improved connectivity will lead to more **balanced economic development** across the NCR, creating opportunities in various cities and reducing reliance on a single central hub.
- **Sustainable Future:** RRTS serves as a model for developing **efficient public transport systems** in other Indian cities. It will also help reduce overall traffic congestion and emissions within the NCR.

A new start

The 84-km Regional Rapid Transit System (RRTS) corridor from Delhi to Meerut, being built at a cost of ₹30,274 crore, will start from south Delhi's Jangpura



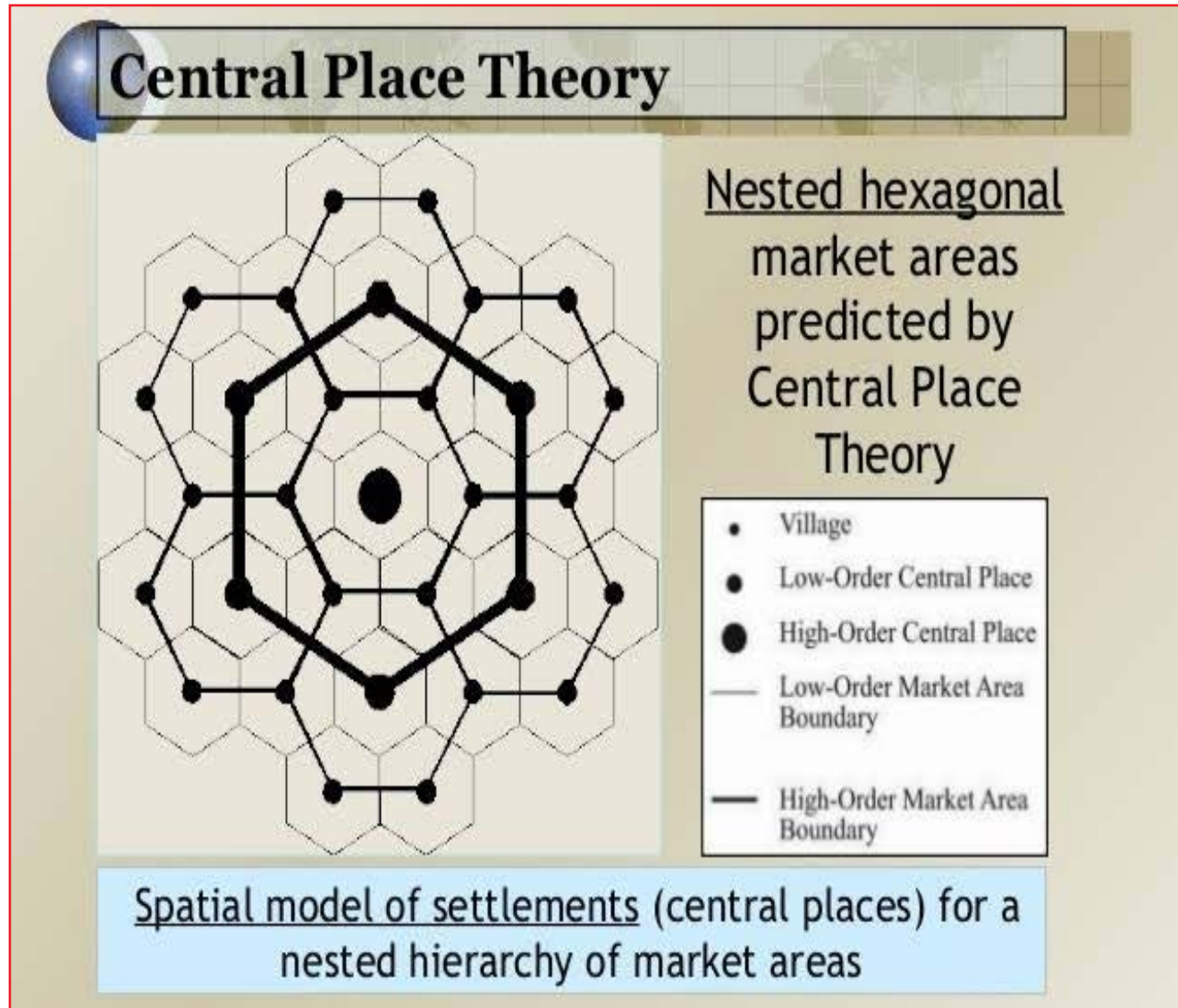
Note:



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What are the Geographical Theories associated with RRTS?**➤ Central Place Theory:**

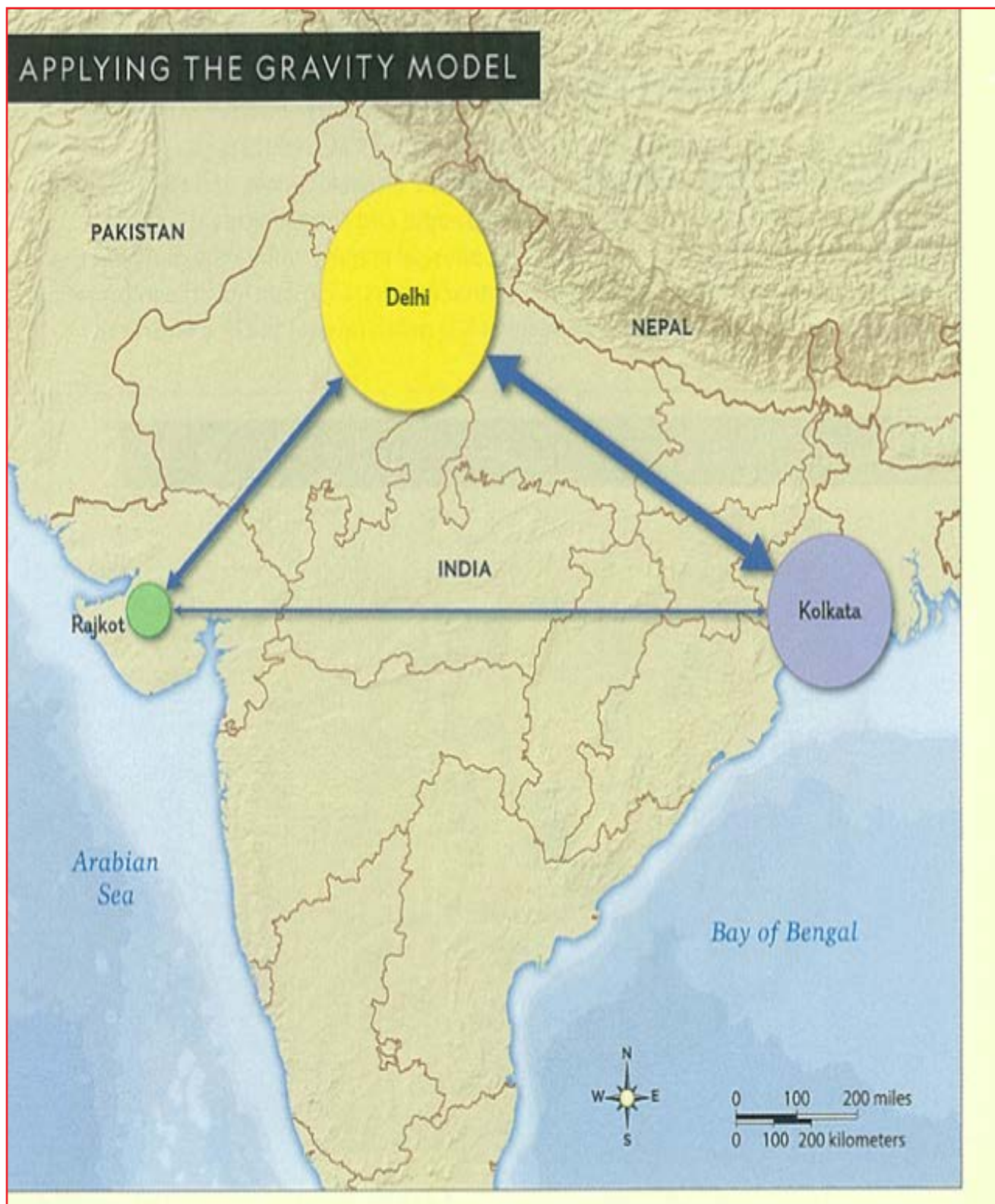
- This theory suggests settlements (cities) develop around **central locations** that **provide services** to surrounding areas.
- RRTS connects smaller towns and suburbs to major cities, allowing for easier access to jobs, education, and other services offered in the central city.
 - **For example**, The Delhi-Meerut RRTS connects Delhi, a major economic hub, with Meerut, a developing city. This improves access for Meerut residents to Delhi's opportunities like jobs, education, and other services offered in the central city of Delhi.

**➤ Gravity Model:**

- This model suggests the interaction between two places is influenced **by their populations and the distance** between them.

Note:

- RRTS strengthens this by facilitating faster and more frequent travel, thus increasing the potential for **economic and social interaction** between connected cities. This can **lead to increased trade, collaboration, and cultural exchange**.



Note:

➤ Diffusion Theory:

- This theory explains how **ideas, innovations, and practices spread** across space. RRTS can lead to the spread of urban development patterns (shopping malls, business districts) along the train corridor.
- For Example, The Delhi-Ghaziabad RRTS could lead to the development of new commercial centres in Ghaziabad, previously a primarily residential area.

What are India's Initiatives for Urban Transportation?

- [PM-eBus Sewa](#)
- [The Gati Shakti Terminal \(GCT\) policy](#)
- [National Logistics Policy \(NLP\)](#)
- [Bharatmala Project](#)
- [Dedicated Freight Corridors](#)
- [Smart Cities](#)

Earth Habitable 4 Billion Years Ago

Why in News?

Recently, analyses of ancient rocks and minerals revealed that Earth may have had the **necessary conditions** to support life **around 600 million years** after its formation, with **fresh water and dry land** present as far back as **4 billion years ago**.

What are the Key Highlights of the Recent Study?

- **Water Cycle and Life Emergence:** The interaction between freshwater and land, referred to as the [water cycle](#) might have created conditions conducive to life.

- This interaction was previously believed to have **started around 3.5 billion years ago based on fossil evidence**.
- A study of [oxygen isotopes](#) in ancient rocks reveals the **origins of Earth's water cycle**.
 - It suggests fresh water and land interactions occurred several kilometres [below the Earth's surface](#), challenging the theory that Earth was completely covered by [ocean](#) **four billion years ago**.
- **Implications for Early Life:** These findings indicate that the conditions for life to flourish existed relatively early in Earth's history.

What are the Key Facts About Origin of Earth?

- **Age of Earth:** While Earth is estimated to be around **4.5 billion years old**, the study suggests that fresh water and dry land were present as far back as 4 billion years ago.
- **Theories Related to the Origin of Earth:**
 - **Nebular Hypothesis:** It was given by Immanuel Kant and revised by Laplace.
 - It considered that the **planets were formed out of a cloud of material** associated with a youthful sun, which was slowly rotating.
 - In 1950, Otto Schmidt in Russia and Carl Weizsacker in Germany revised the **nebular hypothesis**.
 - They considered that the sun was surrounded by a [solar nebula](#) containing mostly **hydrogen, helium**, and dust.
 - The friction and collision of particles led to the formation of a **disk-shaped cloud** and the **planets were formed through the process of accretion**.
 - **Big Bang Theory:** It was given by Edwin Hubble, in 1920. It is the idea that the universe began as just a **single point**, then expanded and stretched to grow as large as it is right now.

Note:



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Geological Time Scale

<i>Eons</i>	<i>Era</i>	<i>Period</i>	<i>Epoch</i>	<i>Age / Years Before Present</i>	<i>Life / Major Events</i>
	Cainozoic (From 65 million years to the present times)	Quaternary	Holocene Pleistocene	0 - 10,000 10,000 - 2 million	Modern Man Homo Sapiens
		Tertiary	Pliocene Miocene	2 - 5 million 5 - 24 million	Early Human Ancestor Ape: Flowering Plants and Trees
			Oligocene Eocene Palaeocene	24 - 37 Ma 37 - 58 Million 57 - 65 Million	Anthropoid Ape Rabbits and Hare Small Mammals : Rats – Mice
	Mesozoic 65 - 245 Million Mammals	Cretaceous Jurassic Triassic		65 - 144 Million 144 - 208 Million 208 - 245 Million	Extinction of Dinosaurs Age of Dinosaurs Frogs and turtles
	Palaeozoic 245 - 570 Million	Permian		245 - 286 Million	Reptile dominate-replace amphibians
		Carboniferous		286 - 360 Million	First Reptiles: Vertebrates: Coal beds
		Devonian Silurian		360 - 408 Million 408 - 438 Million	Amphibians First trace of life on land: Plants
		Ordovician Cambrian		438 - 505 Million 505 - 570 Million	First Fish No terrestrial Life : Marine Invertebrate
Proterozoic Archean Hadean	Pre-Cambrian 570 Million - 4,800 Million			570 - 2,500 Million 2,500 - 3,800 Million	Soft-bodied arthropods Blue green Algae: Unicellular bacteria
				3,800 - 4,800 Million	Oceans and Continents form – Ocean and Atmosphere are rich in Carbon dioxide
Origin of Stars Supernova Big Bang	5,000 - 13,700 Million			5,000 Million	Origin of the sun
				12,000 Million	Origin of the universe
				13,700 Million	

➤ Evolution of The Earth:

- **Formation of the Lithosphere:** Initially, Earth was extremely hot and volatile. As it cooled, **heavier elements like iron sank towards the centre**, while lighter materials rose to the surface, **forming the crust**.
- **Evolution of Earth's Atmosphere in Three Stages.**
 - First, the **loss of primordial atmosphere**.
 - Second, the **hot interior of the earth** contributed to the evolution of the atmosphere. The **process through which the gases were outpoured from the interior is called degassing**.

Note:



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- Finally, the **atmosphere** was modified by the living world through the process of **photosynthesis** and volcanic activity.
- **Development of the Hydrosphere:** As Earth cooled, water vapour in the atmosphere condensed and fell as rain, filling the planet's depressions to form oceans.
- **Impact of Biological Processes on Atmosphere:** Photosynthesis began to flood the atmosphere with oxygen paving the way for more complex life forms that rely on oxygen.
- **Origin of Life:** A kind of **chemical reaction**, which first generated **complex organic molecules** and assembled them.

THEORIES OF EVOLUTION

The modification of living organisms during their descent, generation by generation from common ancestors.

Oparin-Haldane Theory of Origin of Life

- ↳ Also known as Materialistic theory
- ↳ Describes process of origin of life on early Earth as:

Physio-chemical processes of atoms → Organic compounds → Macromolecules → First living system or cells

Theory of Inheritance of Acquired Character (Lamarckism)

- ↳ First theory of organic evolution
- ↳ **Evolutionary ideas:**
 - ↳ Internal forces of life increase the size of organism
 - ↳ New structures appear because of an 'inner want'
 - ↳ Direct environmental effect over living organisms
 - ↳ Inheritance of acquired character
- ↳ **E.g.;** Long neck of giraffe due to gradual lack of surface vegetation

Theory of Natural Selection (Darwinism)

- ↳ Foundation of evolutionary biology
- ↳ **Elements:**
 - ↳ Universal occurrence of variation
 - ↳ Rapid multiplication
 - ↳ **The struggle for existence** - Intraspecific and interspecific
 - ↳ **Survival of the fittest (Natural Selection)**
 - ↳ Inheritance of useful variations; Elimination of non-useful variations
- ↳ **E.g.;** Survival of more dark-winged moths than white-winged ones in post-industrialisation period

Neo-Darwinism

Integration of Darwin's theory of evolution with Gregor Mendel's theory of genetics

Modern Synthetic Theory

- One of the proven theories of organic evolution
- Includes factors such as – Mutation, Variation /Recombination, Heredity, Natural Selection and Isolation

Mutation Theory (Hugo de Vries)

- ↳ Describes evolution as a jerky process where new varieties of species are formed by mutations (discontinuous variations)
- ↳ **Salient features:**
 - ↳ Mutation appears all of a sudden and becomes operational immediately
 - ↳ Same type of mutation in several individuals of a species
 - ↳ All mutations are inheritable
 - ↳ Useful mutations are selected and lethal ones are eliminated by nature



Note:

Rangelands and Pastoralism

Why in News?

Recently a **UN Convention on Combating Desertification (UNCCD)** report on rangelands and pastoralists has said that millions of pastoralists in India need better recognition of their rights and access to markets.

Note:

- **Rangelands:** Rangelands are **vast natural landscapes primarily used for grazing livestock and wildlife**. They are dominated by **grasses, shrubs, and open-canopy trees**.
- **Pastoralists:** Pastoralists are people who **raise livestock on natural pastures**. They often **lead a nomadic or semi-nomadic lifestyle**, moving their herds seasonally to access fresh pastures and water sources.

United Nations Convention to Combat Desertification (UNCCD)

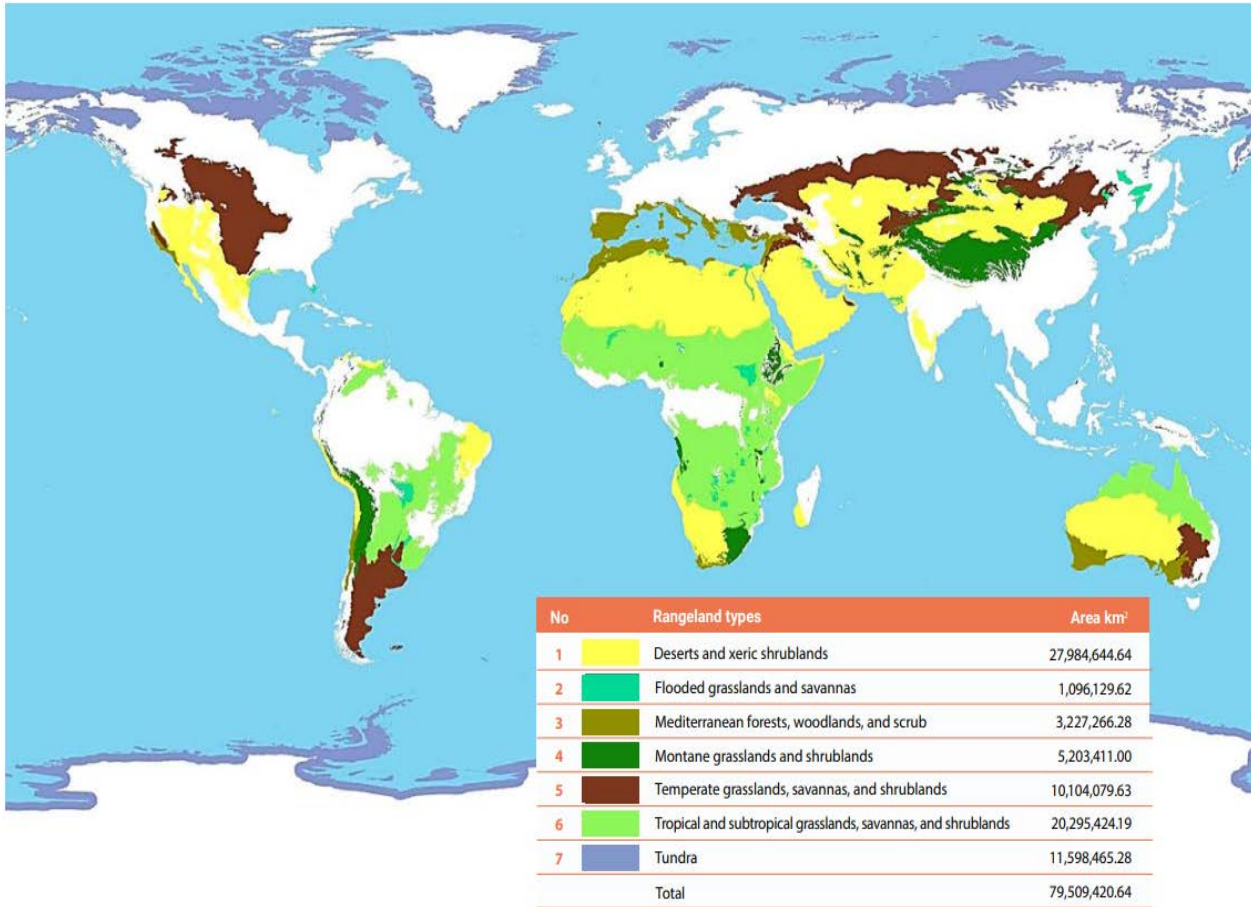
- It was **established in 1994**, as a **sole legally binding international agreement linking environment and development** to sustainable land management.
- It addresses specifically the **arid, semi-arid and dry sub-humid areas, known as the drylands**, where some of the most vulnerable ecosystems and peoples can be found.
- The Convention's 197 parties work together to **improve the living conditions for people in drylands**, to maintain and restore land and soil productivity, and to mitigate the effects of drought.
- The UNCCD works with the other two **Rio Conventions** to address the interlinked challenges of land, climate and biodiversity:
 - [Convention on Biological Diversity \(CBD\)](#)
 - [United Nations Framework Convention on Climate Change \(UNFCCC\)](#)
 - **United Nations Conference on Sustainable Development (Rio+20)**
 - [UNCCD 2018-2030 Strategic Framework](#)
 - [Conference of the Parties \(COP\)](#)

What are the Key Findings of the UNCCD Report?

- **State of Rangelands:**
 - Rangelands cover **80 million square kilometres**, which is **54% of the earth surface**, constituting the largest land cover/use type in the world. Of this:
 - **78%** occur in the **drylands**, mainly in the tropical and temperate latitudes
 - **12% is protected rangelands worldwide**.
 - Around **40-45%** of these lands are **degraded**, posing a **threat to one-sixth of the world's food supply** and **one-third** of the planet's carbon reservoir.
 - **Rangelands generate 16% of global food production** and 70% of feed for domesticated herbivores, most significantly in Africa and South America.
 - **Degradation of Rangelands:** Almost half of the world's **rangelands** are degraded due to **climate change, population growth, land-use change and growing farmlands**.
 - In India, rangelands occupy about **1.21 million square kilometres**, from the **Thar Desert** to **Himalayan meadows**.
 - As per report, **less than 5% of India's grasslands are within protected areas**, and the total **grassland area decreased** from 18 million hectares to 12 million hectares between 2005 and 2015.
 - The area used for grazing is estimated at around **40% of the total land surface of India**.

Note:

Indicative map of global rangelands according to ecoregions



➤ **State of Pastoralist and Economic Contributions in India:**

- Globally, an estimated **500 million** pastoralists are involved in livestock production and allied occupations.
- There are around **13 million pastoralists in India**, across 46 groups including **Gujjars, Bakarwals, Rebaris, Raikas, Kurubas, and Maldharis**.
- According to the 2020 report “**Accounting for Pastoralists in India**,” India holds **20% of the world’s livestock population** and approximately **77% of the animals** are raised in pastoralist systems, where they are either herded or allowed to graze on common lands.
- Pastoralists contribute to the economy through **livestock rearing** and milk **production**.
- The livestock sector contributes **4% to the national GDP** and **26% to the agricultural GDP**.
- The report highlighted that laws, such as the **Forest Rights Act of 2006**, have aided pastoralists in securing **grazing rights** across various states in the country.
 - One notable success mentioned was the **Van Gujjars** obtaining grazing rights and land titles in **Rajaji National Park** in Uttarakhand, following a **High Court** judgement.
- **India is currently the world’s largest producer of milk**, contributing 23% of global dairy production. It also leads in **buffalo meat production** and is the **top exporter of sheep and goat meat**, as reported by the **Department of Animal Husbandry and Dairying**. Pastoralists play a significant role in these sectors.

Note:



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Rangeland extent according to biome

Biome	Rangeland cover (%)
Deserts and xeric shrublands	35%
Tropical and subtropical grasslands, savannahs and shrublands	26%
Temperate grasslands, savannahs and shrublands	13%
Tundra	15%
Montane grasslands and shrublands	6%
Mediterranean forests, woodlands and scrub	4%
Flooded grasslands and savannahs	1%

What is Pastoralism?

➤ About:

- According to the UN's **Food and Agriculture Organization (FAO)**, pastoralism is a **livelihood system based on livestock production**.
- This includes livestock rearing, dairy production, meat production, wool production, and leather production.

➤ Characteristics:

- **Mobility:** Pastoralists often **move with their herds** to access seasonal pastures and water sources. This mobility helps manage the sustainability of grazing resources and reduces overgrazing in any one area.
 - **Example: Bedouin tribes** of the Arab region wander with their herds in **search of water and green pastures**.
- **Animal Husbandry:** The care and management of livestock are central to pastoralist life. This **includes breeding, feeding, and protecting animals from predators and diseases**.
- **Cultural Practices:** Pastoralist communities often have **rich cultural traditions, including specific social structures**, rituals, and knowledge systems related to animal husbandry and the environment.

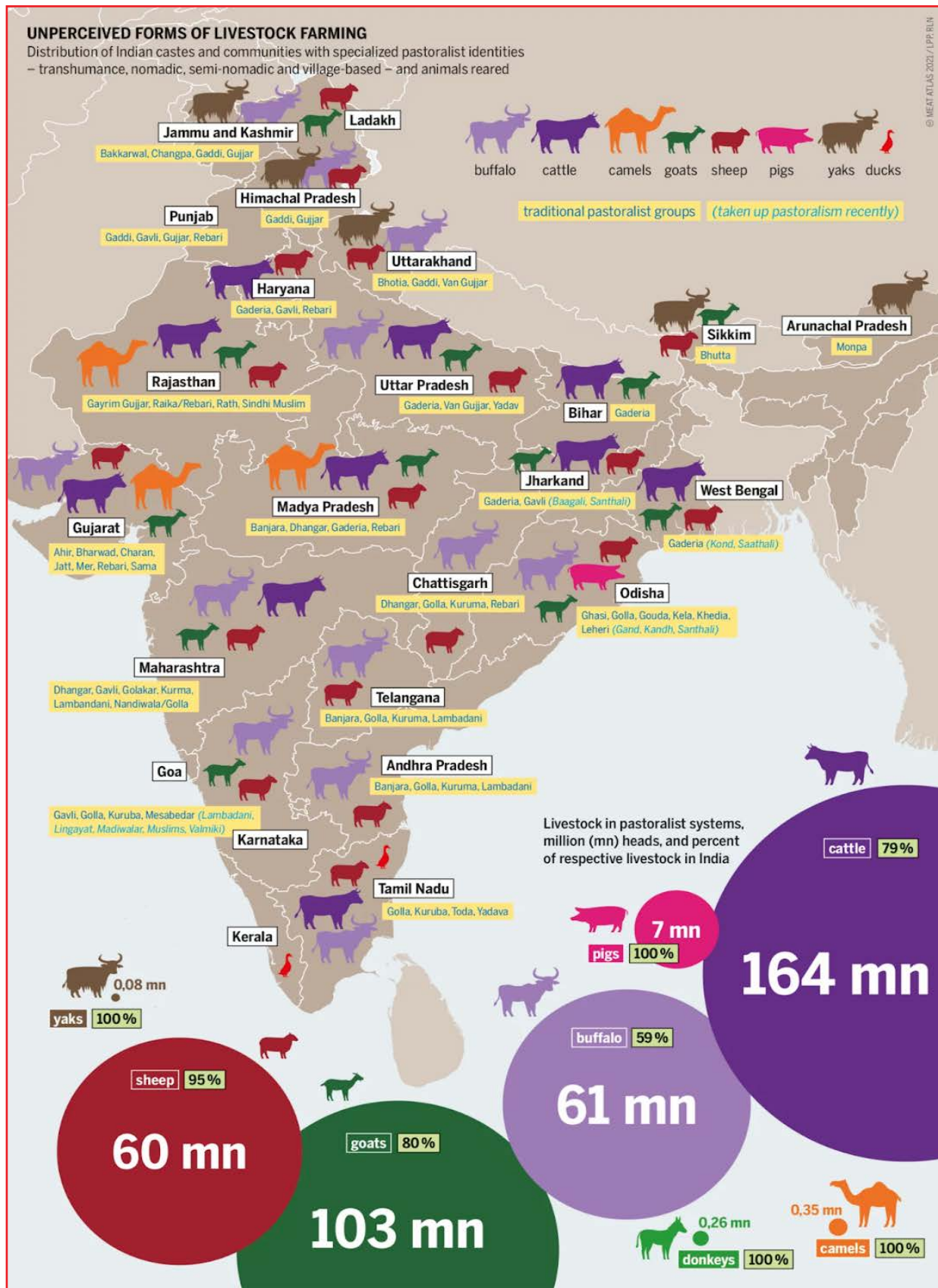
- **Economic Systems:** Livestock is a **crucial economic asset for pastoralists, providing food (meat, milk), materials (wool, hides), and trade goods**. Some pastoralist communities also engage in **trade or supplementary farming**.

- **Adaptation to Environment:** Pastoralist practices are closely **adapted to their environments, employing traditional ecological knowledge** to make decisions about movement and resource use.

➤ Examples of Pastoralists Communities:

- **Gujjars** (Jammu and Kashmir, Himachal Pradesh, Rajasthan, and Uttar Pradesh), **Raikas/Rebaris** (Rajasthan and Gujarat), **Gaddis** (Himachal Pradesh), **Bakarwals** (Jammu and Kashmir), **Maldharis** (Gujarat), **Dhangars** (Maharashtra) etc.
- **Maasai of East Africa:** Renowned for their cattle herding in **Kenya and Tanzania**.
- **Mongolian Nomads:** Famous for their herding of horses, sheep, goats, camels, and **yaks across the Mongolian steppes**.
- **Sami of Northern Europe:** Traditionally involved in **reindeer herding across Norway, Sweden, Finland, and Russia**.

Note:



Note:



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What are the Issues Faced by Pastoralists in India?

- **Non-Recognition of Pastoral Land Rights:** Many pastoral communities have traditionally **used common grazing lands for generations**. However, these lands often **lack clear ownership or official recognition**.
 - This makes it **difficult for pastoralists to secure access and defend their grazing routes**, leading to conflicts with other land users.
- **Population Growth and Land Fragmentation:** India's growing population puts pressure on land resources. **Land that was once available for grazing is being converted to agriculture or development projects**.
 - This fragmentation of grazing lands disrupts traditional migration routes and **reduces the amount of food available for livestock**.
- **Livelihood Threats:** The issues mentioned above limit access to grazing lands, impacting the ability of pastoralists to raise livestock effectively.
 - Additionally, **competition from commercial farms and volatile market prices** for livestock products can make it difficult for them to earn a decent living.
- **Sedentarization:** Government policies **sometimes encourage pastoralists to settle down in one place**. While this may seem beneficial for providing access to social services, it can **disrupt their traditional migratory patterns** and reduce the efficiency of their livestock management.
- **No Access to Veterinary and Medicines:** Many pastoral communities, especially those who are nomadic, have **limited access to veterinary care and essential medicines for their animals**.
 - This can lead to livestock diseases and death, further impacting their livelihoods.
- **Dependence on Middle Man for Marketing:** Pastoralists often lack direct access to markets and **rely on middlemen to sell their livestock products**. This can lead to exploitation, as middlemen may offer low prices, leaving pastoralists with little profit.

What are the Key Recommendations of the UNCCD Report?

- **Climate-Smart Management:** Integrate strategies that **address climate change into rangeland plans**. This will help store more carbon while making these lands more resistant to future challenges.
- **Protect Rangelands:** Stop converting rangelands to other uses, especially those managed by indigenous

communities. This **preserves the unique variety of life these areas support**.

- **Conservation through Use:** Design practices to **conserve rangelands both inside and outside protected areas**. This benefits both the land and the animals that depend on it, leading to healthier and more productive livestock production.
- **Pastoralism-Based Solutions:** Support traditional grazing practices and **new strategies that minimise damage to rangelands caused by climate change**, overgrazing, and other threats.
- **Working Together:** Develop flexible management systems and policies that involve everyone. This empowers **local communities and ensures rangelands continue to provide benefits for society as a whole**.

Tonga Volcano Impacting Weather

Why in News?

A recent study published in the Journal of Climate revealed that the eruption of the **Hunga Tonga-Hunga Ha'apai Volcano** in January 2022 has had significant implications for global weather patterns.

Hunga Tonga-Hunga Ha'apai Volcano

- It is an **Undersea Volcanic Eruption** consisting of two small uninhabited islands, **Hunga-Ha'apai** and **Hunga-Tonga**.
 - The volcano has **erupted regularly** over the past few decades.
- This is one of the massive explosions the volcano is capable of producing roughly every thousand years.
- One of the reasons for it being highly explosive is the **Fuel-Coolant interaction**.
- The Hunga Tonga eruption's unique characteristic of injecting **massive water vapour** into the stratosphere.
 - Usually, volcanic smoke, which mostly contains **sulphur dioxide**, leads to a **temporary cooling** of the Earth's surface.
 - The sulphur dioxide turns into **sulphate aerosols, which reflect sunlight into space**, causing the surface to cool down until the sulphate settles back on the surface or is washed out by rain.

Note:

What are the Effects of the Hunga-Tonga Volcano on the Climate?

➤ Extraordinary Ozone Hole in 2023:

- Since Hunga Tonga is an **underwater volcano**, it produced 100-150 million tonnes of **water vapour** during its eruption, **raising the amount of water in the stratosphere by around 5%**.
 - This water vapour in the stratosphere contributes to the **destruction of the ozone layer** and acts as a **potent greenhouse gas**.
- The study found that the **large ozone hole** observed from August to December 2023 was at least partly due to the Tonga eruption.
- This **ozone hole was almost two years in advance**, as the water vapour from the eruption **had enough time to reach the polar stratosphere over Antarctica**.

➤ Wet Summer of 2024 in Australia:

- The study predicted a positive phase of the **Southern Annular Mode** during the summer of 2024, leading to a higher chance of a wet summer in Australia.
- This was **contrary to the expected El Niño conditions**.

➤ Regional Weather Disruptions:

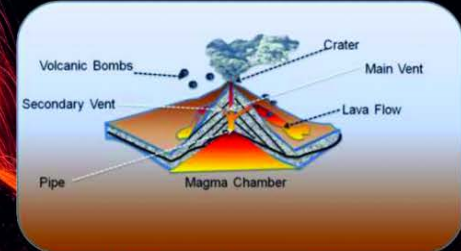
- The study **predicts colder and wetter than usual winters** for the northern half of **Australia up to around 2029**.
- **North America may have warmer than usual winters**, while **Scandinavia can have colder than usual winters**.
- These regional weather patterns are attributed to the Tonga eruption's impact on the way **atmospheric waves** travel, which directly influences local weather conditions.
 - This emphasises the **need for region-specific climate predictions and adaptation strategies**.

➤ Minimal Impact on Global Temperatures:

- The impact of the eruption on **global mean temperatures was very small, around 0.015°C**.
- The **incredibly high temperatures** observed for about a year cannot be attributed to the Tonga eruption.

VOLCANOES

A volcano is a vent or a fissure in the crust from which lava (molten rock), ash, gases, rock fragments erupt from a magma chamber below the surface



● Types: On basis of -

○ Periodicity of Eruption:

- Active volcano: Recently Erupted
- Dormant Volcano: Potential for eruption, no imminent signs
- Extinct: No recent eruptions, low possibility in future

○ Nature of Eruption:

- Hawaiian: Calmest types (low gaseous content)
- Strombolian: Formation of large gas bubbles in magma
- Vulcanian: More explosive
- Plinian eruptions: Magma's volatile gases rise via a narrow conduit
- Icelandic: Often build lava plateaus

○ Shape of Volcanoes:

- Shield volcanoes: Composed of basaltic lava, low slope
- Cone volcanoes (Cinder Cones): Most abundant
- Composite cones (stratovolcanoes): Formed by layers of diverse materials.

● Volcanic Features:

○ Extrusive :

- Crater: Cone-shaped vent for magma
- Caldera: Large, crater-like depression
- Volcanic Plateaus: Levelled areas from fissure eruptions

○ Intrusive:

- Batholiths: Central core of a volcanic mountain.
- Dyke: Vertical intrusion cutting across country rock bedding.
- Sills: Tabular intrusions along sedimentary bedding.
- Laccoliths: Magma injection along horizontal sedimentary bedding.

○ Minor:

- Geysers: Underground water above 100°C, powered by magma, results in powerful eruptions with steam and diluted minerals.
- Hot Springs: Heated water flows quietly along fault zones.

● Distribution of Volcanoes:

- Subduction zones (Circum Pacific Belt)
- Divergence zones (Mid Atlantic Ridge)
- Intra-plate oceanic volcanism (Hawaiian chain)
- Mid-continental belt and volcanoes in Mediterranean region

● Volcanoes in India:

- No volcanoes in Himalayans
- Barren Island (Only active volcano)

● Products of Volcanic Eruption:

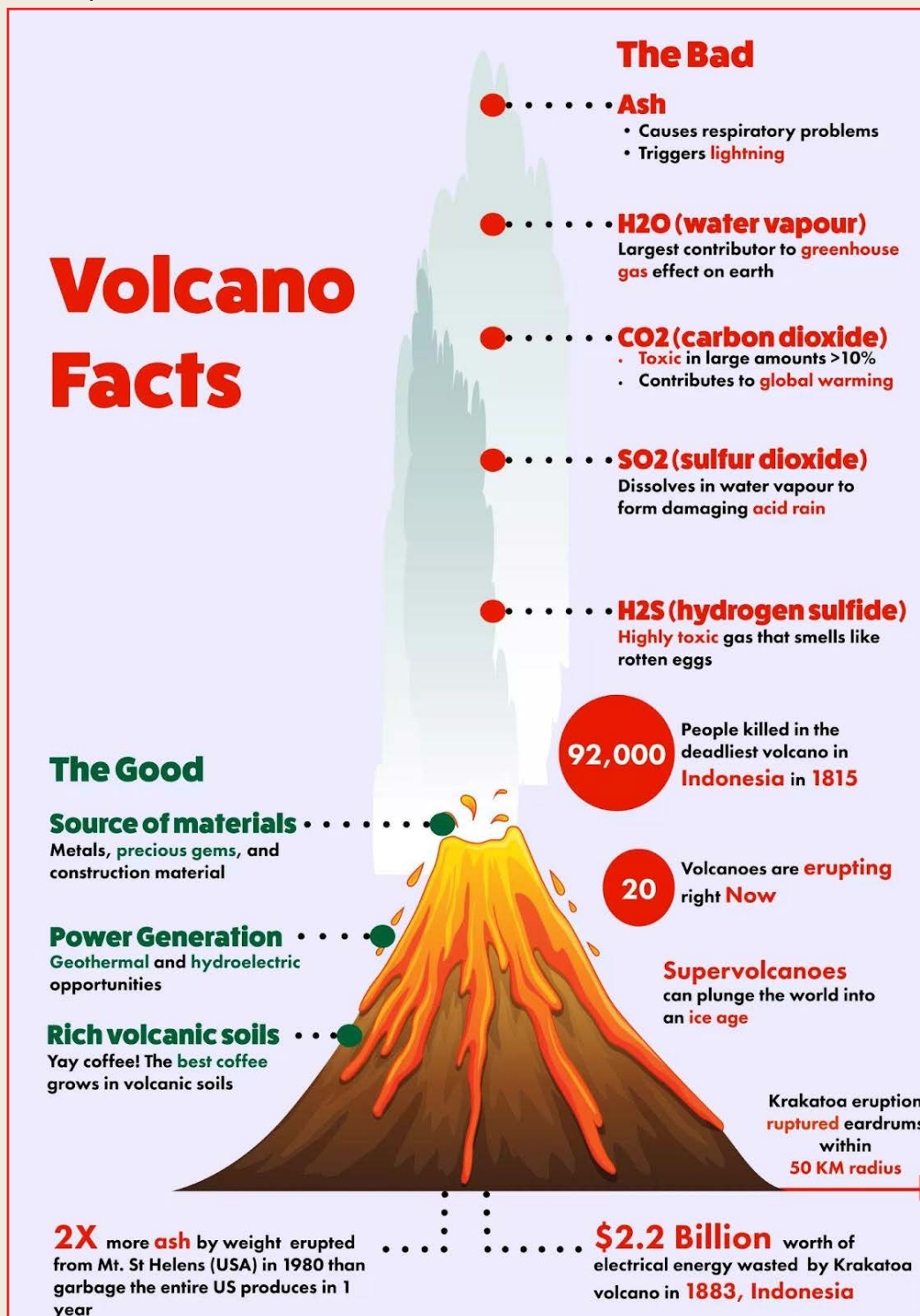
- Gases: H, C, O, S, N, CH₄, NH₃
- Solid: Pyroclastic materials
- Liquid: Lava



Note:

Undersea Volcano

- The undersea volcanic **eruption happens in a volcano** which is located **under the ocean surface**. There are an estimated one million undersea volcanoes, and most of them are **located near the tectonic plates**.
- Apart from lava, these **openings also spew out ash**. These deposit on the ocean's floor and lead to the formation of **sea mounds (underwater mountains that are formed on the ocean floor but do not reach the water surface)**.



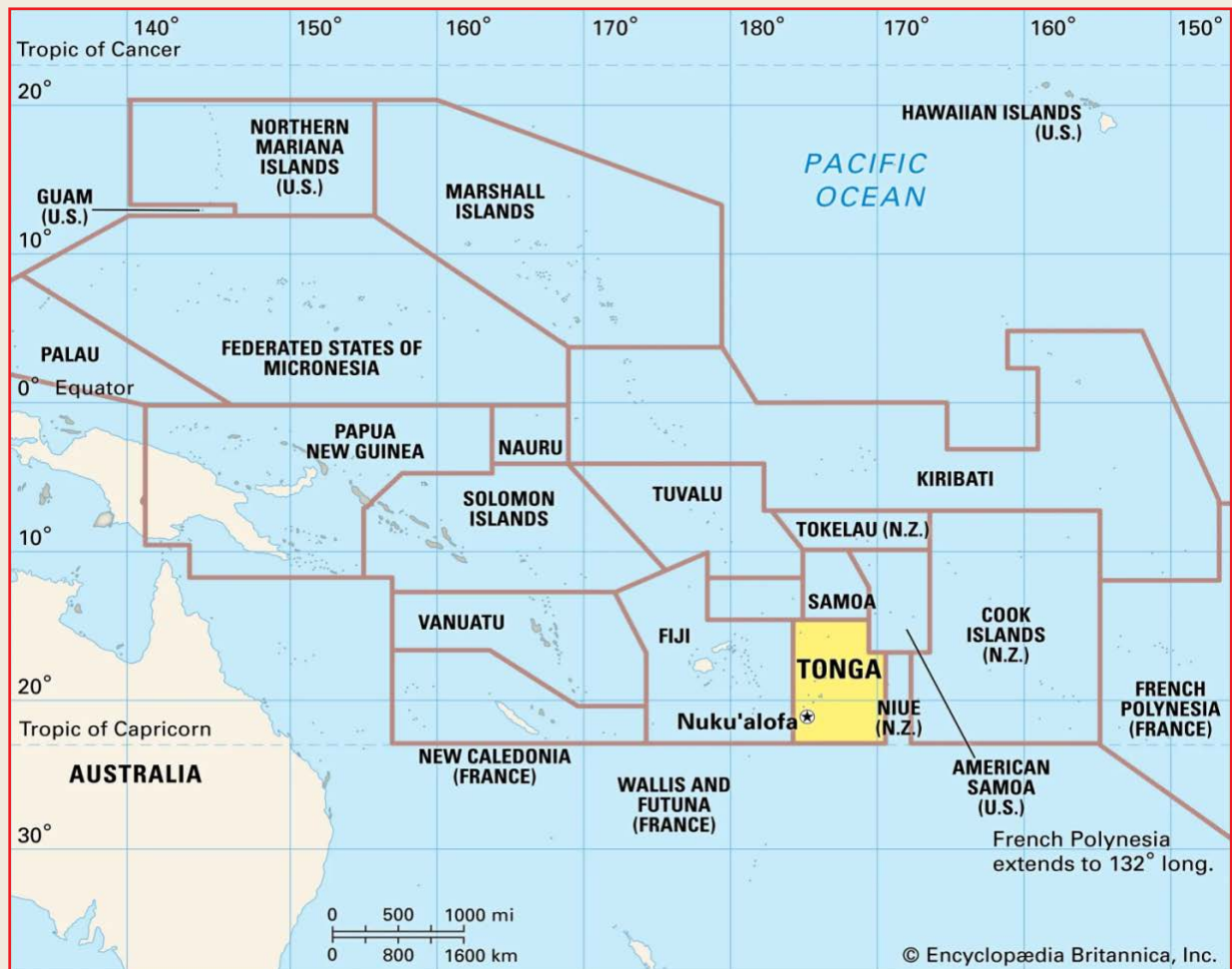
Note:

Fuel-Coolant Interaction

- If **magma rises into seawater slowly**, even at temperatures of about 1200 degrees Celsius, a **thin film of steam forms between the magma and water**. This provides a **layer of insulation** to allow the **outer surface of the magma to cool**. But this process doesn't work when magma is **blasted out** of the ground full of volcanic gas.
- When **magma enters the water rapidly**, any steam layers are **quickly disrupted**, bringing hot magma in **direct contact with cold water**. It is akin to **weapons-grade chemical explosions**.
 - Extremely violent blasts tear the magma apart.
- A **chain reaction begins**, with new magma fragments exposing **fresh hot interior surfaces to water**, and the explosions repeat, **ultimately jetting out volcanic particles and causing blasts with supersonic speeds**.

Tonga

- Tonga is an island country in **Polynesia**, part of Oceania, with 171 islands, of which 45 are inhabited.
- The country spans approximately 800 km north-south and is **surrounded by Fiji, Wallis and Futuna, Samoa, New Caledonia, Vanuatu, Niue, and Kermadec**.
- Tonga has a **tropical rainforest climate**. The economy relies heavily on remittances from Tongans living abroad, particularly in Australia, New Zealand, and the United States.
- The **economy focuses on small-scale industries** like handicrafts and agriculture, with efforts to enhance sectors such as tourism and communications.
- The **largest ethnic group in Tonga is Tongan**, followed by a mix of Tongans, Chinese, Fijians, Europeans, and other Pacific Islanders.



Note:



drishti

Lost Nile Branch Key to Pyramid Construction

Why in News?

Recently, a study discovered an ancient Nile river branch that helped transport workers and materials to Egypt's pyramids, now buried under modern landscapes.

- Researchers employed technologies including **satellite imagery, high-resolution digital elevation data, and historical maps to trace** the path of the now-vanished **Ahramat Branch of Nile River**.

What are the Key Highlights of the Study?

- The revelation of the **Ahramat Branch**, a previously unknown **Nile channel** from **Lisht (village) to Giza (city)**, illuminates its **crucial role in transporting workers** and materials for pyramid construction, offering insight into their geographic and **logistical considerations**.
- The study shows that natural events such as **climate change, tectonic shifts**, and human activities, along with environmental factors like **desertification** and **changes in rainfall**, have altered the Nile's landscape, and branches over time, impacting the region's ecology and water systems.



Note:

What are Key Facts About Egyptian Pyramids?

- The **pyramids of Egypt** are massive, ancient stone structures built as **tombs for pharaohs (ancient Egyptian rulers)** and important figures during the Old Kingdom (roughly 2700–2200 BCE) and Middle Kingdom periods (2050–1650 BCE).
- There are over 118 identified pyramids in Egypt, but the most famous are the **three pyramids at Giza**:
 - **Great Pyramid of Giza**: The oldest of the **Seven Wonders of the Ancient World** and the largest pyramid ever built. It was constructed for **Pharaoh Khufu (Cheops)**.
 - **Pyramid of Khafre (Chephren)**: This pyramid appears larger than the Great Pyramid due to its steeper angle and the **presence of the Sphinx**, a massive statue with a human head and a lion's body, located nearby.

- **Pyramid of Menkaure (Mycerinus)**: The smallest of the three main pyramids at Giza, built for **Pharaoh Menkaure**.

Nile River

- The **Nile River originates** south of the equator in **Burundi, Africa**.
- Flowing northward through northeastern Africa, the Nile traverses Egypt and 10 other African countries, including **Burundi, Tanzania, Rwanda, the Democratic Republic of the Congo, Kenya, Uganda, Sudan, Ethiopia, and South Sudan**, before reaching its endpoint at the **Mediterranean Sea**.
- The Nile is formed by **three principal streams**, the **Blue Nile, Atbara** which flow from the highlands of Ethiopia, and the **White Nile** the headstreams of which flow into Lakes Victoria and Albert.
- Nile River, the **longest river in the world**, called the father of African rivers.

Note:

Ethics

Highlights

- Many Facets of Truth

Many Facets of Truth

Why in News?

For millennia, philosophers have wrestled with questions about the **nature of truth**, its knowability, and whether it is **universal or subjective**, leading to **diverse perspectives** on the concept.

What are the Various Thinkers' Perspectives on Truth?

➤ Correspondence Theory:

- Thinkers like **Aristotle** and **Bertrand Russell** assert that truth is determined by the correspondence between our statements or thoughts and the external world, meaning **a statement is true if it accurately reflects reality**.
- For example, "The grass is green" is true because the **grass actually** has the property of **greenness** in the real world.
- This theory doesn't account for **abstract truths (e.g., mathematical theorems)** that don't directly correspond to physical reality.

➤ Coherence Theory:

- Thinkers like **Immanuel Kant** and **Friedrich Hegel** assert that truth is determined by the **internal consistency of ideas**, where a statement is true if it coheres with an **established framework of knowledge**.
- For example, **scientific theories are considered true if they are internally consistent** and explain a wide range of phenomena.
- This theory can lead to closed belief systems that **resist new evidence that contradicts the existing framework**.

➤ Pragmatic Theory:

- Thinkers such as **William James** and **John Dewey** argue that the **truth of a statement is determined by its practical usefulness** and its ability to lead to successful outcomes.
- Example: The **theory of gravity** is considered true because it allows us to predict the movement of objects and build stable structures.
- This theory makes truth relative to context and **doesn't account for objective facts** independent of human usefulness.

➤ Mahatma Gandhi's Quest for Truth:

- **Divine Truth and Non-Violence:**
 - Gandhi's **truth wasn't merely factual accuracy**. He equated it with the **ultimate reality, God itself**.
 - Truth is naturally obvious, but it becomes clear only when the ignorance around it is removed. This absolute truth could be understood through **non-violence (ahimsa)**.
 - His **truth is not just a concept but an eternal principle equivalent to God**, making the pursuit of truth and the practice of non-violence inseparable.
 - The unending quest for truth involved introspection, continuous questioning, and the readiness to acknowledge errors, seeing truth as an ongoing journey of self-discovery rather than a set endpoint.
- **Truth in Action:**
 - Gandhi's commitment to truth extended to his **methods of protest**. He devised **Satyagraha**, meaning **"truth force"**.
 - Satyagrahis, Gandhi's followers, **aimed to awaken the conscience of the oppressor through acts of civil disobedience** and unwavering truthfulness.

Note:

What are the Dilemmas and Complexity of Truth?

➤ The Complexity of Truth:

- The **three lions on the Ashokan pillar**, part of India's national emblem, symbolise **three perspectives of truth**: my truth, your truth, and an observer's truth.
- **The fourth, unfathomable dimension of truth** often leads to the saying, **"God only knows the truth."**
- For example, during an election, the task of the **Election Commission of India** becomes challenging.
 - The challenge lies in **political parties** often engaging in caste or communal speech by use of clever language which makes it difficult for the **election commission** to act.

- The **Model Code of Conduct (MCC)** though bans explicit appeals on these grounds, but loopholes let political parties make divisive statements **indirectly**.

➤ The Dilemma of Truth and Deception:

- Historical and mythological narratives, like **Yudhishtira's half-truth** in the **Mahabharata**, illustrate the ethical dilemmas faced when truth is manipulated.
- Yudhishtira's declaration of **Ashwathama's death** led to a **misinterpretation** that caused **Dronacharya's demise**.
- This story underscores the moral complexities that arise when **truth is bent for strategic purposes**, highlighting the potential loss of moral high ground.



Note:

Miscellaneous

Highlights

• QS World University Rankings 2025

• Kanyakumari's Vivekananda Rock

QS World University Rankings 2025

Why in News?

Recently, the latest [QS World University Rankings](#) for 2025 were released revealing **significant improvements** for [Indian universities](#) and notable global standings.

What are the Key Highlights of the Rankings?

➤ About:

- **QS Quacquarelli Symonds (QS)** offers unrivaled data, expertise, and solutions for the global higher education sector.
- For the compilation of the 2025 **QS World University Rankings**, QS claims to have analysed **17 million research papers**, 176 million citations, data from 5,600 institutions worldwide and insights from 175,798 academics and 105,476 employers.

➤ Top Global Institutes:

- **Massachusetts Institute of Technology (MIT):** Retained its position as the **best institute globally** for the 13th consecutive year.
- **Imperial College London:** Improved from sixth to **second**.
- **Harvard University and University of Oxford:** Jointly held the **third rank**.

➤ Regional Highlights:

- **ETH Zurich:** Continues to be the **top institution in Continental Europe** for the 17th year.
- **Asia:** The **National University of Singapore (NUS)** remains a prominent institution, keeping its eighth spot.

➤ India's Position:

- In this edition of the rankings, with **46 universities**, the [Indian Higher Education system](#) is the **seventh**

most represented globally and the **third in Asia**, trailing only Japan (49 universities) and China (71 universities).

- 61% of Indian universities' ranking has improved, with **IIT Bombay** gaining the **top spot in India**.
- A total of 61% of Indian universities have risen in rank this time, while 24% have maintained their positions.

○ Research and Collaboration:

- **Citations per Faculty:** India's performance in this **indicator is strong**, with a score of 37.8, surpassing the global average of 23.5.

➤ This is the **second-highest in Asia** among countries with more than 10 ranked universities.

- However, **India lags in the International Faculty Ratio** and International Student Ratio indicators, underscoring the need for greater international collaboration and exchange

○ Top Indian Institutes:

- **IIT Bombay:** Leading in India, IIT Bombay climbed from 149th in 2024 to 118th in 2025.
- **IIT Delhi:** Achieved the second position in India, moving up 47 ranks from 197th to 150th.
- **IIT Indore:** The only Indian institute that declined in ranking, dropping from 454th to 477th.
- **New Entries:** Symbiosis International (Deemed University) entered the top 20, ranked between 641-650 globally.

Kanyakumari's Vivekananda Rock

Why in News?

Recently, the Prime Minister announced his plan to visit and meditate at the **Vivekananda Rock Memorial** in Kanyakumari, Tamil Nadu marking the culmination of the Lok Sabha election campaign.

Note:

What are the Key Facts Related to Vivekananda Rock Memorial?

➤ **Swami Vivekananda's Spiritual Experience:**

- In **1892**, Swami Vivekananda was said to have **swum to the rock from the shores of [Kanyakumari](#)** for meditation. He spent three days and nights there, **resulting in his enlightenment**.
- Swami Vivekananda's letter to Swami Ramkrishnananda in 1894 suggests that his **core philosophy crystallised** after meditation at the **Dhyan Mandapam** on the rock.

➤ **Location:**

- The **memorial stands on one of the two rocks located about 500 meters off the mainland of Vavathurai, Tamil Nadu**.
- The Vivekananda rock is a **small rocky islet**, surrounded by the Laccadive Sea where the Bay of Bengal, the Indian Ocean and the Arabian Sea form a confluence presenting a picturesque view.
- The **memorial consists of two main structures, viz Vivekananda Mandapam and Shripada Mandapam**.

➤ **Significance as a Memorial:**

- The memorial was constructed to honour **[Swami Vivekananda](#)**, a prominent Indian spiritual leader.
- It was formally inaugurated in **1970 by the then-President of India, V V Giri**.



What are the Key Facts About the Swami Vivekananda?

➤ **Birth and Early Life:**

- Swami Vivekananda, originally born as **Narendranath Datta** on 12th January 1863, hailed from a **conventional Bengali family** in Calcutta.
- His excessive appetite for knowledge led him to explore various subjects, including philosophy, literature, **Indian scriptures, as well as western philosophies**.

➤ **Towards Spiritualism:**

- He became the **chief disciple** of the 19th-century mystic **[Ramakrishna Paramhansa](#)** in **1881**.

Note:

- Initially sceptical of Ramakrishna's teachings, Vivekananda eventually embraced his guru's philosophy, leading to his initiation into **monastic life**.

- In 1893, upon the request of **Maharaja Ajit Singh** of the Khetri State, he took the name '**Vivekananda**.'

➤ **Associated Organisations:**

- The **Ramakrishna movement** (initiated by Vivekananda) had two goals:
 - To train monks dedicated to a life of **renunciation and practical spirituality** to spread Vedanta teachings and
 - To guide lay disciples to carry on **preaching, philanthropic and charitable works**.
- He established the **Ramakrishna Mission** in 1897 to fulfil the second objective of the Ramakrishna movement whereas **Paramhansa himself fulfilled the first objective through Ramkrishna Math**.

➤ **His Contributions:**

- He introduced the world to the Indian philosophies of **Vedanta and Yoga**.
 - He preached '**neo-Vedanta**', an interpretation of Hinduism through a Western lens, and **believed in combining spirituality with material progress**.
- His powerful speech at the 1893 **World Parliament of Religion** in Chicago captivated the audience and placed Hinduism on the global stage.
- His teachings also offered different **paths to spiritual liberation** (moksha) through his writings, outlining the four yogas: **Raja-yoga** (yoga of the mind), **Karma-yoga** (yoga of action), **Jnana-yoga** (yoga of knowledge), and **Bhakti-yoga** (yoga of devotion).
- His famous quote, "**Service of man is the service of God**", is still relevant today.
- **Netaji Subhas Chandra Bose** had called Vivekananda the "**Maker of modern India**."
- **National Youth Day** is celebrated every year to observe the birth anniversary of Swami Vivekananda.

Note:

Rapid Fire Current Affairs

Highlights

- Binsar Wildlife Sanctuary
- WHO's Framework for Kala Azar
- Eco-Friendly Solution for Safe Groundwater
- Renaming Joshimath and Kosiyakutoli
- JIMEX 24
- Sun Images Captured by Aditya-L1
- Satnamis Protest
- Satellite-based Tolling System
- International Year of Quantum Science and Technology
- The Greater Tunb, The Lesser Tunb, and Abu Musa Island
- Volkhov River
- PM Kisan Nidhi
- Greater Spotted Eagles
- Nano-Fertilizer Plant at Kakinada
- Pump and Dump Scheme
- Hawking Radiation
- Software Technology Parks of India 192
- Leader of Opposition
- Cryonics
- Skilling Potential of Tourism
- Syndicated Loan
- Australia Opens Armed Forces to Non-Citizens
- Jolfa
- ABHA-Based Scan and Share Service
- World Wealth Report 2024
- UN's WSIS 2024 "Champion" Award
- System for Pension Administration Raksha (SPARSH)
- Insolvency Professionals (IPs)
- Ajrakh Craft and Bela Block Printing
- Netherlands Becomes India's 3rd Largest Export Destination
- Global Soil Partnership's 12th Plenary Assembly
- Repo Rate Unchanged for 8th Consecutive Time
- Unified India Organic Logo
- Living Will and Passive Euthanasia
- Dissolution of the 17th Lok Sabha
- Indian Army Received Hydrogen Buses
- Exchange Traded Funds
- Leading Edge Actuators & Airbrake Control Module
- PraVaHa Software
- Supreme Court Mandates Self-Declaration by Advertisers
- Kenya-India Collaboration on Cheetah Conservation
- Preston Curve
- China's Chang'e-6
- Nelson Mandela Award for Health Promotion
- Volcanism on Venus
- Diffraction-Based Tool to Detect Virus
- OPEC+ Extends Deep Oil Output Cuts
- Carnian Pluvial Episode
- RudraM-II
- Exercise Red Flag
- World's First Wooden Satellite
- Decline in FDI Equity Inflows in FY 2024
- Advancement of the Southwest Monsoon in India
- India's First 3D-Printed Rocket Launched
- India's First Quantum Diamond Microchip Imager

Note:

Binsar Wildlife Sanctuary

In the first incident of frontline forest workers losing their lives in a **wildfire** this year, four forest department personnel lost their lives in a firefighting operation in **Binsar Wildlife Sanctuary** in Almora.

- The **Binsar Wildlife Sanctuary** is located in the **Kumaon Himalayas of Uttarakhand**.
 - In 1988, the sanctuary was established to conserve the **rich biodiversity** of the region.
 - It boasts a remarkable **variety of flora** due to its diverse topography and altitudinal variation. The sanctuary is primarily covered with a dense forest of **oak and pine**.
 - The sanctuary has over **200 species of birds** including **Eurasian jay, koklass pheasant, monal pheasant**, and **Himalayan woodpecker**.
- Binsar was the erstwhile summer capital of the **Chand Dynasty rulers**, who **ruled Kumaon** from the 7th to 18th century AD.
- According to locals, Binsar was named after the **Bineshwar Mahadev temple**, a 16th-century temple dedicated to **Lord Shiva**.

Read more: **Forest Fires**

WHO's Framework for Kala Azar

Due to the growing health threat of **visceral leishmaniasis (VL) (Kala-azar)**, the **World Health Organisation (WHO)** has launched a **new framework** to help **eradicate** the disease in **eastern Africa**.

- The framework outlines **five main strategies** for guiding VL elimination:
 - Early diagnosis and treatment
 - Integrated vector management
 - Effective surveillance
 - Advocacy, social mobilisation and partnership-building
 - Implementation and operational research

- **Visceral leishmaniasis** is a slow-progressing indigenous disease caused by a protozoan parasite of the *genus Leishmania*.

- It spreads through the bite of **infected female sandflies** and can prove to be deadly if not treated timely.
 - VL leads to fever, weight loss, and enlargement of the spleen and liver.
- It is **endemic to 80 countries**, however, In 2022, eastern Africa accounted for 73% of global VL caseload, 50% of which occurred in children aged under 15 years.
 - In 2023, **Bangladesh** became the **first country** in the world to eradicate VL.
- In India, ***Leishmania donovani*** is the **only parasite** causing this disease.
 - Recently, India has also successfully achieved its target to eliminate visceral leishmaniasis (initial target year was 2010, but it was extended until 2023).

Read more: **Kala Azar**

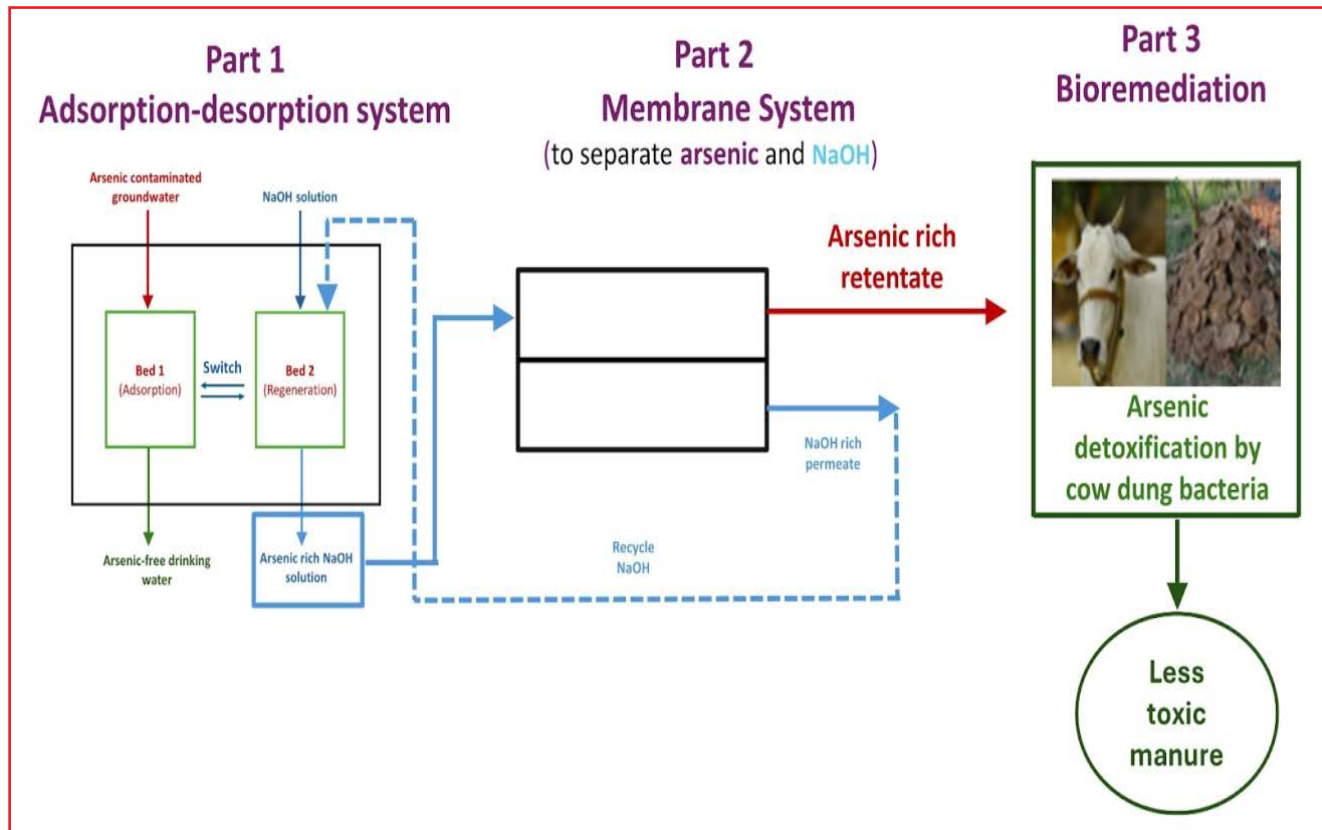
Eco-Friendly Solution for Safe Groundwater

Recently, researchers at the **Indian Institute of Science (IISc)** have created an **innovative remediation technique** that not only **eliminates heavy metal pollutants** from groundwater but also ensures **safe disposal of removed pollutants** as well.

- It removes **Arsenic** and other harmful metals, making the water safe to drink.
- The process is **eco-friendly** as removed contaminants are **disposed of in an environmentally friendly** and sustainable manner
- **3-Step Working Mechanism:**
 - **Capture:** Contaminated water is passed through a **chitosan-based adsorbent that removes toxic inorganic arsenic**. The adsorbent is regenerated using a recycled alkaline wash.

Note:

- **Concentrate:** The **arsenic-laden alkaline wash is separated** using membranes, recovering sodium hydroxide for reuse, while the concentrated arsenic moves to the next step.
 - **Transform:** **Microbes in cow dung convert inorganic arsenic** to less toxic organic forms. The treated sludge can then be safely disposed of.
- In India, **113 districts** in 21 States in India have **arsenic levels above 0.01 mg per litre** while **223 districts** in 23 States have **fluoride levels above 1.5 mg per litre**, which are beyond the permissible limits set by the **Bureau of Indian Standards (BIS)** and the **World Health Organization (WHO)**.



Read more: [Groundwater Contamination in India](#), [Purification Processes of Water](#).

Renaming Joshimath and Kosiyaikutoli

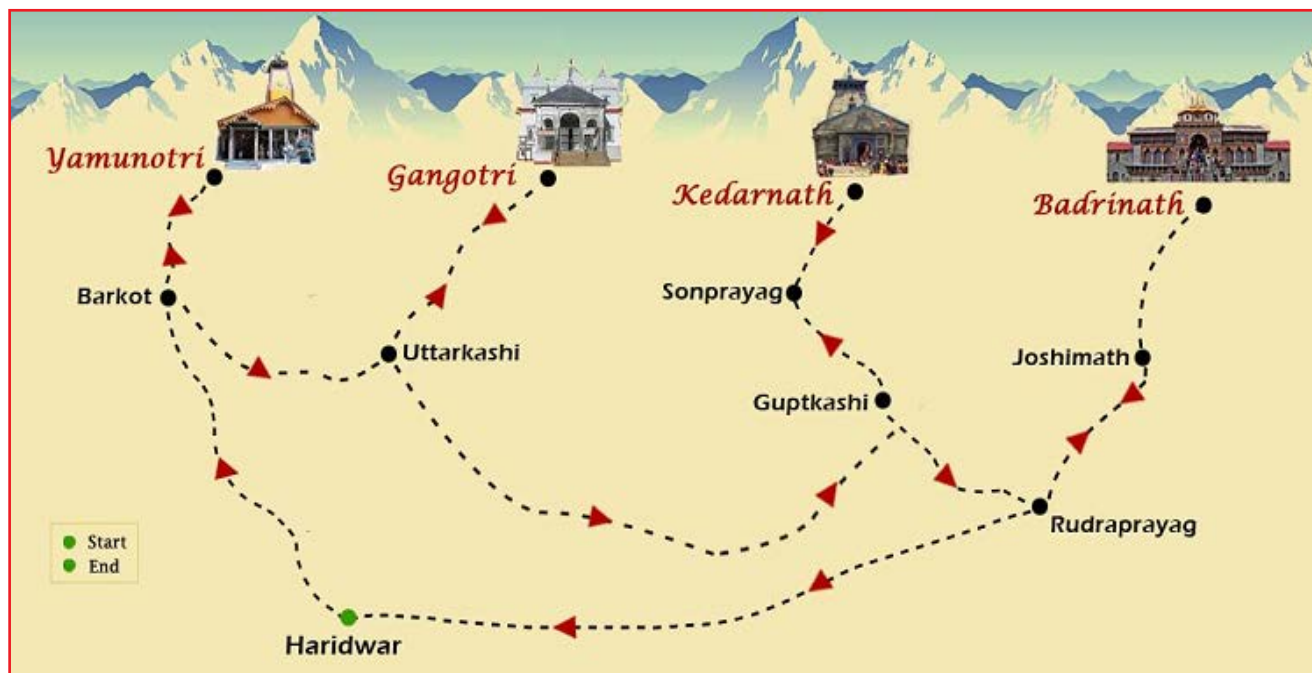
Recently, the Uttarakhand government has renamed Joshimath tehsil as **Jyotirmath** and Kosiyaikutoli tehsil as **Pargana Shri Kainchi Dham**.

- Joshimath is believed to be the site where **Adi Guru Shankaracharya** attained enlightenment in the 8th century.
- Kosiyaikutoli has been renamed **Pargana Shri Kainchi Dham** in honour of **Baba Neem Karoli Maharaj's** ashram located there.
- Joshimath serves as the gateway to **Badrinath Dham**, one of Hinduism's most significant pilgrimage destinations.
- **Badrinath Dham** is located in the Chamoli district and is home to the sacred Badrinarayan Temple, dedicated to Lord Vishnu.

Note:



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Read more: [Char Dham Yatra](#)

JIMEX 24

The eighth edition of the bilateral [Japan-India Maritime Exercise 2024 \(JIMEX 24\)](#) is set to take place in Yokosuka, Japan.

- The exercise involves **harbour and sea phases**, with professional, sports, and social activities at the harbour, followed by **joint naval war drills** at sea to improve their interoperability across various operations.
- The Indian Navy (IN) is being represented by [INS Shivalik](#) and the **Japan Maritime Self-Defense Force (JMSDF)** is being represented by the **Guided Missile Destroyer JS Yugiri**.
 - **Integral helicopters** from both navies will also participate in the joint exercise.
- JIMEX 24 provides an opportunity to learn from each other's **best practices** and facilitates operational interactions between IN and JMSDF to foster cooperation and reaffirm their shared commitment towards maritime security in the [Indo-Pacific](#).
- Other **bilateral exercises** between India and Japan include the [Malabar exercise \(Naval Exercise\)](#), 'Veer Guardian' SHINYUU Maitri (Air Force), and [Dharma Guardian \(Army\)](#).

Read more: [Japan-India Maritime Exercise](#), [Maritime security](#)

Sun Images Captured by Aditya-L1

Recently, the [Indian Space Research Organisation \(ISRO\)](#) released images captured by its [Aditya-L1 solar mission](#) during a significant [solar \(geomagnetic\) storm](#) that occurred in May 2024.

- The remote sensing payloads **Solar UltraViolet Imaging Telescope (SUIT)** and the **Visible Emission Line Coronagraph (VELC)**, along with other payloads captured these images from the [Lagrange point](#) in space.

Note:



drishti

- These images will help in studying **solar flares**, **energy distribution**, **sun spot**, understanding and predicting **space weather**, **monitoring solar activity** and **UV radiation** over a wide wavelength range, and also aid in the study of **long-term solar variations** and its **impact on the Earth's environment**.

Aditya L1:

- It is India's **first dedicated solar mission**, developed by the **ISRO**, in collaboration with international partners.
- It will **study the Sun and its corona** and **provide valuable data** and insights into the Sun's behaviour, which is crucial for **understanding the impact of solar activity** on the Earth's climate and space weather.

ADITYA-L1 MISSION

ABOUT

- India's 1st scientific expedition to study the Sun
- To be placed at halo orbit around **L1 Lagrange point**
- Launch date - 02 Sept, 2023
- Time to reach - **4 months**; Mission Life - **5 years**

FIELDS OF STUDY:

- **Sun's corona** (Visible and Near-infrared rays), **photosphere** (soft and hard X-ray) and **chromosphere** (UV)
- Solar emissions, solar winds and flares and **Coronal Mass Ejections** (CMEs)
- Carry out round-the-clock imaging of Sun

SIGNIFICANCE

- Solar weather/environment affects the weather of entire solar system
- Solar events help **understand space weather**
- **Tracking Earth-directed storms** can help predict their impact

LAUNCH VEHICLE

- PSLV-C57

PAYLOADS:

- Visible Line Emission Coronagraph (**VLEC**) (**primary payload**)
- Solar Ultraviolet Imaging Telescope (**SUIT**)
- Solar Low Energy X-ray Spectrometer (**SoLEXS**)
- Aditya Solar wind Particle Experiment (**ASPEX**)
- High Energy L1 Orbiting X-ray Spectrometer (**HEL1OS**)
- Plasma Analyser Package for Aditya (**PAPA**)
- Advanced Tri-axial High Resolution Digital Magnetometers

What are Lagrange Points?

- Named after Italian-French mathematician Josephy-Louis Lagrange
- Positions in space where gravitational forces of a two-body system (e.g. Sun & Earth) produce enhanced regions of attraction and repulsion
- Spacecrafts placed at L points consume lower fuel to remain in position
- L1 will provide ISRO continuous view of Sun without any occultation/ eclipses

ANATOMY OF THE SUN

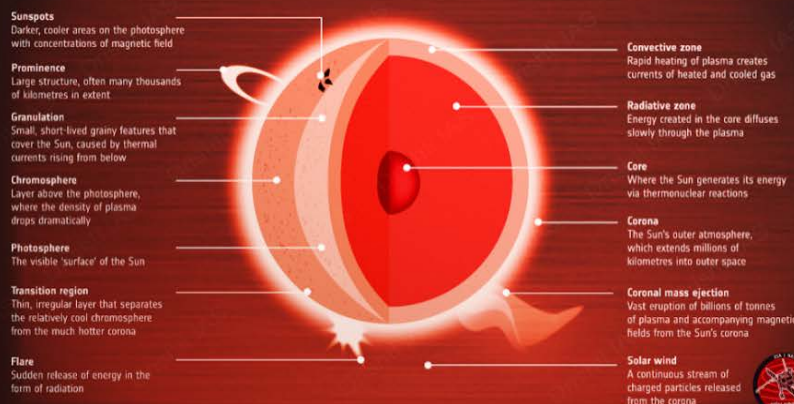


Illustration of all five Lagrange points of Sun-Earth System. Aditya-L1 will be placed around Lagrange point 1



Read more: [Solar Storms](#), [Indian Space Research Organisation \(ISRO\)](#)

Note:

Satnamis Protest

Recently, a large mob from the **Satnami community** in Chhattisgarh's Baloda Bazar district attacked the Superintendence of Police (SP) office, over the alleged desecration of a 'jaitkhamb' (victory pillar, a sacred structure for the Satnami community).

Satnami Community:

- It is the largest **Scheduled Caste (SC)** community, including peasants, artisans, and untouchables in Chhattisgarh.
- It was **founded by Guru Ghasidas**, a 19th-century saint, who preached **monotheism**, believing in **one God** called **Satnam** "Truthful Name" and **social equality**.
- They've faced challenges in securing land rights, obtaining fair employment opportunities, and accessing education and healthcare encountered social prejudice and haven't had a strong voice in government.
- The Chhattisgarh government renamed a section of the **Sanjay-Dubri Tiger Reserve** to **Guru Ghasidas National Park** in his honour.

Read more: [Protests in Chhattisgarh](#).

Satellite-based Tolling System

The **National Highway Authority of India (NHAI)** has invited **expressions of interest (Eoi)** for the implementation of a **satellite-based electronic toll collection system**.

- The winning entity will have to develop a **geo-referenced map** and **toll-charging software** for the **Global Navigation Satellite System (GNSS)**.
 - A **georeferenced digital map** or image has been tied to a known Earth coordinate system, so users can **determine** where every point on the map or aerial photo is **located on the Earth's surface**.
 - A GNSS is the generic term for any of the **satellite constellations** that broadcast **positioning**,

navigation and **timing data**. It is used in all forms of transportation like space stations, aviation, maritime, rail, road and mass transit.

- **Indian Regional Navigation Satellite System (IRNSS)** is an **autonomous system** designed to cover the **Indian region** and **1500 km** around the **Indian mainland**. The system consists of **7 satellites**.
- NHAI plans to implement the GNSS-based electronic toll collection system **alongside RFID-based Fastags** currently being used by vehicles.
 - FASTag is a device that employs **Radio Frequency Identification (RFID)** technology for **making toll payments** directly while the vehicle is in motion.

Read more: [NHAI](#)

International Year of Quantum Science and Technology

The **United Nations (UN)** has designated the **year 2025** as the '**International Year of Quantum Science and Technology**' to increase public awareness of the importance of **quantum science** and its applications.

- The resolution for this was led by Mexico at the **UNESCO** General Conference in May 2023, which was adopted by almost 60 countries.
- Also, the year 2025 marks a century since German physicist **Werner Heisenberg** published a paper laying the foundation of **modern quantum mechanics**.
 - He was awarded the **Nobel Prize** for physics in **1932** for the creation of quantum mechanics.
- India launched the **National Quantum Mission** in April 2023, to be implemented from **2023 to 2031** by the **Department of Science & Technology (DST)**.
 - It has **four verticals**: Quantum Computing, Quantum Communication, Quantum Sensing and Metrology, and Quantum Materials and Devices.

Note:

NATIONAL QUANTUM MISSION

Aims to put India among the top six leading nations involved in the R&D in quantum technologies

■ Presently, R&D works in quantum technologies are underway in the US, Canada, France, Finland, China and Austria ■

✦ **Duration:** 2023-24 to 2030-31

✦ **Nodal Ministry:** Ministry of Science & Technology

✦ **Highlights of the Mission:**

- Four Thematic Hubs (T-Hubs) in different domains across the country
- Wide-scale applications ranging from healthcare and diagnostics, defence, energy and data security

- Strengthening of indigenously building quantum-based computer
- Help develop magnetometers with high sensitivity in atomic systems and atomic clocks
- Support design and synthesis of quantum materials

A huge boost to National priorities like digital India, Make in India, Skill India, Stand-up India, Start-up India, Self-reliant India and SDGs

Quantum Technology

■ Works by using the principles of quantum mechanics (the physics of sub-atomic particles), including quantum entanglement and quantum superposition ■

Quantum Superposition

The ability of a quantum system to be in multiple states simultaneously

While digital computers store data as bits (the ones and zeros of binary), quantum computers use qubits that exist as one, zero or both at the same time

This superposition state creates a practically infinite range of possibilities, allowing for fast simultaneous and parallel calculations

Quantum Entanglement

■ It means the two members of a pair (Qubits) exist in a single quantum state

■ If you change the properties of one of them, the other changes instantly

■ This can be used to create a secure encryption key in quantum cryptography

■ If an eavesdropper tries to intercept the transmission, the entangled state of the particles will be disturbed, making the attempt detectable



Read more: [Quantum Technology](#), [National Quantum Mission](#)

The Greater Tunb, The Lesser Tunb, and Abu Musa Island

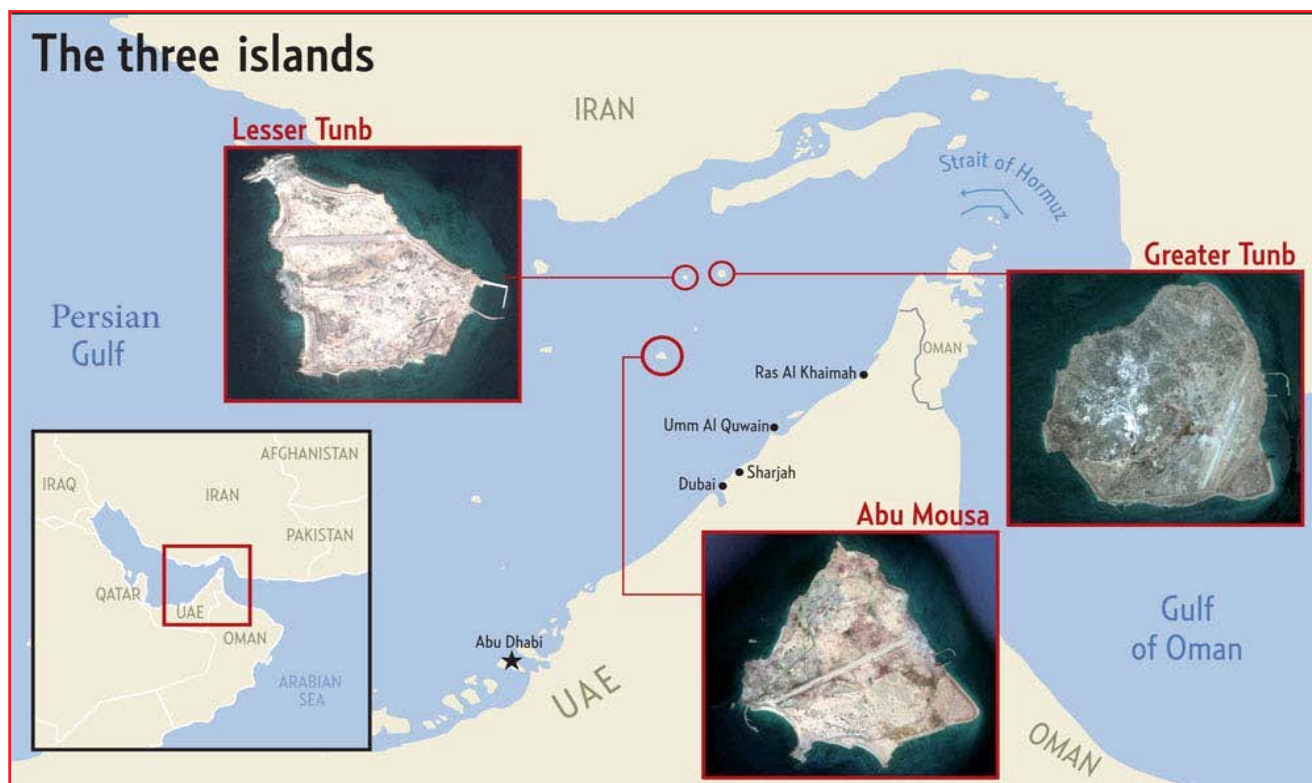
Recently, **Iran** called in China's ambassador to lodge a protest over a joint statement made by **China** and the **United Arab Emirates (UAE)** regarding the sovereignty of **the Abu Musa, Greater Tunb, and Lesser Tunb islands**.

- These are small disputed islands between **Iran** and **UAE**, located at the entrance of the **Strait of Hormuz** in the **Persian Gulf**.
- Iran claims that the islands were historically part of Persian territories until they were occupied by the British in the **early 20th century**.
- After British forces withdrew in **1971**, Iran took control of the three islands, considering them an integral part of its territory.
- According to the UAE, the **islands belonged to the emirate of Ras al-Khaimah** until Iran allegedly seized them by force just days before the formation of the **Emirati Federation in 1971** before UAE's independence from Britain.

Note:



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Read more: [Disputed Persian Gulf Islands](#)

Volkhov River

Recently, four medical students from Maharashtra studying at a university in **Russia** drowned in the **river Volkhov** near **St. Petersburg**.

- The Volkhov River is in **northwestern Russia**.
- It flows from **Lake Ilmen**, passes through **Novgorod**, and goes north-northeast into **Lake Ladoga** through a flat, swampy area.
- In the town of Volkhov, the **first hydroelectric station** in the **Soviet Union** was built in 1926.
- The Volkhov, in early times part of the important **Baltic Sea–Black Sea trade route**, is navigable only by small craft.
- As per the data released by the Ministry of External Affairs (MEA) in 2022, there were nearly **16, 500 Indian students in Russia**.

Read more: [India-Russia](#)

PM Kisan Nidhi

Recently, the Union Government released the seventeenth instalment of the **PM Kisan Nidhi** in the first decision of the newly sworn-in government.

- Under the **PM Kisan Nidhi scheme**, the centre transfers an amount of Rs 6,000 per year, in **three equal instalments**, directly into the bank accounts of **all landholding farmers** irrespective of the size of their land holdings.
- Launched in February 2019, it is a **Central Sector Scheme** with 100% funding from the Government of India.
- It is being implemented by the **Ministry of Agriculture and Farmers Welfare**, however the entire responsibility of identification of beneficiary farmer families rests with the State / UT Governments.

Read more: [PM-Kisan Scheme](#)

Note:

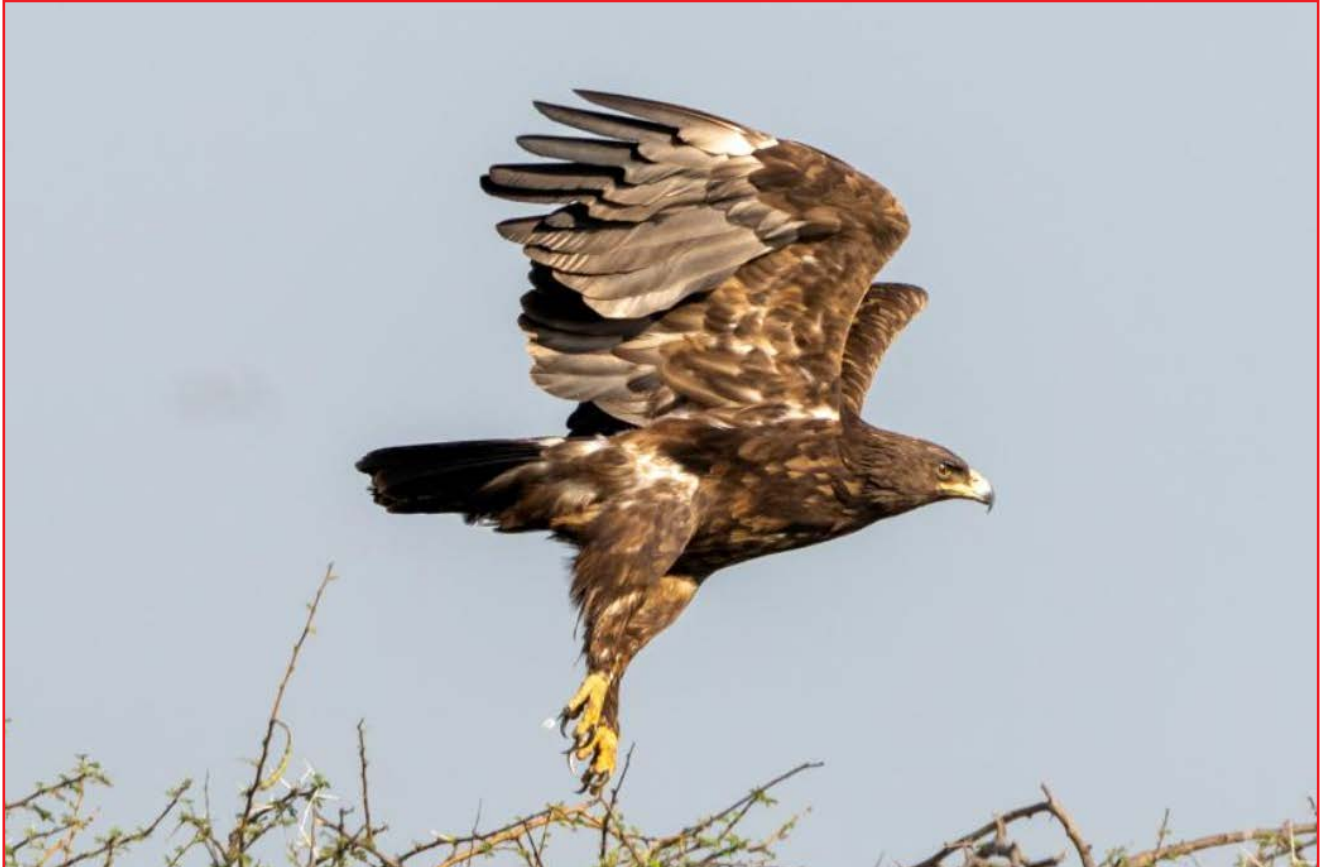


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Greater Spotted Eagles

A recent report revealed that the ongoing war between [Russia and Ukraine](#) has forced [greater spotted eagles](#), a large raptor species, to change their **migratory paths**.

- **IUCN Status:** Vulnerable
- **Geographical Distribution:** Mostly vanished from western and central Europe, with a limited breeding population in Polesia, Belarus.
- India's [Wildlife Protection Act, 1972](#): Schedule I (**Other eagle species**)



Read More: [Rare Steppe Eagle](#)

Nano-Fertilizer Plant at Kakinada

Recently, Coromandel International (an agriculture solutions provider) has opened a [nano-fertiliser](#) plant at its Kakinada complex in Andhra Pradesh.

- The nano fertilisers (such as [Nano DAP](#) and [Nano urea](#)) **ensure optimal nutrient delivery** and absorption by the plants, potentially replacing conventional fertilisers and increasing crop yield.
- **Nano fertilisers** are highly efficient types of fertilisers that provide nutrients like nitrogen to crops through **fine granules**.
 - They are made up of **nanoparticles**, which are particles that are **less than 100 nanometers in size**.
 - This small size allows the nanoparticles to **penetrate plant cells more easily** and **deliver nutrients directly to the plant**.

Note:



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Comparison item	Nano-fertilizers	Traditional-fertilizers
Solubility and dispersion of mineral nutrients	Improve solubility, reduced soil fixation & its absorption and increased nutrient bioavailability	Lower bioavailability to plants based on large size of particle and less its solubility
Nutrient uptake efficiency	Increase fertilizer efficiency (50-70%), uptake of nutrients by root and reduced applied fertilizer doses	Lower nutrient efficiency by roots (20-50% based applied nutrient)
Controlled release modes	High release rate and its pattern of nutrients due to its encapsulation or coating	High release of nutrients may cause toxicity and ecological problem in soil
Effective duration of nutrient release	Long duration of nutrient supply into soil up to 50 days	Short duration up to 10 days depends on nutrient
Loss rate of nutrients in applied fertilizers	Reduce loss rate of nutrients into soil by leaching due to nano-structured formulation	High loss rate by leaching and/or runoff process

Read more: [Nano Fertilisers](#), [Nano DAP](#)

Pump and Dump Scheme

Recently, the [Securities Exchange Board of India \(SEBI\)](#) has slapped a fine on 11 individuals for allegedly operating a 'pump and dump' scheme.

- A pump-and-dump scheme is a **type of manipulation activity** that involves **artificially inflating** the price of a stock through false and misleading information, only to sell the stock at the **inflated price** and leave investors with significant losses.
- This manipulative tactic is particularly prevalent in the **micro-cap and small-cap sectors**, where companies often have **limited public information** and trading volumes are lower.
- Under the SEBI guidelines, pump-and-dump schemes are **completely banned**.
- Participants in pump-and-dump manipulation can face **severe legal penalties**, including fines, disgorgement of profits, and imprisonment.

Note:



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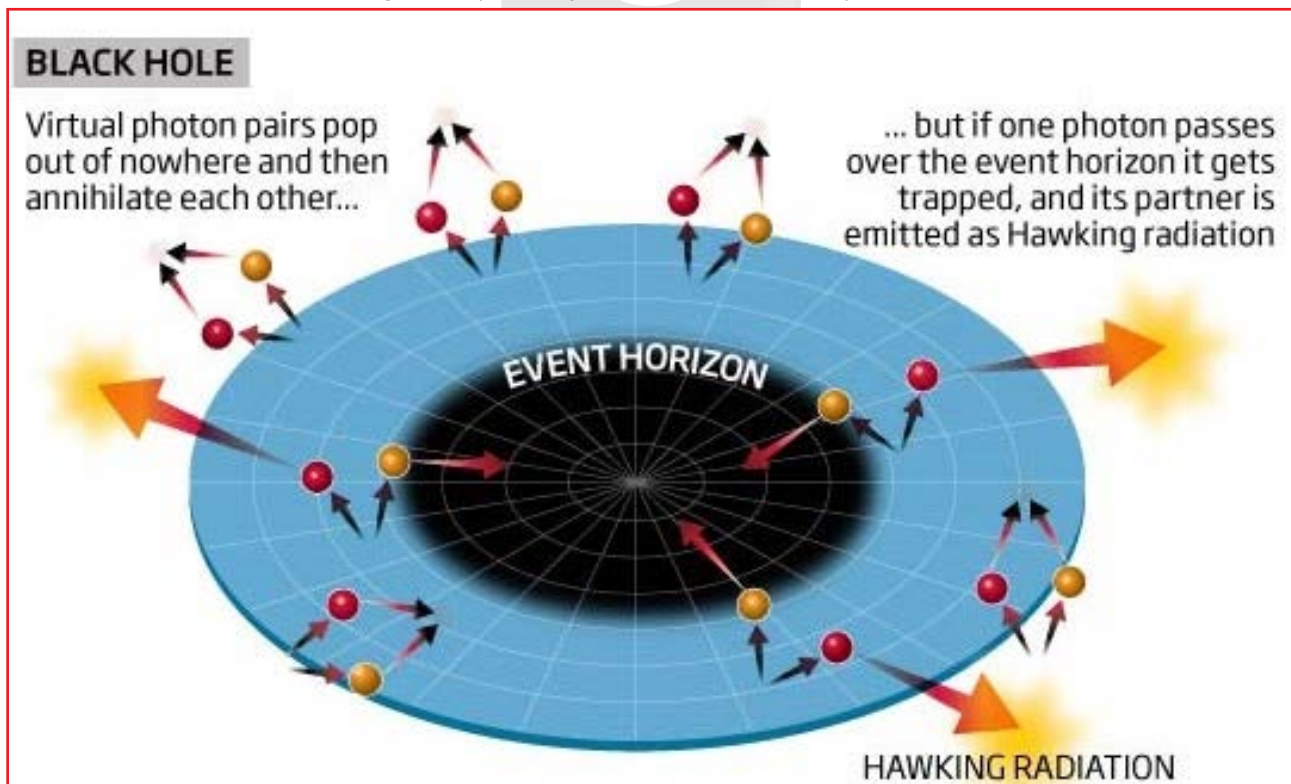
- These schemes **undermine confidence** in the **financial markets** making legitimate investors wary of potential fraud.
- **Pump and Dump scheme is different from Insider trading** as there is no misuse of confidential information of company in pump and dump scheme.
 - While, **Insider trading** is **buying or selling** a publicly traded company's stock by someone with information that could **substantially impact an investor's decision** to buy or sell a security that has not been made available to the public.

Read more: [Stock Market Regulation](#)

Hawking Radiation

Recently, scientists proposed that small, hot "morsel" **black holes**, ejected during larger **black hole mergers**, could emit detectable **high-energy photons**. These morsel black holes would emit **Hawking radiation** (named after Stephen Hawking) at an increasing rate as they lose mass, leading to their **explosive demise**.

- Smaller black holes are hotter and emit Hawking radiation faster than larger ones.
- **Gravitational waves** could detect black hole mergers, followed by **gamma-ray telescopes** spotting **high-energy photons** from morsel black holes as they emit Hawking Radiation.
 - It is predicted that the gravitational field of a black hole should **cause the creation of particles**, mostly photons directly from the vacuum of space.
- **Hawking's Radiation:**
 - It is the idea that black holes leak **thermal radiation**, gradually evaporating and ending their existence with a final explosion.
 - When one particle goes past the **event horizon**, it can't join back with its partner. The particles outside are known as Hawking radiation.
 - The event horizon is a region of space **beyond the black hole** or "point of no return."



Read more: [Black Hole Gaia BH3](#)

Note:

Software Technology Parks of India

Software Technology Parks of India (STPI) recently celebrated its **33rd Foundation Day**.

- Software Technology Parks of India (STPI) was established and registered as an **autonomous society** under the **Societies Registration Act 1860**, in 1991, under the Ministry of Electronics & Information Technology.
- The objective was to implement **Software Technology Park (STP)** and **Electronics Hardware Technology Park (EHTP)** schemes and set up and manage infrastructure facilities.
- STPI is nurturing the pan India start-up ecosystem through its initiatives like **Centres of Entrepreneurship (CoEs)** & **Next Generation Incubation Scheme (NGIS)**.
 - STPI launched a networking and resource discovery platform (**SayujNet**) and **STPI Workspace portal (STPI-Workspace)**.
- The STPI announced "**Ananta**", which will be a **hyperscale cloud** made by Indians for Indians.
 - Apart from the conventional **Compute Infrastructure Services (IAAS)**, Ananta will also offer **PAAS** (platform as a service), **SaaS** (software as a service) and **graphics processing unit (GPU)** based services.
- The **DeepTech Knowledge Report** on, '**Cutting-Edge Tech Forging India as a Software Product Nation**', was also released to provide strategic insights into the current state of cutting-edge technologies in India.

Read more: [STPI Units](#)

Leader of Opposition

Recently, the Congress Working Committee (CWC) has unanimously adopted a resolution to select the Leader of the Opposition (LoP) in the **18th Lok Sabha**.

Leader of the Opposition (LOP):

- The leader of the **largest opposition party** having **not less than one-tenth seats** of the total strength of the Lok Sabha is recognised as the leader of the Opposition.
- He will be a **member** of crucial committees such as **Public Accounts (Chairman)**, **Public Undertakings**,

Estimates and also a member of several **Joint Parliamentary Committees**.

- He is entitled to be a member of various **selection committees** responsible for appointing heads of statutory bodies like the **Central Vigilance Commission**, the **Central Information Commission**, the **CBI**, the **NHRC**, and the **Lokpal**.
- He provides constructive criticism of the government policies and to provide an alternative government.
- The leader of Opposition in **both the Houses** were accorded **statutory recognition under the Salaries and Allowances of Leader of Opposition in Parliament Act, 1977** and are entitled to the salary, allowances and other facilities equivalent to that of a **cabinet minister**.
- The office of the leader of the opposition is **not mentioned in the Constitution**.

Read more: [17th Lok Sabha](#)

Cryonics

Recently, **Southern Cryonics (a company in Australia)** announced that it has successfully **frozen its first client**, with the hope of bringing him back to life in the future.

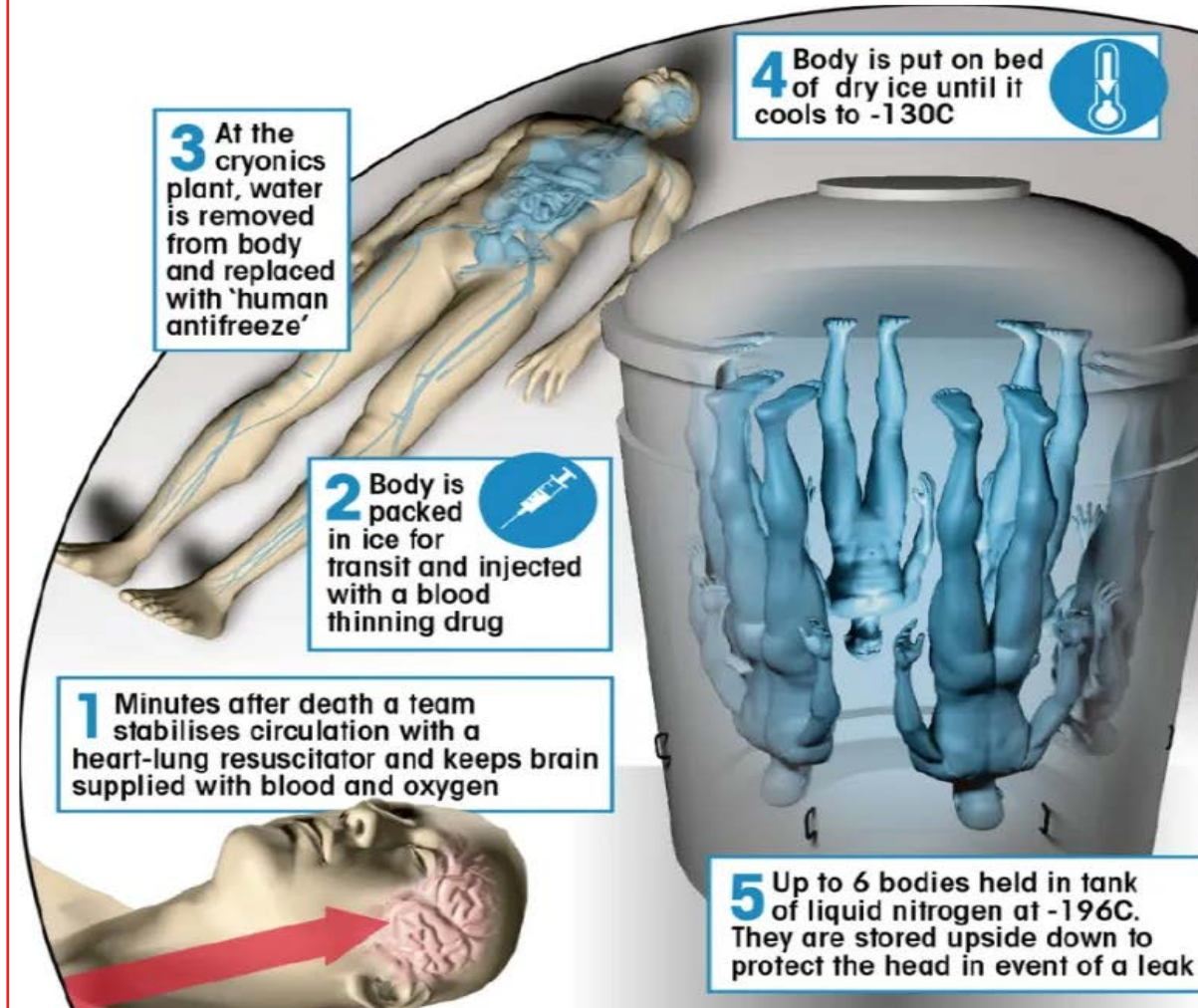
- The first patient was an 80-year-old man, who died in May 2024 at a hospital in Sydney.
- **Cryonics** involves keeping the **human body** at **cryogenic temperatures (-196°C)** in the hopes that one day, **medical science** will be able to **repair the molecular damage caused by ageing and disease** and bring the patient back to full health.
 - The process involves initially cooling the man's body to 6 degrees Celsius with ice, using a **heart-lung bypass machine** to circulate a **preserving solution** and lower the temperature.
 - Further, the body is wrapped in a **special sleeping bag** and **packed in dry ice** to reach -80 degrees Celsius, and then gradually lowering the temperature to -200 degrees Celsius in a **cooling chamber** before placing in a pod and storing it upside down in a **specialised tank**.
- However, the concern lies in the **scientific and ethical aspects** of reviving a whole human body, along with the **extended timeframe** required for such advancements.

Note:



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HOW THE PROCESS OF CRYONICS WORKS



Skilling Potential of Tourism

The Ministry of Tourism has been implementing the [Hunar se Rozgar Scheme](#) (skill to employment) since 2006 and it needs to relaxation in bureaucratic norms to boost participation.

Hunar se Rozgar Scheme:

- The **Hunar se Rozgar** scheme has significant potential to skill and employ youth in the tourism sector.
- The **primary goal of the scheme** is to offer **short-term vocational training** to **non-literate, semi-literate, and educated unemployed youth** aged **18-28 years** to improve their skills and employability.
- It enables **less-educated youth** to **pursue formal employment** after brief training.
- This scheme gives **economic importance to tourism** and the **potential to promote cultural heritage**.
- The scheme primarily attracts participants from **northern states**.

Read More: [Revamping India's Tourism Sector](#)

Note:



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Syndicated Loan

Recently, a private **Non-Banking Financial Company (NBFC)** announced that it has raised USD 425 million and EURO 40 million through a syndicated loan.

- It is a three-year **external commercial borrowing** facility structured as a social loan that would be used to **empower small entrepreneurs** and **vulnerable groups** across India.
 - A **syndicated loan** is financing offered by a syndicate made up of a **group of lenders** that work together to provide funds for a borrower.
 - The borrower can be a corporation, a large project, or a sovereign government.
 - Syndicated loans **involve large amounts of money**, spreading the risk among several financial institutions to reduce the impact if the borrower fails to repay.
 - **External Commercial Borrowings (ECBs)** denote Indian companies **borrowing funds from foreign sources**, such as loans, bonds, or financial instruments, to finance business expansion, asset acquisition, or existing debt repayment.
- Read more: [External Commercial Borrowings \(ECBs\)](#), [Non-Banking Financial Company \(NBFC\)](#)

Australia Opens Armed Forces to Non-Citizens

Australia will allow **non-citizen permanent residents** who have been living in Australia for at least 12 months to join the Australian armed forces starting in July 2024.

- This is due to Australia struggling to meet recruitment targets for its military.
- Citizens from the **Five Eyes countries** will be favoured to join.
 - The **Five Eyes** is an **intelligence alliance** comprising **Australia, Canada, New Zealand, the United Kingdom and the US**.
 - These countries are parties to the multilateral **UK-USA Agreement**.
- Australia is **bolstering its military** by ramping up recruitment in **response to a perceived growing threat from China** and a current defence personnel count of around 90,000.



Read more: [India-Australia Relations](#)

Note:

Jolfa

Recently, **Iran's President** and Foreign Minister died, following a **helicopter crash** in the Jolfa, East Azerbaijan province of Iran.

- The helicopter was a **US-made Bell-212 helicopter**, known for its reliability despite its age.

Jolfa:

- Jolfa is a city in the Central District of **Jolfa County**, East Azerbaijan province, Iran.
- It serves as the **capital of both the county and the district**.
- Jolfa is separated by the **Aras River** from the **town of Julfa** on the **Azerbaijan** side of the border.



Read more: [Iran-Israel Conflict](#)

ABHA-Based Scan and Share Service

Recently, the **National Health Authority (NHA)** has achieved a milestone of generating over 3 crore tokens for **Out-Patient Department (OPD)** registrations through the **ABHA-based Scan and Share service**.

- It enables patients to conveniently **register for OPD appointments** by **scanning a QR code** displayed at the OPD registration counter.
- It has **eliminated the need to wait in long queues** for appointments, benefiting vulnerable groups such as the elderly, pregnant women, and those with mobility challenges.
- Uttar Pradesh has generated the maximum tokens followed by Andhra Pradesh, Karnataka and Jammu and Kashmir.
- This service was launched under the **Ayushman Bharat Digital Mission (ABDM)** in 2022.
- ABHA is a unique **14-digit number** used to link all the **health records** of a person, which intends to create a **digital health ecosystem** & aims to promote the digitisation of healthcare.

Note:



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THE ABDM ECOSYSTEM



Read More: [Ayushman Bharat Health Accounts](#)

World Wealth Report 2024

India's **high net-worth individuals (HNWIs)** increased by **12.2% in 2023** as compared to 2022, according to the Capgemini World Wealth Report. There are now **3.589 million** HNWIs in the country.

- The **financial wealth** of India's HNWIs increased by **12.4%** in 2023 to **USD 1,445.7 billion**, up from USD 1,286.7 billion in 2022.
- **Globally, HNWI wealth and population** rose by **4.7%** and **5.1%** in 2023.
- **In 2023, India's:**
 - Unemployment rate dropped from 7% in 2022 to 3.1% in 2023, alongside a 7.3% economic growth.
 - Market capitalisation surged by 29.0%, compared to a 6% increase in 2022.
 - National savings as a percentage of GDP rose from 29.9% in 2022 to 33.4% in 2023.
- HNWIs are individuals with investable assets of **USD 1 million or more**, excluding their primary residence, collectables, consumables, and consumer durables.

Read More: [Ultra-high Net Worth Individuals in India](#)

Note:

UN's WSIS 2024 "Champion" Award

Recently, C-DOT (Centre for Development of Telematics), the telecom R&D centre of the Government of India, won the [United Nation's WSIS 2024 "Champion" Award](#) in the "Mobile-Enabled Disaster Resilience through Cell Broadcast Emergency Alerting" category.

- The **World Summit on the Information Society (WSIS)+20 Forum 2024** was conducted by the [International Telecom Union \(ITU\)](#).
 - ITU is a UN specialised agency for information and communication
 - technologies – ICTs.
 - Founded in 1865, it is Headquartered in Geneva, Switzerland.
 - India has remained a regular member of ITU since 1952.
- The award recognized C-DOT's commitment to leveraging technology for societal impact and aligns with global initiatives like [Early Warnings for All \(EW4All\)](#) and the ITU's **Common Alerting Protocol (CAP)**.
- At the [AI for Good Global Summit](#) (organised along with WSIS), C-DOT showcased its AI-powered solutions such as **ASTR (AI and Facial Recognition powered Solution for Telecom SIM Subscriber Verification)** for detecting fraudulent/unauthorised mobile connections.

Read More: [Emergency Alert System, Cell Broadcast Technology](#)

System for Pension Administration Raksha (SPARSH)

Recently, the **Defence Accounts Department (DAD)** of the **Ministry of Defence** has signed MoUs with **several banks** to onboard them as **SPARSH Service Centres**.

- This will provide **last-mile connectivity to pensioners**, especially in remote areas.

- Through these centres, defence pensioners can **update their profile, register grievances, digital annual identification, data verification, and access detailed information** regarding their monthly pension.
- System for Pension Administration Raksha (SPARSH):
 - It is an **integrated web-based system** for the automation of sanctions and disbursement of defence pensions.
 - This web-based system processes pension claims and **credits pensions directly into the bank accounts of defence pensioners** without relying on any external intermediary.
 - It focuses on **efficiency, responsiveness, and transparency**.

Read More: [SPARSH: System for Pension Administration Raksha](#)

Insolvency Professionals (IPs)

Recently, the [Insolvency and Bankruptcy Board of India \(IBBI\)](#) has issued new guidelines for appointing [insolvency professionals \(IPs\)](#) as interim resolution professionals, liquidators, and bankruptcy trustees.

- Under the new guidelines, a **panel of IPs will be set up with a validity of six months**.
- The panel will be shared with the [National Company Law Tribunal](#) and the **Debt Recovery Tribunal (DRT)** to avoid administrative delays.
- To qualify for the panel, IPs **must not have any ongoing disciplinary proceedings** or convictions in the past three years.
- IPs will hold an **authorisation for assignment**, which will be valid till the validity of the panel (6 months).
- The panel will be prepared based on the volume of completed assignments and registration dates, giving priority to those with more experience.
- The [Insolvency and Bankruptcy Board of India \(IBBI\)](#) operates under the [Ministry of Corporate Affairs](#) and aims to **enhance the efficiency of the insolvency resolution process** by ensuring a pool of qualified professionals for immediate appointment.

Note:



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Insolvency and Bankruptcy Code

Introduction

- Insolvency and Bankruptcy Code (IBC), 2016 provides a time-bound process for resolving insolvency in companies and among individuals
- Provides for speedier resolution and higher recoveries
- Insolvency:** individuals or companies are unable to repay their outstanding debt
- Bankruptcy:** a legal declaration of one's inability to pay off debts

Objectives of IBC

- To consolidate and amend all existing insolvency laws in India
- To simplify and expedite the Insolvency and Bankruptcy Proceedings in India
- To protect the interest of creditors including stakeholders in a company
- To revive the company in a time-bound manner
- To promote entrepreneurship
- To get the necessary relief to the creditors and consequently increase the credit supply in the economy
- To work out a new and timely recovery procedure to be adopted by the banks, financial institutions or individuals
- To set up an Insolvency and Bankruptcy Board of India

IBC: Salient Features

- Covers all individuals, companies, Limited Liability Partnerships and partnership firms.
- Adjudicating authority:
 - National Company Law Tribunal (NCLT) for companies and LLPs
 - Debt Recovery Tribunal (DRT) for individuals and partnership firms
- Insolvency and Bankruptcy Board of India to exercise regulatory oversight over insolvency professionals (IPs), insolvency professional agencies (IPAs) and information utilities (IUs)
- IPAs handle the commercial aspects of insolvency resolution process
- IPAs develop professional standards, code of ethics
- IUs collect, collate, authenticate and disseminate financial information to be used in insolvency, liquidation and bankruptcy proceedings
- Enabling provisions to deal with cross border insolvency

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Read more: [Concerns over Insolvency and Bankruptcy Code, 2016](#)

Ajrakh Craft and Bela Block Printing

Recently, Ajrakh, a craft of resist-dyeing from Kutch, received a [Geographical Indication \(GI\)](#) tag, providing legal protection to arts from specific geographical regions.

- Ajrakh, a centuries-old **block-printed textile art** from Kutch, Gujarat, uses natural dyes and intricate designs to tell stories on cotton fabric.
- Ajrakh textiles consisting of vibrant colours like indigo, red and white, are traditionally worn by **nomadic communities** like Rabaris, Maldharis, and Ahirs.

Bela Block Printing:

- It is another craft from the same region of Kutch, which is **lesser-known** and obscure, mainly practised by the Khatri community.
- It is a **traditional textile art** known for its bold designs, striking colour combinations, and **graphic motifs such as elephants and horses** on textured fabrics.

- It has also been listed as an **endangered craft** by the [Office of the Development Commissioner for Handicrafts](#), the national agency that works to promote and export Indian handicrafts.



Read More: [Geographical Indication \(GI\)](#)

Netherlands Becomes India's 3rd Largest Export Destination

The Netherlands has become India's **3rd largest export destination in the world** in 2023-24, after the US and UAE.

- It is among the **top trading partners of India in Europe**, after Germany, Switzerland, the UK and Belgium.
- **Exports** to the Netherlands grew by about **3.5%** reaching **USD 22.36 billion in 2023-24**, from USD 21.61 billion in 2022-23.
 - The Netherlands constituted **2.36%** of India's total trade in 2022-23.
- Netherlands is also a **major investor in India**.
 - India received about USD 5 billion in **Foreign Direct Investment (FDI)** from the Netherlands. It was \$2.6 billion in 2022-23.
- **About Netherlands:**
 - **Bordering Countries:** North Sea to the north and west, Germany to the east, and Belgium to the south.
 - **Capital:** Amsterdam (official), The Hague (seat of government).
 - **Form of Government:** Constitutional Monarchy with a Parliamentary system.
 - **Major Rivers:** Rhine, Meuse, and Scheldt.

Note:



Read More: [India and Netherlands Relations](#)

Global Soil Partnership's 12th Plenary Assembly

The **Global Soil Partnership (GSP)**, established in **December 2012** to position soils on the **Global Agenda** and promote **inclusive policies and soil governance** has initiated a pivotal meeting urging immediate action amid global crises.

- The **Food and Agriculture Organization (FAO)** of the **United Nations** hosts the partnership, including FAO Members and over 700 partners.
- The GSP is committed to improving and maintaining the **health of at least 50% of the world's soils by 2030**, by ensuring **sustainable soil management** based on the **three "Rs": reduce, re-use, and renew**.
- **Key Initiatives of GSP:**
 - **VACS Initiative:** Under the VACS initiative, **FAO is implementing the Soil Mapping for Resilient Agrifood Systems (SoilFER) project** in Central America and African countries.
 - **Other Initiatives:** Include Measuring, Reporting, and Verifying soil health, **Global Soil Laboratory Network quality certificates**, **Conservation Agriculture**, and the role of healthy soils in agrifood systems transformation.
- **Achievements:**
 - Implementing **World Soil Day (5th December)**
 - International Year of Soils 2015
 - Revised World Soil Charter

Read more: [World Soil Day](#)

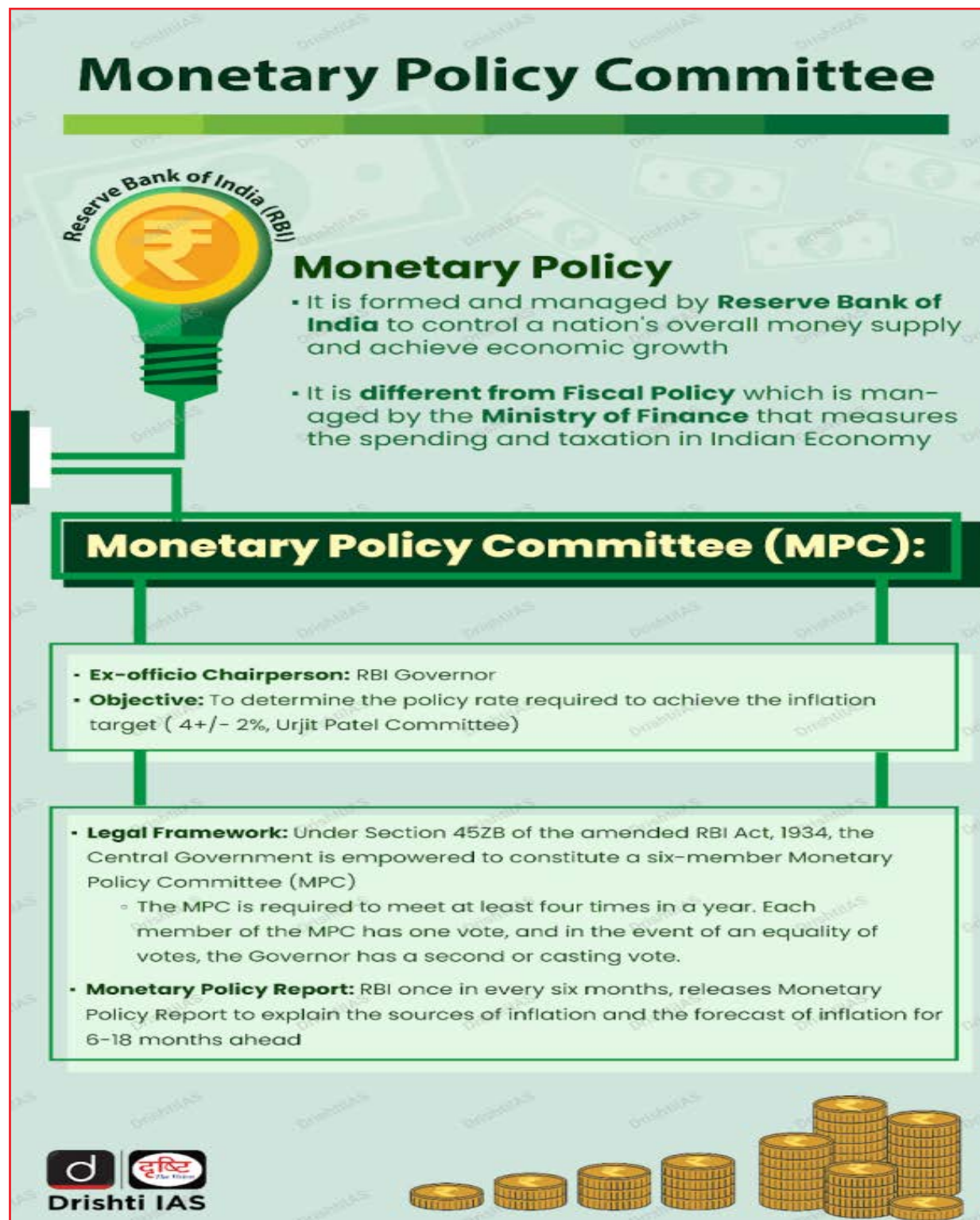
Note:



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Repo Rate Unchanged for 8th Consecutive Time

Recently, the **Reserve Bank of India (RBI)** decided to keep the policy rate unchanged at 6.5% for the eighth consecutive time.



Note:

- The **Monetary Policy Committee (MPC)** will maintain a tight control on inflation and remain **watchful of elevated food inflation** amid the expectation of a **normal monsoon**.
- The rate increase cycle was paused in April last year after six consecutive rate hikes, totalling 250 basis points since May 2022.
- The RBI raised the growth projection to 7.2% from an earlier estimate of 7% for the current financial year.
- **Inflation targeting** in India is a monetary policy framework adopted in 2016, where the Central Government, in consultation with the RBI, sets a target **inflation rate** once in five years.

Read more: **Monetary Policy Committee (MPC)**

Unified India Organic Logo

The **Food Safety and Standards Authority of India (FSSAI)** and the **Agricultural and Processed Food Products Export Development Authority (APEDA)** have jointly developed a “**Unified India Organic**” logo to **replace the India Organic and Jaivik Bharat logos**.

- The new logo has been developed to bring **uniformity and convergence** in the implementation of Indian regulations by the **National Programme for Organic Products (NPOP)** and **FSSAI**.
- The **India Organic logo** was used on organic products **complying with the NPOP**, while **Jaivik Bharat** was used on organic **products certified by FSSAI**.
- The certification bodies will get **three months** of transition time for implementation which will be given from the date the logo is notified.
- **FSSAI** is an **autonomous statutory body** established under the **Food Safety and Standards Act, of 2006**.
 - It is responsible for **protecting and promoting public health** by regulating food safety and quality in India, operating under the **Ministry of Health & Family Welfare**.

- **APEDA** functions under the **Ministry of Commerce and Industry** and is responsible for **export promotion and development** of the **scheduled products** viz. fruits, vegetables and their products etc.

Read more: **FSSAI, APEDA, Organic Food Regulatory System in India**

Living Will and Passive Euthanasia

Recently, a judge serving on the **Goa Bench of the Bombay High Court**, registered a living will’ - an advanced medical directive for his family for when he cannot make his own decisions.

- The background of “**Living Wills**” can be traced back to the Supreme Court ruling in the case **Common Cause vs Union of India (2018)**.
 - In 2018, the **SC** reaffirmed the right to die with dignity as a **fundamental right under Article 21 (passive euthanasia contingent upon ‘living will’)**.
 - Previously in 2011, the SC recognised passive euthanasia in the Aruna Shanbaug case for the first time.
 - **Passive euthanasia** refers to the practice of allowing a person to die by **withholding or withdrawing medical treatments** that are necessary to maintain life.
- In **2023**, the Supreme Court eased the process for passive euthanasia by changing certain existing guidelines for living wills. According to the guidelines, a person who wants to make a “living will” must draft it as per the reference format in the presence of two witnesses.
 - The will then has to be duly certified by a **gazetted officer or a notary** and forwarded to the main Mamlatdar of the taluka, who shall then send it to the nodal officer appointed by the **District Collector** for safe custody.

Note:



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EUTHANASIA

ABOUT

- The practice of an individual deliberately ending their life; to get relief from an incurable condition/intolerable pain

ARGUMENTS FOR

- Patient's freedom of choice
- Right to die with dignity
- More humane to end the suffering
- Shortens the grief of patient's loved ones

ARGUMENTS AGAINST

- Unacceptable from moral, religious perspectives
- Euthanasia cannot be properly regulated
- Guilt-ridden patients may feel bound to give consent

ACTIVE EUTHANASIA

- An active intervention to end a person's life with substances or external force, (e.g. - by a lethal injection)

PASSIVE EUTHANASIA (PE)

- Withdrawing essential life support/treatment keeping a terminally ill person alive

EUTHANASIA - LEGALITY IN INDIA

P RATHINAM V UNION OF INDIA (1994)

- SC challenged the constitutional validity of IPC Section 309 (penalty for attempt to suicide)

SMT. GIAN KAUR VS THE STATE OF PUNJAB (1996)

- SC overturned its 1994 judgement and held that Right to Life (Article 21) did not include the Right to Die (which must **not be mistaken with Right to Die with Dignity**)

ARUNA RAMCHANDRA SHANBAUG V UNION OF INDIA (2011)

- SC allowed PE for Aruna Shanbaug and made a distinction between 'active' and 'passive', and allowed the latter in "certain situations"

COMMON CAUSE V UNION OF INDIA & ANR. (2018)

- SC legalised Passive Euthanasia claiming it contingent upon the person having a '**living will**'
- If a person does not have a living will, his/her family members can make a plea before the HC to seek permission for PE

Recently, the SC has agreed to significantly ease the procedure for passive euthanasia by altering the existing guidelines for 'living wills' (laid down in 2018 case)

Read More: [SC Eases Norms for Passive Euthanasia](#)

Dissolution of the 17th Lok Sabha

The **Union Cabinet** chaired by the **Prime Minister** recommended the **dissolution of the 17th Lok Sabha**.

- According to **Article 83(2)** of the constitution, the **completion of five years** from the first day of its meeting **amounts to the dissolution of the Lower House of Parliament**.
 - A dissolution ends the very life of the existing House and a **new House is constituted after general elections are held**.

Note:

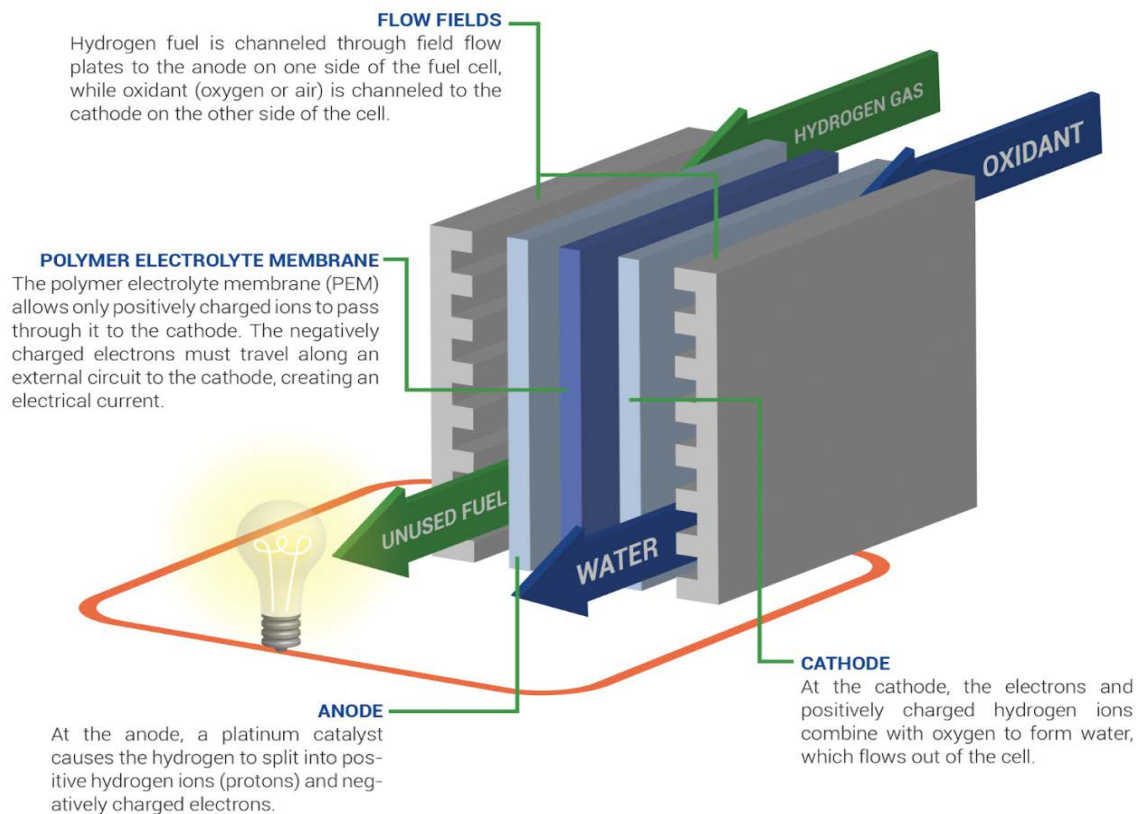
- However, the Lower House can also be **dissolved earlier** by the **President** on the advice of the Prime Minister.
 - It can also be dissolved if the President feels that **no viable government** can be formed after the **resignation or fall of the previous government**.
 - **Rajya Sabha**, being a permanent House, **is not subject to dissolution**.
- Read more: [Lok Sabha](#)

Indian Army Received Hydrogen Buses

Recently, the **Indian Army** has collaborated with **Indian Oil Corporation Limited (IOCL)** for demonstration trials of **Hydrogen Fuel Cell Bus** technology.

- The Indian Army also received its first **Hydrogen Fuel Cell Bus**, marking stride towards cleaner and greener transport solutions.
- Bus has a seating capacity of 37 passengers and a mileage of 250-300 km on a 30 kg onboard Hydrogen fuel tank.
- Earlier, on 21st March 2023, the Indian Army became the first government entity to sign an MoU with **NTPC Renewable Energy Ltd** for installation of **Green Hydrogen** based Microgrid Power Plants along the Northern Borders.
- **Hydrogen fuel cell technology** provides a clean and efficient solution. It generates **electricity through a reaction between hydrogen gas and oxygen**, with water vapour as the sole byproduct.
 - This makes it a compelling alternative to traditional fuels, especially considering the abundance of hydrogen on Earth.

HOW DO HYDROGEN FUEL CELLS WORK?



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www.setra.com

Read more: [Hydrogen Fuel Cell](#), [India's first Indigenous Hydrogen Fuel Cell Ferry](#), [First Green Hydrogen Fuel Cell Bus](#)

Note:



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Exchange Traded Funds

Hong Kong has launched Asia's first **Spot Bitcoin** and **Ether Exchange-Traded Funds (ETFs)** in a step toward becoming a Virtual Asset Investment Hub of the Region.

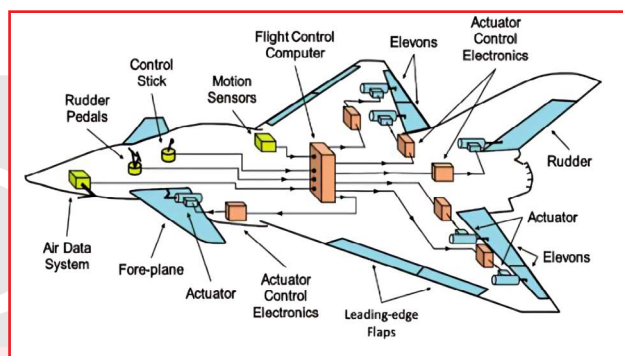
- **Bitcoin** is the world's first and most well-known **Cryptocurrency**.
 - **Cryptocurrency** is a type of **digital or virtual currency** that uses cryptography for security and operates on decentralised networks based on blockchain technology.
 - **Spot Bitcoin** refers to the **immediate purchase or sale of Bitcoin** at the current market price.
 - It involves **real-time transactions** where buyers and sellers exchange Bitcoin for **fiat currency** (such as US dollars) or other cryptocurrencies.
- **Exchange-traded funds (ETFs)** are investment funds that are traded on stock exchanges, much like individual stocks.
 - They are designed to **track the performance** of a particular index, commodity, currency, or a mix of asset classes.
 - ETFs offer investors a way to **diversify their portfolios** without having to buy individual securities.
- The ETFs can be traded in both **Hong Kong Dollars** and **US dollars**, and also in the **Chinese Yuan**.
- Hong Kong ETFs might encourage other nations to approve Cryptocurrency ETFs and could help promote the wider adoption of digital assets.

Read more: [Cryptocurrency](#)

Leading Edge Actuators & Airbrake Control Module

Recently, the **Defense Research and Development Organisation (DRDO)**'s **Aeronautical Development Agency (ADA)** handed over the first batch of the indigenous **Leading Edge Actuators and Airbrake Control Module** to **Hindustan Aeronautics Limited (HAL)**.

- The successful completion of flight trials for **Leading Edge Actuators and Airbrake Control Modules** has paved the way for production clearance, enabling HAL to gear up for equipping the **Mk-1A variant of Light Combat Aircraft - Tejas**.
 - It used to control the leading edge slats on aircraft wings.
- These are developed in collaboration with **Research Centre Imarat (RCI)**, Hyderabad, and **Central Manufacturing Technology Institute (CMTI)**, Bengaluru.
 - **RCI** is a Hyderabad based (**DRDO**) premier lab.
 - **CMTI** is a Research & Development organization under the aegis of the Ministry of Heavy Industries.



Read more: [DRDO hands over first batch of indigenous Leading Edge Actuators & Airbrake Control Module to HAL for LCA Tejas Mk1A](#)

PraVaHa Software

Recently, the **Indian Space Research Organisation (ISRO)** has developed Computational Fluid Dynamics (CFD) software named **Parallel RANS Solver for Aerospace Vehicle Aero-thermo-dynamic Analysis (PraVaHa)**.

- PraVaHa is a software tool specifically designed to analyse the **aerodynamics and thermodynamics** of aerospace vehicles like launch vehicles and winged and non-winged re-entry vehicles.
- It **simulates how air flows** around aerospace vehicles and **calculates the resulting forces** and heat effects which is essential to design the shape, structure, and Thermal Protection System (TPS) required for these bodies.

Note:

- It has been extensively used in the [Gaganyaan program](#) for aerodynamic analysis of [human-rated launch vehicles](#), such as HLVM3, [Crew Escape System \(CES\)](#), and Crew Module (CM).
- Any aerospace vehicle while moving through the [Earth's atmosphere](#) during **launch or re-entry** is subjected to severe aerodynamic and aerothermal loads in terms of **external pressure and heat flux**.
 - **Computational Fluid Dynamics (CFD)** is one such tool to **predict the aerodynamic and aerothermal loads** which solve numerically the equations of conservation of mass, momentum, and energy along with the equation of state.

Read more: [Gaganyaan program](#)

Supreme Court Mandates Self-Declaration by Advertisers

Recently, the [Supreme Court of India](#) has ordered that all advertisers/Advertising Agencies must submit a '**Self-Declaration Certificate**' before publishing or broadcasting any advertisement.

- This aims to ensure **transparency, consumer protection, and responsible advertising practices**.
- These will apply to all new advertisements from 18th June 2024.
- It will also ensure compliance with all relevant regulatory guidelines, including those given in **Rule 7 of the Cable Television Networks (CTN) Rules, 1994** and the **Norms of Journalistic Conduct of the Press Council of India**.
 - **Rule 7 of CTN** provides that advertisements must comply with Indian laws and avoid offending the morality, decency, and religious sensitivities of viewers.
- A certificate signed by an authorised representative of the advertiser can be submitted in **Broadcast Seva Portal** (For TV/Radio Advertisements) and [Press](#)

[Council of India portal](#) (For Print and Digital Media Advertisements).

- Advertisers need to provide proof of uploading the Self-Declaration Certificate to the relevant broadcaster, printer, publisher, or electronic media platform for their records.

Read more: [Regulating Misleading Advertisements in India](#), [Changes in Cable Television Network Rules](#), [Disclosure of Journalistic Sources](#)

Kenya-India Collaboration on Cheetah Conservation

Recently, a **Kenyan** delegation visited India to discuss collaboration on **wildlife conservation efforts**, with a particular emphasis on the ongoing Cheetah Reintroduction Project ([Project Cheetah](#)).

- The delegation presented a draft MoU to the [National Tiger Conservation Authority \(NTCA\)](#) proposing collaboration.
 - It along with **capacity building and knowledge sharing**, also included provisions for supplying equipment to Kenyan forest rangers to enhance field patrolling and wildlife preservation efforts.
- **Project Cheetah:**
 - The **Phase-1** of the project started in **2022**, to restore the population of cheetahs, which were declared extinct in the country in 1952.
 - It involves the translocation of cheetahs from South Africa and Namibia to **Kuno National Park**.
 - The project is implemented by the [NTCA](#) in collaboration with the Madhya Pradesh Forest Department, and [Wildlife Institute of India \(WII\)](#).
 - Under **Phase-2** of the Project India is considering sourcing cheetahs from **Kenya** due to similar habitats.
 - Cheetahs will be translocated to **Kuno National Park** and **Gandhi Sagar Wildlife Sanctuary** (Madhya Pradesh).

Note:



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Cheetah

Common Name – Cheetah

Scientific Name – *Acinonyx jubatus*

- *Acinonyx jubatus jubatus* (African Cheetah)
- *Acinonyx jubatus venaticus* (Asiatic Cheetah)



Reintroduction of Cheetah to India:

- The "Action Plan for Introduction of Cheetah in India" was released by MoEF&CC at the 19th meeting of the National Tiger Conservation Authority (NTCA) (January 2022).
 - Such a plan was first proposed in 2009.
- In September 2022, eight cheetahs landed in India from Namibia.
 - The 8 cheetahs have been relocated to the Kuno-Palpur National Park, Madhya Pradesh.
- The relocation of cheetahs to India from Namibia is the world's first inter-continental large wild carnivore translocation project.

Slightly brownish and golden skin; thicker than the Asiatic Cheetahs

More prominent spots and lines on the face

Found all over the African continent

IUCN Red List Status – Vulnerable



African Cheetah

Slightly smaller than the African ones.

Pale yellowish fawn coloured skin – more fur under body, belly specifically.

Found only in Iran; the country claims there are only 12 of them left. Year 1952 – Asiatic Cheetah officially declared extinct from India.

IUCN Red List Status – Critically Endangered



Asiatic Cheetah



Read more: [One Year of Project Cheetah](#), [Reintroduction of Cheetah](#), [Cheetah Cubs in Kuno National Park](#)

Note:

Preston Curve

The Preston curve refers to the **empirical relationship** between **life expectancy** and **per capita income** in a country, proposed by **American sociologist Samuel H. Preston** in 1975.

- The curve shows that **people in richer countries generally have longer life spans** compared to those in poorer countries, likely due to **better access to healthcare, education, nutrition**, etc.
- As a poor country's per capita income rises, its life expectancy increases significantly initially.
 - For example, **India's per capita income** rose from Rs 9,000 in 1947 to Rs 55,000 in 2011, while **life expectancy increased from 32 to 66 years**.
- However, the positive relationship between per capita income and life expectancy starts to flatten out beyond a certain point, as the **human lifespan cannot be increased indefinitely**.
- The positive relationship shown by the Preston curve applies can also be applied to **other development indicators** like **infant/maternal mortality**, education, healthcare, etc.

Read more: [Lorenz Curve and Gini Coefficient](#)

China's Chang'e-6

Recently, **China's Chang'e-6 probe** successfully **collected rock and soil samples** from the **moon's far side** and lifted off from the lunar surface to return to Earth.

- The probe's landing site was the **South Pole-Aitken Basin**, an impact crater created more than 4 billion years ago, which is 13 kilometres deep and has a diameter of 2,500 kilometres.
 - The landing site for **Chandrayaan-3** was near the lunar **south pole**.

- The mission to the **moon's far side** is challenging due to the lack of direct communication with Earth, requiring a relay satellite, and the rugged terrain with fewer flat landing areas.
- The mission is the sixth in the **Chang'e moon exploration program**, which is named after a **Chinese moon goddess**. It is the second design to bring back samples, following the **Chang'e 5, which did so from the near side in 2020**.
- China **aims to land astronauts** on the moon before 2030, and this mission is a significant step towards that goal.

Read more: [Chandrayaan-3](#)

Nelson Mandela Award for Health Promotion

Recently, the **National Institute of Mental Health and Neuro Sciences (NIMHANS)**, Bengaluru, has been conferred the prestigious **Nelson Mandela Award for Health Promotion** by the **World Health Organization (WHO)** for the year 2024.

- It showcases the country's commitment to **addressing mental health challenges** and ensuring accessible **mental health services for all**.
- India has made significant progress in mental health with the establishment of a tele-mental health helpline (**Tele MANAS**) and **Mental Health Units** in almost all districts through the **National Health Mission**.

NIMHANS:

- It is a **multi-disciplinary institute** focused on both **mental health** and **neuroscience** through **clinical care, education** (undergraduate, postgraduate, PhD programs), and **research**.
- Established in **1974**
- Declared Deemed University in 1994.
- It governed by the act of **Parliament titled NIMHANS Act, 2012**.
- Declared **Institute of National Importance** in 2012.

Note:



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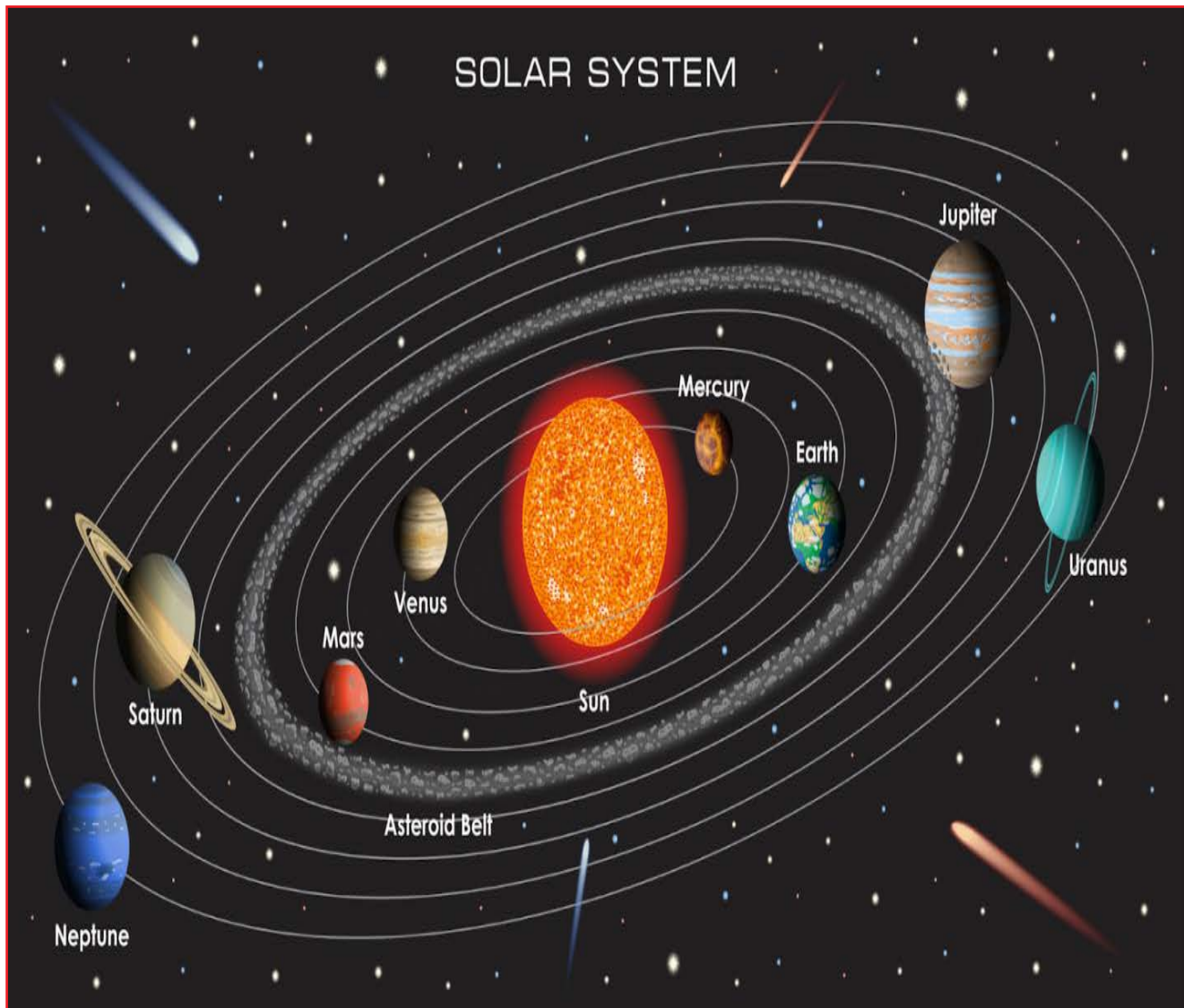
WHO Nelson Mandela Award for Health Promotion:

- **Established:** 2019, upon the initiative of African Region Health Ministers.
- **Awarded to:** Individuals, institutions, or NGOs that make significant contributions to health promotion.

Read more: [Nelson Mandela - The Harbinger Of Equality In South Africa](#), [Nelson Mandela's Influence on the United Nations and International Diplomacy](#)

Volcanism on Venus

Recent scientific analysis has revealed that **Venus** is more volcanically active than previously known.



- Active volcanic flows have been detected at 2 sites named the **Eistla Regio region**, which includes the **Sif Mons volcano**, and the **expansive volcanic plain of Niobe Planitia**. Earlier its erupting was detected in the 1990s.
- Also, a volcanic vent on **Maat Mons** in a region called **Atla Regio**, near the equator has expanded and changed shape.

Note:

- These along with additional evidence such as **atmospheric sulfur dioxide variations, surface thermal emissions data**, confirm volcanic activity on the planet.

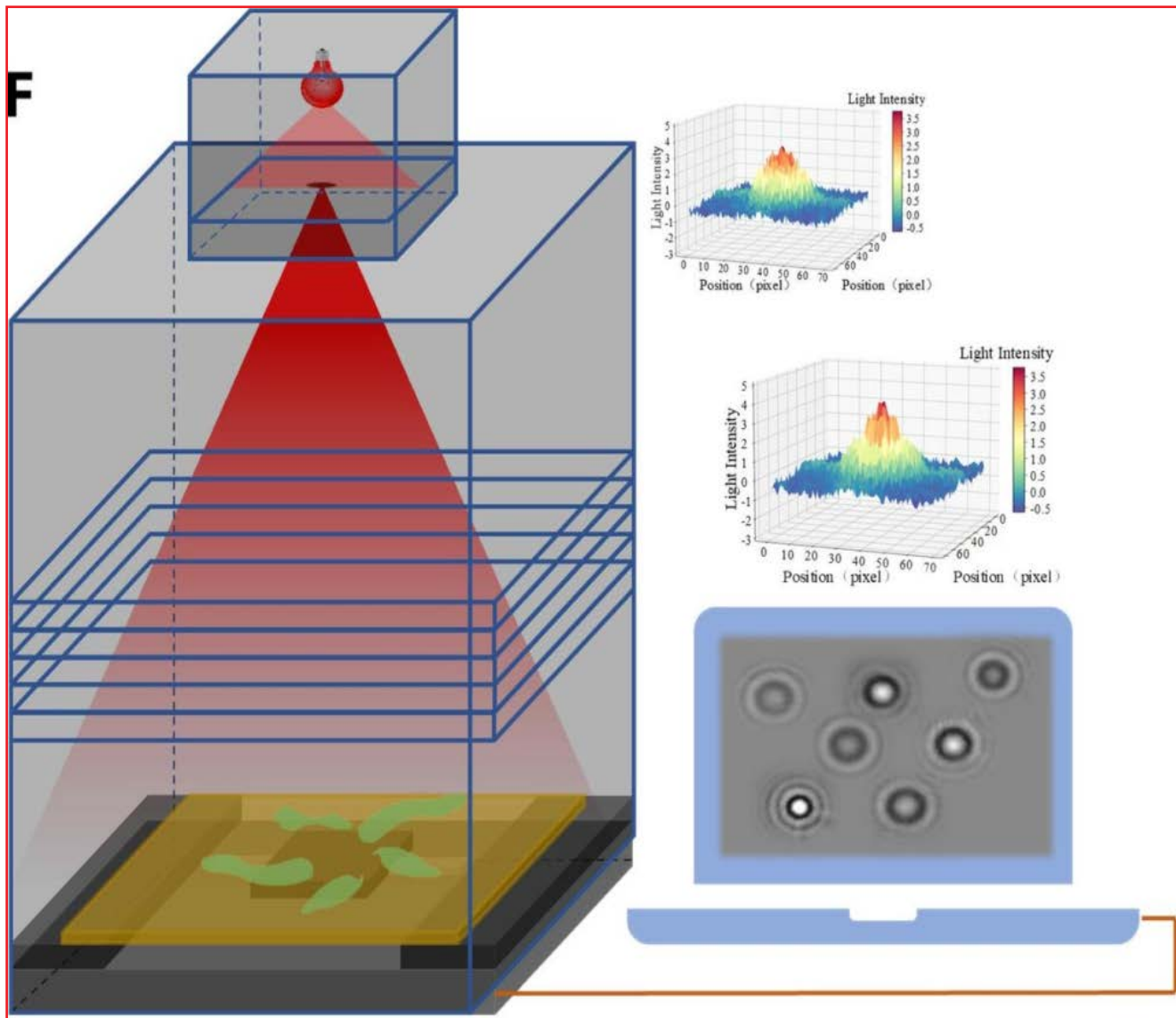
Venus:

- Venus is **often called Earth's twin** is slightly smaller than Earth.
- It is **the second planet from the Sun** and the sixth largest planet.
- It is the **hottest planet** in our solar system.
- Venus **spins from east to west, which is backward compared to most planets**, and it has a **day longer than its year**.

Read More: [Venus' Tectonic History](#), [Venus Mission 2024](#) [Active Volcanoes on Venus](#)

Diffraction-Based Tool to Detect Virus

Researchers have **developed a method** to identify infected cells by observing **how they distort light**.



Note:

- They tracked these distortions over time to mimic a **progressing infection** and compared them to healthy cells, identifying a **unique 'fingerprint' for virus-infected cells**.
 - Researchers infected pig testicle cells with the **pseudorabies virus**, shone light through them, and **observed distinct diffraction patterns** based on **contrast and texture**.
 - **Diffraction** refers to **light waves spreading out** after passing through narrow openings or around objects, **creating patterns of light and dark stripes**.
 - The light-based technique **detects infections in about two hours**, costing a **tenth of the required for traditional 40-hour chemical reagent methods**, and avoids reagent-related delays and supply chain issues.
 - The **low cost and ease of use of the light-based detection method** make it ideal for the early identification of viral infections in **livestock and pets**, aiding in breeding, preventing economic losses during outbreaks, and **supporting the World Health Organization's (WHO) rapid response recommendations**, especially in **resource-limited countries**.
 - Earlier, scientists have developed a highly accurate **holographic imaging method using laser beams to detect viruses** and antibodies within 30 minutes, utilizing **xSight, an instrument by Spheryx**.
- Read more: [WHO launches CoViNet](#)

OPEC+ Extends Deep Oil Output Cuts

- OPEC+** decided to extend **significant oil output cuts** through 2025, surpassing market expectations to **support prices** amid sluggish demand, **high interest rates**, and **increasing US production**.
- According to its official website, the **Organization of the Petroleum Exporting Countries (OPEC)**, established at the **1960 Baghdad Conference**, is a

permanent intergovernmental **organisation with 12 member countries**.

- Its headquarters is in the **Austrian capital Vienna**.
- OPEC member states produce about **40% of the world's oil**, and their exports comprise around **60% of the global petroleum trade**.
- Before OPEC was formed, the international oil market was dominated by the **"seven sisters" group** of multinational energy companies.
- In 2016, OPEC and 10 other oil-producing countries, including **Russia** formed **OPEC+** in response to plummeting oil prices due to increased U.S. shale oil output.

Read more: [OPEC](#), [OPEC+](#)

Carnian Pluvial Episode

The **Carnian Pluvial Episode (CPE)** was a period of **extended and intense rainfall** that occurred in the late **Triassic Period** (approx. **230 million years ago**).

- It had a significant impact on the **evolution** of both **terrestrial and marine life**.
- Researchers believe that this prolonged rainfall was the result of global **climate change** caused by **extensive volcanic activity** in the **Wrangellia Province** (located in western coast of North America).
- During the late Triassic period, all of the Earth's landmasses were joined together to form one large **supercontinent** known as **Pangaea**.
- **Impact of CPE:**
 - It caused **mass extinction of marine life and terrestrial species**, wiping out about one-third of all species and leading to a decrease in biodiversity.
 - However, it also created an opportunity for **new and different marine and terrestrial species to evolve**, including the rise of dinosaurs.
- The CPE is believed to have set the stage for the **Mesozoic Era**, known as the **age of the dinosaurs**, in which dinosaurs emerged and flourished, dominating terrestrial ecosystems for the next 150 million years.

Note:

Geologic Time Scale						
Eon	Era	Period	Epoch	MYA	Life Forms	
Phanerozoic	Cenozoic (CZ)	Quaternary (Q)	Holocene (H)	0.01	Age of Mammals	Extinction of large mammals and birds Modern humans
			Pleistocene (PE)	2.6		
		Neogene (N)	Pliocene (PL)	5.3		Spread of grassy ecosystems
			Miocene (MI)	23.0		
			Oligocene (OL)	33.9		
		Paleogene (PG)	Eocene (E)	56.0		Early primates
			Paleocene (EP)	66.0		Mass extinction
	Mesozoic (MZ)	Cretaceous (K)		145.0	Age of Reptiles	Placental mammals Early flowering plants Dinosaurs diverse and abundant
		Jurassic (J)		201.3		Mass extinction First dinosaurs; first mammals Flying reptiles
		Triassic (TR)		251.9		Mass extinction
	Paleozoic (PZ)	Permian (P)	298.9	Age of Amphibians	Complex multicelled organisms	
		Pennsylvanian (PN)	323.2			
		Mississippian (M)	358.9			
		Devonian (D)	419.2	Fishes	Simple multicelled organisms	Coal-forming swamps Sharks abundant First reptiles
		Silurian (S)	443.8			Mass extinction First amphibians First forests (evergreens)
		Ordovician (O)	485.4	Marine Invertebrates	Early bacteria and algae (stromatolites)	First land plants Mass extinction Primitive fish Trilobite maximum Rise of corals
		Cambrian (C)	541.0			Early shelled organisms
	Proterozoic			2500	Complex multicelled organisms	
	Archean	Precambrian (PC, W, X, Y, Z)		4000	Simple multicelled organisms	
	Hadean			4600	Early bacteria and algae (stromatolites)	
				4600	Origin of life	
				4600	Formation of the Earth	

Read more: [Mass Extinction](#), [Bharitalasuchus Tapani: A Carnivorous Reptile](#), [Footprints of 3 Dinosaur Species: Rajasthan](#)

Note:

RudraM-II

Recently, the **Defence Research and Development Organisation (DRDO)** successfully flight-tested the **Rudra M-II Missile** from a **Sukhoi-30 MKI fighter jet**.

- The RudraM-II is a **solid-propelled air-launched missile** system developed indigenously for **Air-to-Surface operations**.
 - It can **neutralise various types of enemy assets**.
 - It is expected to play a vital role in strengthening India's air security and defence preparedness, acting as a **'force multiplier'**.
- Its performance was evaluated using advanced range tracking instruments, including electro-optical systems, radar, and telemetry stations.
- **Specifications:**
 - **Range:** 300 kilometres
 - **Speed:** Up to **Mach 5.5**
 - **Payload:** 200 kilograms
 - **Detection:** Can detect enemy radio frequencies and signals from radars from over 100 km
- It can **replace Russia's Kh-31 missile** currently used in India's Sukhoi fighter jets.



Read more: [Anti Radiation Missile: Rudram-1, India's Fighter Jets](#),

Exercise Red Flag

Eight **Indian Rafale fighter jets**, accompanied by two IL-78 air-to-air refuellers and three C-17 Globemaster-III strategic airlift aircraft, are poised to participate in the prestigious **multi-national 'Red Flag' exercise** in Alaska, USA.

- The two-week advanced aerial combat training exercise, Exercise Red Flag, aims to **integrate aircrew** in a multinational environment, with over 100 aircraft from four nations and around 3,100 personnel participating from 1st-14th June 2024.
- The **IAF participated twice in the Red Flag exercise**, known as the **most realistic air combat training**, where fighter pilots refine skills against numerous targets, authentic threats, and adversary forces.
- **Other combat exercises in which IAF regularly participates:**

Air Combat Exercises	Location
Iniochos	Greece
Orion	France
Blue Flag	Israel
Pitch Black	Australia
Desert Flag	UAE

Read more: [US Cancels Red Flag](#)

World's First Wooden Satellite

Japanese researchers have built the world's first wooden satellite, **LignoSat**, crafted from **magnolia wood**, with each side measuring merely 10 centimetres.

- The satellite will be launched on a **SpaceX rocket** from the **Kennedy Space Center** in September 2024 to the **International Space Station (ISS)**, where it will be deployed from the **Japanese ISS experiment module** to assess its **strength and durability**.
- Researchers believe the wooden material of the device will **completely burn up** when it re-enters the atmosphere, **preventing** the creation of **harmful metal particles** that can affect the environment and telecommunications when a satellite is retired.
- In another development, a rocket launched from California by the **European Space Agency (ESA)** and **JAXA** carried the **EarthCARE satellite**, which will orbit 400 kilometres above Earth for three years to study how **clouds affect climate change**.

Read more: [ISRO's new NavIC Satellite NVS-01](#)

Decline in FDI Equity Inflows in FY 2024

The **Foreign direct investment (FDI)** equity inflows in India fell to a **five-year low of USD 44.42 billion** in the financial year ended 31st March 2024 (FY24), marking a 3.5% year-on-year (Y-o-Y) contraction.

Note:

- The decline in FDI equity inflows can be attributed to external factors such as **high interest rates** in advanced economies and a limited absorptive capacity in various sectors in India.
- Total FDI, including equity capital, reinvested earnings, and other capital, contracted by 1% Y-o-Y to USD 70.95 billion during FY24 as per **Department for Promotion of Industry and Internal Trade (DPIIT)**.
- **Singapore remained the top investor** with USD 11.77 billion in FDI, followed by Mauritius, the United States, Netherlands, and Japan.
- **Maharashtra continued to be the most favoured destination** for investors, receiving USD 15.11 billion worth of investments, although inflows declined by 2%, followed by Karnataka.
- **Computer software and hardware, services sector**, and trading were the top recipients of FDI, but all three sectors saw a decline in inflows.

DOWNWARD PRESSURE

Year	FDI equity inflow (in \$ bn)	% change Y-o-Y
FY20	49.9	13
FY21	59.6	19
FY22	58.7	-1
FY23	46.0	-22
FY24	44.4	-3

Source: DPIIT

Read more: [India's Foreign Direct Investment Trends](#)

Advancement of the Southwest Monsoon in India

The **Southwest Monsoon** has set in over Kerala and advanced into **most parts of Northeast India**, indicating the onset and progress of the crucial rainy season in the subcontinent.

- There are several theories explaining the monsoon, such as the **Thermal Theory (Edmund Halley)**, **Dynamic Theory**, **Jet Stream Theory**, **ITCZ Theory**, and **Indian Ocean Dipole Theory**. The simplest way to understand the process of the monsoon is through the Thermal Theory, which is provided below.
- The tropical **monsoon climate is primarily caused by the differential heating and cooling rates of land and sea**.
 - **During the summer, when the sun is overhead at the Tropic of Cancer**, large land masses in the northern hemisphere (Central Asia), heat up significantly, **creating intense low-pressure areas**.
 - Meanwhile, the surrounding seas, which warm up more slowly, remain relatively cool.

Note:

- This pressure difference causes winds from the high-pressure region in the Southern Hemisphere (Australia) **to blow towards the low-pressure areas, crossing the equator and transforming into the Southwest Monsoon** as they reach the Indian subcontinent.
- In winter, the situation reverses as the sun shifts to the Tropic of Capricorn. Central Asia cools rapidly, **forming high-pressure areas**, and winds blow outwards as the Northeast Monsoon.
- These winds cross the equator and become the Northwest Monsoon in northern Australia. This seasonal reversal of wind directions characterises the tropical monsoon climate, resulting in distinct wet and dry seasons.

Read more: [Monsoon](#)

India's First 3D-Printed Rocket Launched

Recently Chennai-based start-up Agnikul Cosmos has launched the world's first rocket, **Agnibaan Sub Orbital Technology Demonstrator (SOrTeD)**, powered by a fully 3D-printed engine.

- It aims to **conduct a test flight** to showcase the company's internally developed technologies and **gather important flight data**.
- This has achieved several firsts for the Indian space ecosystem i.e. launch from a private pad (**Dhanush**), homegrown **semi-cryo engine-powered rocket launch** and the **world's 1st single-piece 3D printed engine**.
 - It uses **liquid oxygen and kerosene** as propellant.
- Launch was supported by the [Indian Space Research Organisation \(ISRO\)](#) and the [Indian National Space Promotion and Authorisation Centre \(IN-SPACe\)](#).

3D Printing:

- 3D printing is also known as **additive manufacturing** which uses materials such as plastics and metals to **convert products envisaged on computer-aided design** to real three-dimensional items.
 - It is the **opposite of subtractive manufacturing** which is cutting out/hollowing out a piece of metal or plastic with, for instance, a milling machine.



Read more: [Agnibaan SubOrbital Technological Demonstrator \(SOrTeD\)](#)

India's First Quantum Diamond Microchip Imager

IIT-Bombay and Tata Consultancy Services (TCS) have collaborated to pioneer India's inaugural **Quantum Diamond Microchip Imager**, in line with the [National Quantum Mission's](#) objective to position India as a prominent global leader in **quantum technology**.

- The objective is to develop an **advanced sensing tool to enhance precision in semiconductor chip examination**, reduce chip failures, and improve energy efficiency.
- The Quantum Diamond Microchip Imager, similar to **magnetic resonance imaging (MRI)**, offers **non-invasive and non-destructive imaging of semiconductor chips**, overcoming the limitations of traditional methods in **detecting anomalies as chip sizes decrease**.
- It utilises **nitrogen-vacancy centres in diamonds** and specialised hardware and software, significantly **enhancing failure analysis**, device development, and optimisation processes. It also visualises **three-dimensional charge flow** in multi-layer chips for **advanced defect identification**.
- It will have wide applications in microelectronics, biological and geological imaging, and fine-scale imaging of magnetic fields, among others.

Read more: [National Quantum Mission](#)

Note: