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060017 Civil Services Marksheet
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**UNION PUBLIC SERVICE COMMISSION
MARKSHEET**

Civil Services (PRELIMINARY) Examination, 2016

Roll Number	0029983
Name	SANTOSH PANDEY
Marks Obtained	
Paper I	144.66
Paper II	107.50

REMARKS : QUALIFIED FOR CS(MAIN) EXAMINATION, 2016

DISCLAIMER : The contents of this site is informative in nature. You are advised to verify the same from Commission's office.

SANTOSH SIR
CRACKED ALL 6 PRELIMS



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**UNION PUBLIC SERVICE COMMISSION
MARKSHEET**

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Many questions in CSE PRELIMS 2023 Paper were from most predicted Questions of LAQSHYA 2023



Ishita Kishore, AIR 1 CSE 2022
LAQSHYA Test Series student

Feedback
→

Test was great. definitely better than any other coaching centres

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What do our CSE 2022 TOPPER say?

Thank you sir.

The [DPN notes](#) were very comprehensive and useful. I used it to supplement my newspaper knowledge. It really helped in dealing with the current affairs portion of the prelims exam, since you compile it from so many sources.

Would recommend students to maintain their own digital notes using that source.

After I didn't clear first prelims, I joined your [mains master notes](#) which helped me identify key areas for note making.

Thank you sir for your relentless effort in updating these notes.

They're helpful for the aspirants.



Ishita Kishore

AIR 1, CSE2022

Ishita has been a student of
ONE YEAR LAQSHYA PRELIMS MENTORSHIP
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- 1 Prelims Cum Mains Integrated Daily Plan
- 2 Entire GS Concept Sessions- Pre Cum Mains
- 3 Mains Master Notes GS 1 2 3 4 (Static)
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Economy

Securities and Exchange Board of India (SEBI) – commented on high P/E ratio

Subject: Economy

Section: Capital Market

Securities and Exchange Board of India (SEBI), commented on the high price-to-earnings (PE) ratio in the Indian capital markets. Despite the expensive valuation, SEBI noted that overseas investors are still attracted to the Indian markets due to the country's economic momentum and growth prospects.

Key Points:

1. **High PE Ratio:**
 - The Indian market currently has a **PE ratio of 22.2, indicating relatively high valuations.**
 - Despite this, **overseas investors continue to invest in Indian markets.**
2. **Reasons for Investment:**
 - Influx of investment reflects the optimism, trust, and faith that the world has in India's economy.
 - India's current high multiples in the market are a testament to the positive sentiment towards the country.
3. **Velocity of the Economy:**
 - Buch used the metaphor of a "**hockey stick effect**" to describe the rapid growth trajectory of India's economy.

The high PE ratio, while indicating expensive valuations, is seen as a reflection of the trust and optimism surrounding India's growth prospects. This sentiment aligns with the broader narrative of India's emergence as a key player in the global economy, attracting significant investment interest.

About Price-to-Earnings (P/E) ratio

The Price-to-Earnings (P/E) ratio is a valuation metric used to assess the relative value of a company's stock price compared to its earnings per share (EPS).

It is one of the most widely used tools by investors and analysts to gauge the attractiveness of a stock or the overall market.

Calculation: The P/E ratio is calculated by dividing the current market price of a stock by its earnings per share (EPS). The formula is:

$$P/E \text{ Ratio} = \frac{\text{Market Price per Share}}{\text{Earnings per Share}}$$

Market Price per Share: This is the current price at which the stock is trading in the market.

Earnings per Share (EPS): This is the portion of a company's profit allocated to each outstanding share of common stock. It is calculated by dividing the company's net income by the number of outstanding shares.

High P/E Ratio: A high P/E ratio suggests that investors are willing to pay a premium for the company's stock relative to its earnings. It may indicate that the stock is overvalued, but it could also suggest strong growth expectations.

Low P/E Ratio: Conversely, a low P/E ratio might indicate that the stock is undervalued or that the company is experiencing some challenges.

About Worldwide Governance Indicators:

SAT 'full', with new presiding officer, technical member

Subject: Economy

Section: capital market

Concept –

- SAT is a **statutory body** established under the provisions of **Section 15K of the SEBI Act, 1992**.
- Located at **Mumbai**.

Composition:

- SAT consists of a **Presiding Officer** and Two other members.
- The Presiding officer of SAT shall be appointed by the Central Government in consultation with the Chief Justice of India or his nominee.

Powers & Functions:

- It has the same powers as vested in a civil court. Further, if any person feels aggrieved by SAT's decision or order can appeal to the Supreme Court.
- To hear and dispose of appeals against orders passed by the **SEBI or by an adjudicating officer under the SEBI Act,1992**.
- To hear and dispose of appeals against orders passed by the **Pension Fund Regulatory and Development Authority (PFRDA)**.
- To hear and dispose of appeals against orders passed by the **Insurance Regulatory Development Authority of India (IRDAI)**.

Growth in India's Stock Market

Subject: Economy

Section: Capital markets

Record Market Capitalization:

- - India's stock market achieved a significant milestone with a **combined market capitalization of over Rs 400 trillion for all BSE-listed firms**.
 - This milestone was reached in just **9 months**, marking the shortest period for a **Rs 100 trillion** market cap increase.
- **Market Performance:**
 - BSE Sensex has surged about **15%** in the last 9 months.
 - Midcap and smallcap indices have seen even stronger growth, with each surging about **40%**.
- **Contributing Sectors:**
 - Leading sectors contributing to the rally include **Realty, PSU banks, Auto, Energy, Infra, and Pharma**.
 - Public Sector Units (PSUs) have been standout performers, with indices nearly **doubling** in one year.
- **Factors Driving Growth:**
 - Buoyant economic indicators, **increasing domestic investment, and political stability underpin the market surge**.
 - Increased **domestic retail participation** with over **15 crore demat accounts** by March 2024.
 - Robust **IPO activity** with 24 IPOs raising over **Rs 67,500 crore** indicates strong appetite for new market entrants.
- **Economic Fundamentals:**
 - India's recent GDP growth rate stands at **6%**, outperforming projections.
 - Encouraging corporate earnings estimates, with expectations of **6-8%** earnings growth in Q4FY24.
 - Sectors like **banking, healthcare, and energy** are poised for growth.
- **Investor Confidence:**
 - Retail investors remain optimistic, particularly in **small- and mid-cap stocks**.
 - Confidence in continued **political stability** under the BJP government.
- **Future Outlook:**

- **Earnings season** focus on the IT sector, with expected revenue growth for firms like TCS and Infosys.
- Market movement influenced by **global factors**, particularly **US Fed rate decisions**.
- Analysts advise selectivity in stocks, caution against temporary index jumps.
- Markets likely to remain range-bound until the **June 4, 2024** general election results.
- **Post-Election Expectations:**
 - Significant market movements anticipated post-elections, **influenced by results, the final Union Budget, US Fed decisions, and corporate earnings.**

Market Capitalisation Definition:

Market capitalisation is the total value of a company that is traded on the stock market. It is calculated by multiplying the total number of shares by the current market price per share.

Formula for Market Capitalisation:

Market Capitalisation = Total number of outstanding shares × Current market price per share
 Market Capitalisation = Total number of outstanding shares × Current market price per share

Example Calculation:

Suppose:

- Current market price of XYZ company = ₹10
- Total number of outstanding shares of XYZ company = 100,000

Then, Market Cap of XYZ company = $100,000 \times 10 = 10,00,000$
 Market Cap of XYZ company = $100,000 \times 10 = 10,00,000$

Classification by SEBI:

Companies registered with SEBI are classified based on their market capitalisation into three categories:

- **Large Cap:**
 - Companies ranked between **1 and 100** by market capitalisation.
 - These are typically large, established companies.
- **Mid Cap:**
 - Companies ranked between **101 and 250** by market capitalisation.
 - These are generally medium-sized companies with moderate market capitalisation.
- **Small Cap:**
 - Companies ranked **beyond 250** by market capitalisation.
 - These are often smaller companies with relatively lower market capitalisation.

Concerns over anti-subsidy duties imposed by the U.S. and the EU on Indian exports

Subject: Economy

Sec: Exports

- **Issue:** Concerns over anti-subsidy duties imposed by the U.S. and the EU on Indian exports benefiting from the Remission of Duties and Taxes on Exported Products (RoDTEP) scheme.
- **Background:**
 - Despite the clear connection between remission rates and input taxes, the U.S. and the EU imposed countervailing (anti-subsidy) duties on certain Indian products.
 - Products affected include paper file folders, common alloy aluminum sheet, forged steel fluid end blocks, and certain graphite electrode systems.
- **Government Response:** Implementing a verification process to address these concerns.
- **Verification Process:**
 - A **verification team** comprising officials from the Department of Revenue and DGFT will conduct random inspections of manufacturers.
 - Inspections triggered by complaints from importing countries, such as the U.S., regarding alleged subsidy payouts for specific products.
 - **Objective:** Ensure that only input duties have been remitted under the RoDTEP scheme.
 - **Verification:** All input taxes paid by selected manufacturers will be compared with the RoDTEP payments received.
 - **Purpose:** Reassure importing countries that only duties and taxes paid during production have been remitted under the scheme.

Remission of Duties and Taxes on Exported Products (RoDTEP) Scheme:

The RoDTEP scheme, introduced to replace the Merchandise Export from India Scheme (MEIS), has been notified by the Government of India, outlining rates and norms to support exporters.

Objective: To refund embedded central, state, and local duties or taxes that were not previously rebated, addressing the non-compliance issues with the World Trade Organization (WTO) rules.

Key Features:

- **Scope:**
 - Covers 8,555 tariff lines, constituting around 75% of traded items and 65% of India's exports.
 - Budgetary allocation of ₹12,454 crore for the fiscal year 2021-22.
- **Zero Rating of Exports:**
 - Aims to achieve zero rating of exports by ensuring that domestic taxes are not exported.
- **Refund Mechanism:**
 - Refunds encompass all taxes, including those levied by states and local bodies.
 - Refund rates, considered WTO-compliant, range from 0.5% to 4.3% of the Free On Board (FOB) value of outbound consignments.
- **Rate Variation:**
 - Rates vary based on the product category. For example:
 - Lowest rates for items like chocolates, toffees, and sugar confectionery.
 - Highest rates for yarns and fibers.
 - Exclusion of certain sectors like steel, pharma, and chemicals.
 - **International Standards and Automatic Refunds:**
 - **Enables Indian exporters to meet international standards for exports.**
 - **Provides affordable testing and certification within the country, reducing dependence on international organizations.**
 - **Facilitates automatic tax assessment and refunds for GST, streamlining the process for exporters.**

The RoDTEP scheme aligns with India's efforts to facilitate a conducive environment for exporters, promoting economic growth and enhancing the country's position in the global market.

Govt Plans to Focus on 20 Items as Agri Exports Slip 9%

Subject: Economy

Sec: Exports

- **Decline in Agricultural Exports:**
 - India's agricultural exports fell by nearly 9% between April to February in FY24 to \$43.7 billion.
 - Factors contributing to the decline include the Red Sea crisis, the Russia-Ukraine war, and domestic restrictions.
- **Government Initiatives:**
 - The government is formulating plans to boost exports of 20 items with significant growth potential in global markets.
 - Items targeted for export promotion include bananas, mangoes, potatoes, baby corn, fresh grapes, guava, pomegranate, watermelon, onion, green chili, capsicum, okra, garlic, groundnut, alcoholic beverages, cashew nut, buffalo meat, jaggery, and natural honey.
- **Export Expansion Goals:**
 - The aim is to increase **India's share in global exports from 2.5% to about 4-5% in the coming years.**
 - In 2022, India's exports of the identified items totaled \$9.03 billion, while global imports stood at \$405.24 billion.
- **Focus on Sea Routes:**
 - APEDA is collaborating with different institutes to develop sea protocols for ginger, pineapple, mangoes, and oranges to promote shipments through sea routes.
 - Developing sea protocols reduces logistics costs for exporting horticulture produce to long-distance markets, facilitating increased exports of items like bananas, mangoes, and pomegranates.
- **Export Performance:**
 - Exports of the 719 scheduled agri-products in the **APEDA basket declined by 6.85% to \$22.4 billion during the 11-month period of the last fiscal.**
 - However, 17 out of 24 principal commodities recorded positive growth, including fresh fruit, buffalo meat, processed vegetables, basmati rice, and bananas.

- Basmati rice exports **increased by 22% from \$4.2 billion in April-February 2022-23 to \$5.2 billion in April-February 2023-24.**

Despite challenges, the government's targeted approach aims to revitalize agricultural exports and enhance India's position in global markets.

APEDA stands for the Agricultural and Processed Food Products Export Development Authority. It is an **autonomous organization under the Ministry of Commerce and Industry, Government of India.** APEDA is responsible for the promotion and development of export of various agricultural and processed food products from India. It **aids exporters in improving the quality of their products, enhancing their packaging and marketing strategies, and facilitating their access to international markets.** APEDA also undertakes market research, organizes trade fairs and exhibitions, and implements various export promotion schemes to boost India's agricultural exports. Top of Form

INTRODUCTION

The agriculture sector is the largest source of livelihood in India. The country is one of the largest producers of agriculture and food products in the world. In 2021-22, India's agriculture sector growth rate was estimated to be at 3.9% as compared to the 3.6% in the previous year. The country produces many crops and food grains such as rice, wheat, pulses, oilseeds, coffee, jute, sugarcane, tea, tobacco, groundnuts, dairy products, fruits, etc.

During 2021-22, India's tea production stood at 1,344.40 million kg. Coffee production during the same period was 3420 lakh tonnes, a 2.39% YoY increase. During 2021-22, oilseeds production of India crossed the estimated 37.15 million tonnes while other products such as rice, wheat, maize, pulses, mustard, and sugarcane reached a record high production.

The top crops producing states in India are West Bengal, Uttar Pradesh, Punjab, Gujarat, Haryana, Madhya Pradesh, Assam, Andhra Pradesh, Karnataka and Chhattisgarh. Most of the wheat produced in the country comes from Uttar Pradesh, Punjab, Haryana, Madhya Pradesh, Rajasthan, Bihar and Gujarat. Uttar Pradesh is the largest producer of sugarcane in India contributing about 48%, followed by Maharashtra and Karnataka at 23% and 9% of the total production respectively.

EXPORT TREND

India is one of the largest agricultural product exporters in the world. During 2021-22, the country recorded US\$ 49.6 billion in total agriculture exports with a 20% increase from US\$ 41.3 billion in 2020-21. India's agriculture sector primarily exports agri & allied products, marine products, plantation, and textile & allied products. Agri & allied products exports were valued at US\$ 37.3 billion, recording a growth of 17% over 2020-21.

Rice is the largest exported agricultural product from India and contributed to more than 19% of the total agriculture export during the year 2021-22. Sugar, spices and buffalo meat are among the largest exported products with the contribution of 9% 8% and 7% to 2021-22 agriculture exports, respectively. Wheat exports were valued at US\$ 2.1 billion in 2021-22 after recording significant growth over exports of US\$ 568 million in 2020-21. Coffee exports have crossed US\$ 1 billion for the first time, which has improved realizations for coffee growers in Karnataka, Kerala and Tamil Nadu. Higher exports of marine products, at US\$ 7.7 billion, is benefitting farmers in the coastal states of West Bengal, Andhra Pradesh, Odisha, Tamil Nadu, Kerala, Maharashtra and Gujarat.

The government's commitment to increase farmers income can be seen through significant rise witnessed in Agri-exports through giving thrust on boosting exports. Various initiatives taken by the government through APEDA such as organizing B2B exhibitions, in different countries, exploring new potential markets through product specific and general marketing campaigns have worked as catalyst to growth exports. The government of India has created products matrix for 50 agricultural products with strong export potential and recognized 220 labs to provide services of testing a wide range of products to enable exporters across India

EXPORT DESTINATION:

The largest importers of India's agricultural products are USA, Bangladesh, China, UAE, Indonesia, Vietnam, Saudi Arabia, Iran, Nepal and Malaysia. The other importing countries are Korea, Japan, Italy, and the UK. During 2021-22, USA was the largest importer of Indian agricultural products at US\$ 5.7 billion with share at 11.5% of the total exports. Bangladesh is the major importer of Agri & allied products at US\$ 3.8 billion followed by UAE at US\$ 2.3 billion. USA and China are major importer of India's marine products.

The government of India is keen to organize virtual buyer seller meets (V-BSM) on agricultural and food products with the major importing countries across the world to promote geographical indications (GI) registered with agricultural and processed food products in India. So far 17 V-BSMs have been organized with Kuwait, Indonesia, Switzerland, Belgium and Iran. Similar programs have been organized for Canada (Organic products), UAE & USA (GI products), Germany, South Africa, Australia, Thailand, Oman, Bhutan, Azerbaijan and Qatar.

The government has set up thirteen Agri-Cells in Indian embassies in Vietnam, USA, Bangladesh, Nepal, UAE, Iran, Saudi Arabia, Malaysia, Indonesia, Singapore, China, Japan and Argentina to provide inputs on real time basis to improve Indian exports at these destinations by promoting trade, tourism, technology and investment goals.

Tamil Nadu's Role in India's Electronics Exports

Subject: Economy

Section: External sector

• Key Statistics:

- Tamil Nadu, in FY24, **accounted for 30% of all electronic goods exports from India.**

- The district of Kancheepuram alone **contributed close to 40% of India's smartphone exports in the last two fiscal years.**
- The state has seen a significant rise in its **contribution to electronics exports, overtaking states like Uttar Pradesh and Karnataka.**
- **State-wise Comparison:**
 - Tamil Nadu's electronic goods exports in FY24 surpassed the combined exports of **Uttar Pradesh** and
 - The **gap between Tamil Nadu and other top exporting states like Gujarat and Maharashtra has widened.**
 - Exports from Gujarat and Maharashtra have shown stagnation in recent years.
- **Trend in Exports:**
 - From April 2023 to January 2024, **Tamil Nadu exported electronic goods worth over \$7.4 billion, nearly four times the volume in FY22.**
- **Commodity-wise Share:**
 - **Engineering goods dominated exports (\$98 billion), followed by petroleum products (\$78 billion), gems and jewellery (\$30 billion), and electronics goods (\$25 billion).**
 - In FY18, electronic goods were not even in the top 10 most exported commodities, with an export value of just \$0.8 billion.
- **Major Markets:**
 - The **S. and the UAE are the largest markets for India's electronic goods exports.**
 - In FY24, the U.S. imported nearly 35% of India's electronic goods exports (\$8.7 billion), followed by the UAE at \$3 billion (12%).
 - The **Netherlands and the U.K. each accounted for about 5% of India's electronic goods exports.**
- **Shift in U.S. Imports:**
 - Since FY21, the U.S. has remained the primary destination for India's electronics exports.
 - The **S.'s share in India's electronics exports has increased significantly in recent years, reaching 24-34% in the latest two fiscal years.**
- **Inference:**
 - The surge in smartphone exports from **Kancheepuram district, Tamil Nadu**, has significantly boosted India's electronics exports.
 - Most of these exports, **particularly smartphones, have been directed to the U.S., the world's largest importer of smartphones.**

Why TamilNadu?

Good industrial climate, availability of skilled or trainable labour, especially women with high productivity and good logistics connectivity of the airport has attracted leading electronics manufacturers to Tamil Nadu.

Rating agencies oligopoly should be dismantled: CEA

Subject: Economy

Section: External Sector

Context: The oligopoly of the three global rating agencies, Moody's, Standard & Poor, and Fitch, needs to be dismantled

Concept:

What is credit rating?

- A credit rating is a quantified assessment of the creditworthiness of a borrower in general terms or with respect to a particular debt or financial obligation.
- A credit rating can be assigned to any entity that seeks to borrow money—an individual, corporation, state or provincial authority, or sovereign government.
- A sovereign credit rating is an independent assessment of the creditworthiness of a country or sovereign entity.
- **Sovereign credit ratings** can give investors insights into the level of risk associated with investing in the debt of a particular country, including any political risk.
- Investors use sovereign credit ratings as a way to assess the riskiness of a particular country's bonds.
- Obtaining good sovereign credit rating is usually essential for developing countries in order to access funding in international bond markets.

What are Rating Agencies

- A rating agency is a company that assesses the financial strength of companies and government entities, especially their ability to meet principal and interest payments on their debts.
- The rating assigned to a given debt shows an agency's level of confidence that the borrower will honour its debt obligations as agreed.
- The Big Three Credit Rating Agencies: Fitch Ratings, Moody's Investors Service and Standard & Poor's (S&P) are the big three international credit rating agencies controlling approximately 95% of global ratings business.
- In India, there are six credit rating agencies registered under SEBI namely, CRISIL, ICRA, CARE, SMERA, Fitch India and Brickwork Ratings.

Role of Rating Agencies in Capital Markets

- Rating agencies assess the credit risk of specific debt securities and the borrowing entities. In the bond market, a rating agency provides an independent evaluation of the creditworthiness of debt securities issued by governments and corporations.
- Rating agencies also give ratings to sovereign borrowers, who are the largest borrowers in most financial markets.
- Sovereign borrowers include national governments, state governments, municipalities, and other sovereign-supported institutions. The sovereign ratings given by a rating agency shows a sovereign's ability to repay its debt.
- The ratings help governments from emerging and developing countries to issue bonds to domestic and international investors.
- Governments sell bonds to obtain financing from other governments and Bretton Woods institutions such as the World Bank and the International Monetary Fund.

Issue:

According to Chief Economic Advisor V. Anantha Nageswaran there were many problems with the methodology of the rating agencies, such as "qualitative parameters" (which bring in an element of subjectivity) and the sources of information.

The rating agencies take inputs from the World Bank's World Governance Index, which itself is "extremely problematic" because its own sources of information do not come from the countries assessed but from "think-tanks or research bodies sitting in some European countries."

WGI is "opaque" and does not take due note of the stage of development of a country.

As countries reach a particular stage of development, they discover the need for different institutions for governance.

For them (rating agencies) to compare the institutions of developing countries and developed countries, where such institutions took several centuries to evolve, is not a fair comparison.

World Bank's World Governance Index

- It is released by the **World Bank**.
- It is based on six dimensions of governance:
 1. **Voice and Accountability**
 2. **Political Stability and Absence of Violence**
 3. **Government Effectiveness**
 4. **Regulatory Quality**
 5. **Rule of Law**
 6. **Control of Corruption**
- These indicators are designed to help researchers and analysts assess broad patterns in perceptions of governance across countries and over time.
- The World Bank compiles the Worldwide Governance Indicators using data from more than 30 think tanks, international organisations, non-governmental organisations, and private firms deemed credible.
- The WGI was developed in 1999 by two World Bank researchers, Daniel Kaufmann and Aart Kraay.

Japan's economy recovers to full capacity, keeps alive BOJ rate hike prospects

Subject: Economy

Section: External Sector

Japan's economic output recovered to full capacity for the first time in about four years in the October-December quarter, a positive sign that may allow the central bank to raise interest rates again.

What is output gap?

- It measures the difference between an economy's actual and potential output.
- It stood at +0.02% in the final quarter of last year (Bank of Japan (BOJ)).

- The output gap is among data the BOJ watches closely in determining whether the economy is expanding strongly enough to propel a demand-driven rise in inflation.
- A positive output gap occurs when actual output exceeds the economy's full capacity, and is considered a sign of strong demand. It is seen by analysts as one of a handful of prerequisites for wages to rise more, and push inflation sustainably around the BOJ's 2% target.
- The BOJ ended eight years of negative interest rates and other remnants of its unorthodox policy last month, making a historic shift away from its focus on quashing deflation and reflating growth with decades of massive monetary stimulus.
- Markets are on the look-out for any clues on how soon the central bank could raise interest rates again.

Expectations that the BOJ will go slow in any further rate hikes have pushed the yen down to near 152 to the dollar, a level seen by markets as heightening the chance of yen-buying intervention by Japanese authorities.

Will new solar power rules boost production?

Subject: Economy

Section: External Sector

Context:

- To incentivise **India's solar module manufacturing industry**, the **Ministry of New and Renewable Energy (MNRE)** has brought into effect from **April 1** an **executive order, The Approved Models and Manufacturers of Solar Photovoltaic Modules (Requirements for Compulsory Registration) Order, 2019**.

What is the context of the executive order?

- The **executive order**, issued by the **MNRE in 2019**, **mandates solar module manufacturers to undergo facility inspections** by the **National Institute of Solar Energy** to be listed as **'approved' producers**, distinguishing them from **mere importers or assemblers**.
- This **measure addresses concerns within India's solar industry**, which, despite its claims of **self-sufficiency**, **relies heavily on importing cheaper, quality solar modules from China** due to **local production of cells and modules not meeting demand**.
- **India aims to significantly increase its solar installation by 2030** but faces challenges in producing the necessary raw materials like ingots and wafers, resulting in dependence on imported cells.

Why is India reliant on imports?

- **India's reliance on imports**, especially from **China**, is due to **efforts to reduce dependency on a country that controls about 80% of the global supply**, amidst strained diplomatic relations.
- **India's ambitious goal to source nearly 500 GW of its electricity from non-fossil fuels by 2030**, with at least **280 GW from solar power**, necessitates adding about **40 GW of solar capacity annually until 2030**.
- The past five years have seen a **maximum addition of 13 GW annually**, partly attributed to COVID-19 disruptions, highlighting the **gap between domestic production capabilities and the solar panels and cells needed to meet these targets**.

If the list is voluntary why pay to be on it?

- Being **listed as an approved manufacturer is voluntary but crucial for eligibility in government solar energy tenders**, such as the **PM Surya Ghar Muft Bijli Yojana**, which subsidizes rooftop solar installations with an estimated **₹75,000 crore subsidy for about one crore households**.
- **Only domestic manufacturers on the Approved Models and Manufacturers (AMM) list can participate in this and the PM KUSUM scheme**, which supports solar pump sets and rural electrification.
- Additionally, the **₹24,000 crore Production Linked Incentive Scheme** aims to **boost domestic solar panel and component production**, requiring **manufacturers to be verified as local producers**.
- So far, **14 major companies have qualified for incentives to produce solar modules totalling 48 GW**, though these restrictions **only apply to new projects**, with facilities commissioned before March 2024 allowed to use imported modules.

Is India's manufacturing capacity adequate?

- Last year, **India benefited from reduced global orders to China, exporting nearly \$1 billion worth of solar modules in six months** due to concerns over **forced labour in Xinjiang**. However, potential **U.S. policy changes could reintroduce uncertainty for Indian exports**.
- Despite these exports, **around half of India's solar modules are imported from China**, with the **demand-supply gap expected to continue**.
- The **Indian government anticipates a rise in domestic manufacturing capacity** starting this year, with **82 manufacturers now certified on the AMM list** by the MNRE.

- Nonetheless, the **absence of a similar list for solar cell manufacturers** indicates **India's ongoing struggle to achieve substantial self-reliance in solar component production.**

PM Surya Ghar Muft Bijli Yojana:

- The scheme **Surya Ghar Muft Bijli Yojana, with an investment of over Rs. 75,000 crores,** aims to light up 1 crore households by providing up to 300 units of free electricity every month.
- The scheme aims to incentivise the adoption of solar energy among **residential consumers, promoting sustainability and reducing reliance on conventional energy sources.**
- It is a **grid connected rooftop solar PV system,** where the **DC power generated from a solar panel** converted to AC power using a power conditioning unit/Inverter and is fed to the grid.
- **All stakeholders** will be integrated into a **National Online Portal.**
- In order to popularize this scheme at the grassroots, **Urban Local Bodies and Panchayats** shall be incentivised to promote rooftop solar systems in their jurisdictions.
- The scheme will lead to more **income, lesser power bills and employment generation for people.**
- Under the scheme, **subsidies will be given directly to people's bank accounts.**
- The government has appointed **eight central public sector undertakings (CPSUs)** to implement the scheme across all states and union territories of the country.
- These include **NTPC, NHPC, EESL, PowerGrid, Grid-India, THDC, SJVN and NEEPCO.**
- These CPSUs will be responsible for the installation of rooftop solar in one crore households.
- Under **rooftop installation, solar photovoltaic (PV) panels are fixed atop a building, home, or a residential property**

Source: [TH](#)

The 'import restrictions' on solar PV cells

Subject: Economy

Section: External Sector

Context:

- The **Ministry of New and Renewable Energy (MNRE)** on March 29, ordered to **re-implement** its **2021** notification of an **'Approved List of Models and Manufacturers of Solar Photovoltaic [PV] Modules'**, also called the **ALMM list.**

What is the ALMM list? Why is it being re-implemented?

- The **Approved List of Models and Manufacturers (ALMM)** includes **manufacturers approved for involvement in government projects and initiatives,** especially those related to **renewable energy, like solar power.**
- The **ALMM was temporarily paused two years** after its introduction due to concerns from **renewable power producers.**
 - These producers, having **secured sale contracts** with the government prior to the **list's establishment,** relied heavily on **imported solar modules and cells from China** due to their **affordability** and the **domestic sector's inability to meet demand at competitive prices.**
- This move **aims at promoting import substitution to support the domestic industry,** rather than restricting imports outright.

Does India rely on solar PV imports?

- **India** significantly depends on **imports to fulfil its solar cell and module requirements,** with **China and Vietnam** being the **primary suppliers.**
- Over the past **five years, India imported solar cells and modules** worth approximately **\$11.17 billion,** constituting **0.4% of India's total exports** during this period. As of **January 2023-24,** **China** was responsible for **53% of India's solar cell imports** and **63% of its solar PV modules.**
- The **manufacturing capacity in China** is **dominant** across the **solar supply chain,** while **India's capacity is limited** and **mainly focused** on the **final stage of manufacturing.**
- **Initiatives** like the **Production Linked Incentive (PLI) scheme** aim to **expand India's manufacturing capabilities in the coming years.**
- In response to this **reliance on imports and global supply chain challenges,** especially highlighted during the **COVID-19 pandemic,** **India** has implemented **key policies to bolster domestic production.** These include the introduction of the **Approved List of Models and Manufacturers (ALMM)** in **January 2019,** the announcement of a **₹19,500 crore PLI scheme** in the **2022-23 Union Budget** to **enhance domestic manufacturing** across the **solar supply chain,** and the imposition of a **40% customs duty on PV modules** and a **25% duty on PV cells.**
- These duties were later **reduced to address the slowdown in solar capacity additions** and the **financial pressures** faced by projects relying on **imported Chinese equipment,** which were bid at competitively low tariffs.

Why is China a leading exporter?

- **China** is the **leading exporter of solar PV components** primarily due to its **cost-competitive manufacturing environment**. The **lower cost of power**, which is a significant part of **production costs** (over **40%** for **polysilicon** and nearly **20%** for **ingots** and **wafers**), plays a crucial role in this advantage.
- Additionally, the **Chinese government's strategic prioritization** of the **solar PV sector**, combined with **substantial domestic demand**, has **facilitated economies of scale** and continuous innovation **throughout the supply chain**.

What is the scope for solar in India?

- **India's ambitious goal** to achieve **500 GW of installed capacity** from **non-fossil fuels by 2030** significantly drives the potential for solar power expansion. The country is experiencing the **fastest growth rate in electricity demand among major economies up to 2026**.
- This surge in demand is attributed to **robust economic activity** and the **increasing consumption of products designed to counter extreme weather conditions**.
- **Solar energy** contributed to approximately **one-third of all renewable energy production** between April last year and February this year. With an estimated solar power potential of **748.99 GW**, **India** has yet to fully exploit this resource.

Source: [TH](#)

DGTR recommends anti-dumping duty on sodium cyanide imports

Subject: Economy

Section: External sector

The Directorate General of Trade Remedies (DGTR) has recommended the **imposition of anti-dumping duty on sodium cyanide (NaCN) imported from China, the European Union, Japan, and Korea**.

Reasons for Anti-Dumping Duty Recommendation:

- **Industry Injury:** The DGTR found that the domestic industry had suffered injury despite capacity expansion.
- **Factors of Injury:**
 - High volumes of dumped imports
 - Suppressed prices
 - Production declines
 - Financial losses

Impact on Domestic Industry:

- The domestic industry was compelled to sell at losses to increase its market share.
- Significant investments of about ₹500 crore were made by the domestic industry to bridge the demand-supply gap.
- The current situation with dumping had forced domestic players to suspend production due to economic unviability.

Duration of Anti-Dumping Duty:

- The recommended anti-dumping duty on sodium cyanide imports from China, the European Union, Japan, and Korea is for a period of five years.

Overview of Sodium Cyanide:

- **Usage:** Sodium cyanide is utilized in various industries:
 - Extraction of gold and silver from their ores
 - Electroplating and heat treatment of metals
 - Manufacturing of insecticides, dyes, pigments, and bulk drugs, among others.

Directorate General of Trade Remedies (DGTR)

The Directorate General of Trade Remedies (DGTR) is the **apex national authority under the Ministry of Commerce and Industry responsible for administering all trade remedial measures**. These measures include anti-dumping duties, countervailing duties, and safeguard measures.

Functions of DGTR:

- **Trade Remedial Measures:** DGTR administers various trade remedial measures to protect domestic industries from unfair trade practices. This includes:
 - **Anti-Dumping Duties:** Imposed to rectify the situation arising from the dumping of goods, where a country exports goods to another country at prices lower than in its home market.
 - **Countervailing Duties:** Levied on goods that have received government subsidies in the originating or exporting country.
 - **Safeguard Measures:** Put in place to protect domestic industries from sudden and significant increases in imports.

- **Support to Domestic Industry:** DGTR provides trade defense support to domestic industries and exporters facing trade remedy investigations initiated by other countries. This includes legal and technical assistance throughout the investigation process.

Anti-Dumping Duty (ADD):

- **Objective:** The imposition of Anti-Dumping Duty aims to counter the adverse effects of dumping on the domestic industry.
- **Purpose:** It is a protectionist tariff imposed by a domestic government on foreign imports believed to be priced below fair market value.
- **Long-Term Impact:** ADD can reduce international competition for domestic companies producing similar goods, providing them with a level playing field.
- **WTO Compliance:** The use of anti-dumping measures is permitted by the World Trade Organization (WTO) to ensure fair competition in international trade.

Differentiation from Countervailing Duties:

- **ADD:** A customs duty imposed on imports to protect against goods being dumped at prices significantly lower than the normal value.
- **Countervailing Duty:** Imposed on goods that have received subsidies in the originating country, countering the unfair advantage conferred by these subsidies.

Legal framework

Sections 9, 9 A, 9 B and 9 C of the Customs Tariff Act, 1975 as amended in 1995 and the Customs Tariff (Identification, Assessment and Collection of Anti-dumping Duty on Dumped Articles and for Determination of Injury) Rules, 1995 and Customs Tariff (Identification, Assessment and Collection of Countervailing Duty on Subsidised Articles and for Determination of Injury) Rules, 1995 framed there under form the legal basis for anti-dumping and anti subsidy investigations and for the levy of anti-dumping and countervailing duties. These laws are in consonance with the WTO Agreements on Anti Dumping and Anti Subsidy countervailing measures.

WTO Provisions for Anti-Dumping Duty:

- **Validity:** An anti-dumping duty remains valid for a period of five years from the date of imposition unless revoked earlier.
- **Sunset Review:** The duty can be extended for another five years through a sunset or expiry review investigation.
 - **Purpose:** A sunset review evaluates the need for the continued existence of the duty, assessing its effectiveness and impact on the industry.
 - **Initiation:** Such a review can be initiated suo moto (on its own) or based on a substantiated request from or on behalf of the domestic industry.

Why text of amended tax treaty with Mauritius triggered stock sell-offs

Subject: Economy

Section: External Sector

Context:

- The **text of the amended tax treaty with Mauritius** has raised concerns of greater scrutiny on investments, and led to a sell-off in stock markets by Foreign Portfolio Investors (FPIs) on Friday.

More on news:

- **India has signed a protocol amending its tax treaty** with Mauritius with an aim to plug treaty abuse for tax evasion and avoidance.
- India and Mauritius, signed a protocol at Port Louis, amending the Double Taxation Avoidance Agreement (DTAA) between the two nations.
- The **amended treaty introduces the Principal Purpose Test**, essentially implying that the tax benefits under the treaty will not be applicable if it is established that obtaining that duty benefit was the principal purpose of any transaction or arrangement.

Introduction of the Principal Purpose Test

- The amended pact includes the **Principal Purpose Test (PPT)**, which is **in line with the global efforts against treaty abuse, particularly under the BEPS (Base Erosion and Profit Shifting) framework**.
- The PPT essentially implies that the tax benefits under the treaty will not be applicable if it is established that obtaining that duty benefit was the principal purpose of any transaction or arrangement.
- The two nations have also amended the preamble of the treaty to incorporate the thrust on tax avoidance and evasion.
- The earlier objective of “**mutual trade and investment**” has now been replaced with an intent to “eliminate double taxation” without creating opportunities for non-taxation or reduced taxation through tax evasion or avoidance including through “treaty shopping arrangements” aimed at obtaining relief provided under this treaty for the indirect benefit of residents of third jurisdictions.

- The recent amendment reflects India's intent to align with global efforts against treaty abuse, under the BEPS framework.

Impact of the amended treaty

- The text of the protocol amending the treaty states that the provisions of the protocol shall have effect from the date of entry into force of the protocol, without regard to the date on which the taxes are levied or the taxable years to which the taxes relate.
- This suggests that the PPT will apply to all transactions after the treaty gets notified, irrespective of the date of the investment itself.
- Investors are apprehensive that this will result in greater scrutiny of the capital gains tax levy and exemption, as the PPT will be applicable to past investments where investors have not made an exit yet.
- The DTAA was a major reason for a large number of FPIs and foreign entities to route their investments in India through Mauritius, as there was no capital gains tax on sale/transfer of shares.

India and Mauritius:

- Mauritius remains India's fourth largest source of FPI investments, after the US, Singapore, and Luxembourg.
- FPI investment from Mauritius stood at Rs 4.19 lakh crore at the end of March 2024, which is 6 per cent of the total FPI investment of Rs 69.54 lakh crore in India.
- FPI investment from Mauritius had stood at Rs 3.25 lakh crore, out of total FPI investment of Rs 48.71 lakh crore at the end of March 2023.

US sorting out WTO disputes with India

Subject: Economy

Sec: External Sector

- USTR Katherine Tai emphasizes the resolution of WTO disputes with India as beneficial for American agriculture and rural communities.
- Concerns were raised regarding India's wheat subsidies impacting American farmers.

Resolutions Reached with India:

- Last June, India and the US resolved six WTO disputes, leading to the removal of retaliatory tariffs on several US products.
- Improved access for chickpeas, lentils, almonds, walnuts, and apples is highlighted, benefiting farmers across various states including Michigan, Oregon, and Washington.
- Additionally, in September, India agreed to reduce tariffs on several US products, providing more market access for turkey, duck, blueberries, and cranberries, benefiting farmers in North Carolina, Pennsylvania, Virginia, and Wisconsin.

Settled WTO Disputes:

- Disputes settled include issues such as tariffs on steel and aluminum products, renewable energy subsidies, export subsidy programs, and countervailing duties on certain steel products.
- The last dispute, settled in September 2023, involved poultry imports from Washington, with India agreeing to cut import duties on some farm items.

Concerns of US:

- US alleges that India's wheat subsidies distort prices and directly harm American farmers.
- Emphasizes the importance of trade enforcement to counter unfair trading practices, mentioning Mexico's illegal fishing practices and China's unfair subsidies and trade practices.

India's Defense on Wheat Subsidies:

- India maintains that its wheat subsidies comply with WTO regulations and are necessary to support vulnerable farmers and feed the poor.

Impact on US Farmers:

- USTR cites an example of a family growing almonds in California, impacted by India's retaliatory tariffs imposed in 2019.
- Removal of these tariffs provided economic certainty for the family and others.

Bilateral Trade Between US and India:

- The US was India's largest trading partner in 2022-23, with bilateral trade rising to \$128.55 billion, marking a 7.65% increase.

About USTR –

USTR stands for the Office of the United States Trade Representative. It's a federal agency responsible for developing and *coordinating U.S. international trade, commodity, and direct investment policy, and overseeing negotiations with other countries.* The USTR advises the President on international trade issues, conducts trade negotiations, and enforces trade agreements. Its *primary goal is to promote free and fair trade to benefit American businesses, workers, and consumers.*

Pulses Import Bill in FY24

Subject: Economy

Sec: External Sector

- **Significant Increase:**
- India's pulses imports **surged almost twofold to \$3.74 billion** in the fiscal year 2023-24 compared to the previous year.
- This drastic increase followed the **government's decision to remove restrictions on imports to enhance supplies and manage price inflation.**
- **Growth Figures:**
- Pulses imports witnessed a remarkable 93% growth in dollar value, **rising from \$1.94 billion to \$3.74 billion.**
- In rupee terms, imports escalated by 97%, reaching ₹31,071 crore in 2023-24 compared to ₹15,780 crore in the previous fiscal.
- **Reasons for Surge:**
- The surge in imports can be attributed to the **increased purchase of masur (lentils) and higher shipments of yellow peas.**
- Duty-free imports of yellow peas were permitted until June 30, 2024, while duty-free imports of tur and urad were extended until March 31, 2025, to augment domestic supplies.
- **Record Imports:**
- **Record-high prices of pulses like tur and urad** in origins such as Myanmar and East Africa contributed to the significant import value in 2023-24.
- Lentil imports likely exceeded 16.11 lakh tonnes, **urad imports stood around 6.16 lakh tonnes, and tur imports were approximately 7.70 lakh tonnes.**
- **Impact on Domestic Production:**
- The **erratic weather conditions, including deficit rains in various regions,** adversely affected pulses output in 2023-24.
- **Pulses production** during the kharif 2023-24 season **declined to 71.18 lakh tonnes from the previous year's 76.21 lakh tonnes,** while rabi pulses output decreased slightly to 163.24 lakh tonnes from 163.58 lakh tonnes.

Mauritius tightens over offshore funds

Subject: Economy

Sec :External Sector

Increased Scrutiny:

- Mauritius imposes **stricter scrutiny on offshore fund structures,** leading to longer timelines and higher compliance burdens for India-focused funds.
- Recent **amendments to the India-Mauritius tax treaty and tax notices from Indian authorities to Mauritius-based funds** contribute to the tighter regulatory environment.
- Emerging alternatives like **GIFT City may deter funds from choosing Mauritius** as their jurisdiction.

Image Makeover:

- Mauritius, having exited the FATF grey list in October 2021, seeks to distance itself from its reputation as a **quasi-tax haven.**
- Enhanced KYC measures and routine audits by the **Financial Services Commission aim to align with international tax norms.**

Intensified Scrutiny Process:

- The time required for fund setup has increased to 6-9 months due to intensified scrutiny.
- Greater emphasis on **beneficial owner experience, fund sources, commercial substance, and compliance measures.**
- Background checks on fund sponsors and managers conducted by the FSC to verify antecedents.

Challenges and Impact:

- Compliance requirements lead to changes in management company pricing, driven by rising costs and scarcity of skilled talent.
- Reluctance among institutional investors to provide personal information required for compliance.

- Mauritius emphasizes its commitment to **eliminating the tax haven image but faces challenges in dispelling this perception.**

Exploring Alternatives:

- Larger funds consider alternative jurisdictions like **GIFT City, Singapore, and Cayman Islands due to difficulties in setting up funds in Mauritius.**

GIFT City (Gujarat International Finance Tec-City):

- **Location:**
- GIFT City is situated in Gandhinagar, Gujarat, India.
- It is strategically positioned to leverage the state's infrastructure and connectivity advantages.
- **Components:**
- GIFT City comprises a multi-service Special Economic Zone (SEZ) with two main components:
 1. India's first International Financial Services Centre (IFSC)
 2. An exclusive Domestic Tariff Area (DTA)
- **Vision:**
- GIFT City is envisioned as an integrated hub for financial and technology services, not only catering to India but also serving global markets.
- It aims to provide a conducive environment for businesses to thrive and innovate in the fields of finance and technology.
- **Regulatory Framework:**
- The International Financial Services Centre Authority (IFSCA) **serves as the unified regulator responsible for the development and regulation of financial products, services, and institutions within IFSCs in India.**
- It ensures a robust regulatory environment conducive to the growth of financial services in GIFT City.

New FDI Policy in Satellite Business

Subject: Economy

Sec: External Sector

Increased FDI Limit

- The Finance Ministry has announced a **new FDI limit for satellite-related activities, allowing up to 74% FDI via the automatic route.**
- The new regulations are set to come into effect from April 16, **providing a boost to foreign investment in the space sector.**

Sectoral Guidelines:

- The investee entities will be subject to **sectoral guidelines issued by the Department of Space**, ensuring compliance with regulations and standards.
- **Amended Policy for Space Sector:**
- In February, the government **approved an amendment to the FDI policy for the space sector, permitting 100% FDI.**
- **Satellite manufacturing & operation, satellite data products, and ground segment & user segment can now receive FDI up to 74% under the automatic route.**
- **Government Approval Route:**
- Beyond the 74% limit, the government route will be applicable for FDI in satellite-related activities.
- Certain sub-sectors, **such as launch vehicles and associated systems or sub-systems, have specific FDI thresholds and approval routes.**
- **Liberalized FDI Thresholds:**
- The liberalized entry routes aim to attract potential investors to Indian companies in the space sector, aligning with the **Indian Space Policy 2023.**
- **Definition of Satellite-Related Activities:**
- The notification provides definitions for various satellite-related activities, **including satellite manufacturing and operation, satellite data products, ground segment, user segment, launch vehicles, creation of spaceports, and manufacturing of components and systems.**
- **Facilitating End-to-End Satellite Operations:**
- The policy covers end-to-end activities related to **satellites, including manufacturing, operation, data products, ground infrastructure, and user terminals, providing a comprehensive framework for satellite operations.**

Indian Space Policy 2023

- The Indian Space Policy 2023 aims to **enable, encourage, and develop a flourishing commercial presence in space, recognizing the critical role of the private sector** in the space economy.

Key highlights of the policy:

Creation of Entities:

- **InSPACE (Indian National Space Promotion and Authorization Centre):** This entity serves as a **single window clearance and authorization agency for various space activities, facilitating private sector participation**. It also shares technologies, products, processes, and best practices with **non-government entities (NGEs) and government companies**.
- **New Space India Limited (NSIL):** Responsible for **commercializing space technologies and platforms developed through public expenditure**, as well as manufacturing, leasing, or procuring space components and technologies from the private or public sector.
- **Department of Space:** Provides overall policy guidelines and **acts as the nodal department for implementing space technologies**. It also coordinates international cooperation and resolves disputes arising from space activities.
- **Rationalizing ISRO's Role:**
- ISRO will transition out of manufacturing operational space systems and focus on R&D in advanced technology. **Mature systems will be transferred to industries for commercial usage, allowing ISRO to concentrate on cutting-edge research and long-term projects.**
- **Private Sector's Role:**
- NGEs (including the private sector) are allowed to **undertake end-to-end activities in the space sector, including the establishment and operation of space objects, ground-based assets, and related services** such as communication, remote sensing, and navigation.
- NGEs can **design and operate launch vehicles, establish infrastructure, make filings with the International Telecommunication Union (ITU), and engage in commercial recovery of asteroid resources.**
- The private sector's involvement **spans satellite ownership, communication services, remote sensing data dissemination, and space transportation.**

Key Highlights of India's Oil Import Scenario

Subject: Economy

Sec: External Sector

- **Reduction in Import Bill:**
- India's crude oil import bill witnessed a **significant decline of 16% in the fiscal year ended March 31, attributed to lower international prices.**
- Despite importing a similar volume of crude oil as the previous fiscal year, **India paid \$132.4 billion for imports in FY24, compared to \$157.5 billion in FY23.**
- **Continued Dependence on Overseas Suppliers:**
- Despite the reduction in import bill, **India's dependency on overseas suppliers reached a new high.**
- Import dependence for crude oil surged to 87.7% in FY24, up from 87.4% in the previous fiscal year, **highlighting the nation's heavy reliance on imports to meet its energy needs.**
- **Stagnant Domestic Production:**
- **India's domestic crude oil production remained nearly unchanged** at 29.4 million tonnes in FY24.
- This stagnation in domestic production contributes to the country's increasing reliance on imported oil.
- **Import of Petroleum Products and LNG:**
- Apart from crude oil, **India imported petroleum products like LPG, spending \$23.4 billion on 48.1 million tonnes of imports.**
- Additionally, the country imported 30.91 billion cubic meters of LNG, costing \$13.3 billion, in FY24.
- The **import of LNG experienced a decrease compared to the previous fiscal year due to the price shock caused by geopolitical events.**
- **Net Import Bill and Trade Balance:**
- Petroleum imports accounted for **25.1% of India's gross imports, while petroleum exports represented 12% of the country's gross exports in FY24.**
- **Rising Fuel Consumption:**
- India's fuel consumption witnessed a **notable increase of 4.6%** to a record 233.3 million tonnes in FY23.

- This upward trend in fuel consumption **reflects the country's growing energy demand and economic activity.**
- **Surplus Refining Capacity:**
- Despite challenges in crude oil production, **India maintains surplus refining capacity, enabling the export of petroleum products like diesel.**
- This surplus capacity enhances India's position in the global refining industry, contributing to its energy security strategy.

RBI Issues FEMA Norms for Direct Listing on International Exchange

Subject: Economy

Sec: External Sector

- **Regulatory Push:** The Reserve Bank of India (RBI) introduced regulations under the Foreign Exchange Management Act (FEMA) to facilitate the listing of Indian companies on international stock exchanges.
- **Proceeds Handling:** According to the notification, the proceeds from the purchase or subscription of equity shares of an Indian company listed on an International Exchange must either be remitted to a bank account in India or deposited in a foreign currency account of the Indian company.
- **Sale Proceeds:** The sale proceeds of equity shares (net of taxes) can be remitted outside India or credited to the bank account of the permissible holder.
- **Transaction Reporting:** Reporting regarding foreign exchange transactions will be conducted by the investee Indian company through an authorized dealer. If a Foreign Portfolio Investor (FPI) makes an investment through a stock exchange, the authorized dealer will report to the RBI.
- **Utilization of Funds:** Funds raised through External Commercial Borrowings (ECBs), American Depository Receipts (ADRs), Global Depository Receipts (GDRs), or through the direct listing of shares of Indian companies on International Exchanges, but yet to be utilized or repatriated, will be held in foreign currency accounts with a bank outside India.

Foreign Exchange Management Act (FEMA)

The Foreign Exchange Management Act (FEMA) is a key legislation governing cross-border trade and payments in India.

Overview:

- FEMA regulates foreign exchange transactions and procedures in India.
- It was enacted in 1999, replacing the Foreign Exchange Regulation Act (FERA).
- The head office of FEMA is the Enforcement Directorate, located in Delhi.

Entities and Transactions Covered:

- Indian citizens residing in India or abroad (NRIs).
- Overseas companies owned 60% or more by NRIs.
- Associate branches or subsidiaries of Indian companies located outside India.
- Exports and imports of goods and services.
- Banking, financial, and insurance services provided outside India.
- Cross-border sale, purchase, and exchange of goods and services.

FEMA plays a crucial role in regulating and facilitating cross-border transactions, ensuring compliance with legal and regulatory requirements.

ADRs and GDRs

ADR (American Depository Receipts):

- ADRs are issued by a US bank and represent a specific number of shares in a foreign company.
- They are **listed and traded on US financial markets, making it easier for US investors to buy shares of foreign companies.**
- ADRs allow foreign companies to access US capital markets without directly listing their shares on US exchanges.
- ADRs are denominated in US dollars and are subject to US securities regulations.
- They provide investors with dividends and capital gains in US dollars.

GDR (Global Depository Receipts):

- GDRs are similar to ADRs but are issued by a depository bank located outside the company's home country.
- They represent shares of a foreign company and are traded in markets outside the company's home country.
- GDRs are typically **traded in European markets and denominated in currencies other than the US dollar.**
- They allow foreign companies to raise capital from international investors by offering shares in global markets.
- GDRs provide investors with exposure to foreign companies while trading in their local currency.

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Targeting \$1 Trillion in Goods Exports by 2030: Initiatives and Challenges

Subject: Economy

Sec: External sector

- **Objective:** The Ministry of Trade has set a target to achieve \$1 trillion in merchandise exports by 2030.
- **Initiative:** An exercise has been initiated to identify the necessary infrastructure requirements, potential sectors, and clusters that will contribute to achieving this target.
- **Sustainability Concerns:** Sustainability has emerged as a major concern, especially after the European Parliament's approval of the Corporate Sustainability Due Diligence Directive (CSDDD). This law requires larger companies operating in the EU to ensure their supply chains do not involve forced labor or environmental damage.
- **Impact of CSDDD:** Prior to CSDDD, the European Union implemented the Carbon Border Adjustment Mechanism (CBAM), which penalizes products with high carbon footprints entering the EU. This could raise the costs of Indian exports by 20 to 35 percent, particularly affecting iron, steel, and aluminum exports to the EU.
- **Infrastructure Enhancement:** The Ministry is focusing on enhancing infrastructure capabilities, including ports, airports, and railways, to support increased trade volumes. A study by the Asian Development Bank is underway to identify critical clusters and infrastructure gaps.
- **Integration into Global Supply Chains (GVCs):** There is an emphasis on integrating India into global supply chains, as approximately 70 percent of global trade occurs through these chains.
- **Infrastructure Challenges:** Significant infrastructure development is required to support the projected increase in goods movement. This includes additional capacity in ports, railways, and airports to handle the expected rise in exports and imports.

Overall, while the target of \$1 trillion in merchandise exports by 2030 presents significant challenges, officials are optimistic about overcoming them through strategic infrastructure development and integration into global supply chains.

About Carbon Border Adjustment Mechanism (CBAM)

- **What is it?** CBAM is a proposed European Union (EU) tariff on carbon-intensive products.
- **Purpose:** The purpose of CBAM is to put a fair price on the carbon emitted during the production of carbon-intensive goods entering the EU. It aims to encourage cleaner industrial production in non-EU countries.
- **Adoption and Transition Period:** CBAM was adopted on May 17, 2023, and its transitional period started on October 1, 2023.
- **Operation:** CBAM is designed to counter the risk of carbon leakage by imposing a charge on the embedded carbon content of certain imports equal to the carbon price of domestic production.
- **How does it Work?**
 - EU importers must purchase carbon certificates corresponding to the EU's carbon price if the goods had been produced locally.
 - Certificate prices are calculated based on auction prices in the EU carbon credit market.
 - The required certificates depend on the quantity of imported goods and their embedded emissions.
 - Companies from countries with equivalent domestic carbon pricing regimes can export to the EU without buying CBAM certificates.
- **Affected Sectors:** Initially, CBAM targets goods imported from non-EU countries, particularly those in carbon-intensive sectors such as cement, electricity, fertilisers, aluminium, iron, steel, and hydrogen.

About Directive on Corporate Sustainability Due Diligence (CSDD):

- **Introduction:** The European Commission has proposed a Directive on Corporate Sustainability Due Diligence to promote sustainable and responsible corporate behavior across global value chains.
- **Key Features:**
 - It mandates certain large EU and non-EU companies to establish mandatory due diligence practices to identify, prevent, mitigate, and ultimately terminate adverse impacts of their corporate activities on human rights and the environment.
 - The proposal aligns with the European Green Deal's objectives towards a sustainable future.
- **Impacts of EU's Sustainability:**
 - Covered EU companies are taking proactive measures to protect themselves, including implementing robust mechanisms to mitigate risks.
 - Actions include establishing clear contractual clauses, complaint procedures, increased third-party assessments, and capacity building.

New test to diagnose special learning disabilities in adults to be rolled out by year-end

Subject: Economy

Sec: External sector

Context:

- The Union government is expected to roll out a new test to **diagnose specific learning disabilities (SLDs) in adults in India by the end of the year.**

More on news:

- The test is being designed by the **National Institute for the Empowerment of Persons with Intellectual Disabilities (NIEPID) in Telangana's Secunderabad.**
- This comes even as the **Supreme Court is in the middle of hearing a writ petition by a former Jawaharlal Nehru University student**, challenging the absence of such diagnostic methods for testing SLDs in adults, which prevented them from getting disability certificates.
- When SLDs were introduced in the list of disabilities in 2016, it invariably left out people who were adults at the time because the nature of the disorder requires diagnosis at an early age.

About the certificate:

- Getting a certificate is imperative in order to claim benefits under the **Rights of Persons with Disabilities (RPwD) Act, 2016, which provides for reservation in government or higher education institutions receiving government aid (5%), and in government jobs (4%).**

Certification requirements:

- The **certification requirements for SLDs included a clinical assessment, an IQ assessment and an SLD assessment.**
- The SLD assessment can be done using the NIMHANS battery test or the Grade Level of Assessment Devices (GLAD).
- This certification begins at the **age of 8, followed by repeat certifications — once in Class 10, and then in Class 12.**
- The certificate issued after the final assessment at the age of 18 or above will be valid for lifetime.
- The new guidelines said that the same tools will be used for adults till new ones for older children and adults can be completed.

Need for such a step:

- Officials explained that this was **only to cover those who were already adults when SLDs were added to the list of disabilities in the RPwD Act in 2016**, thus leaving them without an option to be certified and avail benefits.
- Once these adults are covered in the **new test, diagnosis and certification can be limited to children due to the nature of the disorder.**

Centre accords AEO status to gem and jewellery sector

Subject: Economy

Sec: External Sector

Inclusion of the Gem and Jewellery Sector:

- The **Gem & Jewellery Export Promotion Council (GJEPC)**, the apex body of the sector, announced that the **gem and jewellery sector** is now included in the **AEO program**. Previously, this sector was excluded.
- Following proactive efforts and advocacy by the GJEPC with relevant ministries, the **Ministry of Finance** declared that **units within the gem and jewellery industry** are eligible to apply for **AEO status** and enjoy its benefits.
- **Asian Star**, a diamond and diamond jewellery manufacturer, became the **first company in this sector to be granted AEO status in India**, following its application along with 19 other companies.
- This extension of AEO status to the gem and jewellery sector is expected to boost the industry by providing faster and more cost-effective export processes.

About the Authorized Economic Operator (AEO) Program:

- The **Authorized Economic Operator (AEO) program** is part of the **World Customs Organisation (WCO) SAFE Framework of Standards** aimed at **securing and facilitating global trade.**
- This program enhances **international supply chain security** and **eases the movement of legitimate goods.**
- Entities engaged in **international trade** can gain **AEO status** by **complying with supply chain security standards**, which brings certain benefits.
- Initially introduced as a pilot project in **2011** by the **Customs Department**, the **AEO program** has played a significant role in simplifying **export operations** and **reducing costs for exporters** across various sectors.

AEO in India:

- The **AEO program in India** aligns with the **commitments under Article 7.7 of the World Trade Organization's Trade Facilitation Agreement (WTO TFA).**

- The program is **voluntary** and seeks to **improve cargo security** through collaboration with key players in the **international supply chain**, including **importers, exporters, logistics providers**, and others, as noted by the **Central Board of Indirect Taxes (CBIC)**.

World Customs Organisation (WCO):

- Established in **1952** as the **Customs Co-operation Council (CCC)**
- It is an **independent intergovernmental body** whose mission is to enhance the effectiveness and efficiency of Customs administrations.
- Today, the **WCO** represents **186 Customs administrations** across the globe that collectively process **approximately 98% of world trade**.
- As the global centre of Customs expertise, the **WCO is the only international organization with competence in Customs matters** and can rightly call itself the voice of the international Customs community.
- **WCO Secretariat** is based in **Brussels, Belgium**.

WCO SAFE framework of standards:

- In **June 2005**, the **WCO Council** adopted the **SAFE Framework of Standards to Secure and Facilitate Global Trade (SAFE Framework)** aimed at **deterring international terrorism, securing revenue collections, and promoting global trade facilitation**.
- The **Authorized Economic Operators (AEO) Programme**, a key **Customs-Business partnership initiative**, was introduced in **2007** as part of the **SAFE Framework**.
- The **SAFE Framework** serves as the **global Customs community's unified response to supply chain security threats** while also **supporting the facilitation of legitimate and secure businesses**.
- The **2021 update of the SAFE Framework** includes **enhancements** such as **stronger cooperation between Customs and other government agencies**, the **promotion of smart security devices for real-time monitoring of goods**, and the **development of regional Customs union AEO programs and mutual recognition**.

Source: [TH](#)

RBI Directive for Currency Derivatives

Subject: Economy

Sec: Financial Market

- **RBI Directive for Currency Derivatives:**
 - Effective from **April 5**, all market participants, including Foreign Portfolio Investors (**FPIs**), must declare any **underlying position** in the currency derivatives market.
 - This declaration is necessary even for a single lot, or else all positions must be **squared-off**.
 - Previously, FPIs were allowed to participate in **Exchange-Traded Currency Derivatives (ETCD)** without establishing "underlying exposure" in equities, bonds, or other financial instruments.
 - FPIs could take **long or short positions** in all currency pairs up to a limit of **\$100 million** across all recognized stock exchanges.
- **Impact on FPIs:**
 - FPIs, along with other market participants, have been crucial in providing **liquidity** to ETCD contracts listed on exchanges.
 - Some FPIs and foreign brokers, particularly those engaged in **prop trading** or **high-frequency trading**, may now need to **square off positions** by **April 5**.
 - Failure to comply could result in **penal action**.
 - Custodians handling trades for FPIs are seeking **clarity** from the RBI regarding this directive.
- **Concerns and Confusion:**
 - The FPI community is **confused** and uncertain about the necessary actions to take.
 - Large hedge funds and quant-based funds, active in the ETCD market, may have **significant positions** that require attention.
 - Lack of clarity has led to a situation where many market participants are considering **squared-off positions** before the deadline.
- **Market Outlook:**
 - The market anticipates a shift towards a landscape dominated by **hedgers**, including exporters, importers, and FPIs.
 - Banks and brokers, traditionally market makers, might consider their position in light of the new directive.
 - The circular raises concerns of a **reduction in liquidity** if banks and brokers withdraw from the market.

- **Risk Factors:**
 - FPIs' positioning in the **USD-INR** pair typically leans towards being **long** (more foreign currency, less rupee).
 - With positive FPI flows into India and a **current account deficit**, the risk is perceived as **Indian currency depreciation**.

ETD - Exchange Traded Derivative:

- An **Exchange Traded Derivative** is a standardized financial contract traded on **stock exchanges** in a regulated manner.
- These derivatives are subject to rules drafted by market regulators such as the **Securities and Exchange Board of India (SEBI)**.

Derivatives Overview:

- **Derivatives** are financial contracts deriving their values from price fluctuations of underlying assets like **stocks, currency, bonds, commodities**, etc.
- There are essentially two types of derivatives:
 - **Exchange Traded Derivatives (ETDs):**
 1. Subject to **standardized terms and conditions**.
 2. Traded on **stock exchanges**.
 - **Over the Counter (OTC) Derivative:**
 1. Traded between **private counter-parties**.
 2. Transactions occur **directly** between parties without a formal intermediary.

ETD Characteristics:

- ETDs are standardized, meaning they have **pre-defined terms and conditions**.
- Traded on **regulated exchanges**, ensuring transparency and market oversight.
- Buyers and sellers of ETDs do not need to know each other, as the exchange acts as the **counter-party** for both sides.
- Prices and terms are **publicly available and visible** on the exchange, allowing for **price discovery and market liquidity**.
- ETDs often include various financial instruments such as **futures and options** contracts.

Examples of ETDs:

- **Futures Contracts:** Agreements to buy or sell an asset at a **future date** for a **specified price**.
- **Options Contracts:** Contracts giving the buyer the **right** (but not the obligation) to buy or sell an asset at a **set price** within a specific time frame.

Exchange Traded Derivatives play a crucial role in financial markets, providing investors with opportunities for risk management, speculation, and portfolio diversification. Their standardized nature and regulated trading environment contribute to market efficiency and transparency.

Suggestions for GST Reform by Vijay Kelkar

Subject: Economy

Section: Fiscal policy

- **Single GST Rate:**
 - Kelkar suggests introducing a single GST rate system of **12% across the country**.
 - This move aims to simplify the GST structure, reducing complexity.
- **Constitutional Amendment:**
 - He proposes a **constitutional amendment** for equitable sharing of GST proceeds.
 - The sharing should include the Centre, States, and local governments like municipal corporations.
- **Consolidated Fund for Third Tier:**
 - A constitutional amendment is also needed to **create the Consolidated Fund for the third tier of government**.
- **Impact on Urban Governments:**
 - Kelkar believes that **sharing GST with the third tier will strengthen the fiscal base of urban governments**.
 - It will also **deepen democracy and governance at the grassroots level**.
- **GST Rate Complexity:**
 - Kelkar points out that the current **plethora of GST rates** has made the system unnecessarily complex.
 - He emphasizes that **many developed and emerging economies have found success with a single GST or VAT rate**.

- **Eliminating Differential Tax Rates:**
 - The traditional tax policy of having different rates for '**must-have**' and '**nice-to-have**' goods should be done away with, according to Kelkar.
- **Previous Recommendation:**
 - The **13th Finance Commission** previously recommended a **single rate of 12%** for GST during its award period of **2010-15**.
- **GST Revenue Performance:**
 - In March 2023, GST revenues reached the **second-highest level** of ₹1.78 lakh crore.
 - This was notably higher than the monthly average collection of around ₹1.68 lakh crore in **2023-24**.
 - The average monthly collection for **2022-23** stood at about ₹1.5 lakh crore.
- **Infrastructure Needs:**
 - Kelkar emphasizes the need for **efficient infrastructure** in the urban economy.
 - Urban local bodies currently lack the fiscal base required for investments in high-quality public goods.
- **Independent Secretariat for GST Council:**
 - He suggests the creation of an **independent Secretariat** for the GST Council.
 - This move aims to **ensure neutrality and unbiased support or advice to the GST Council**.

Different rates under GST

<p>NIL</p>  <p>Hulled Cereal Grains, Sanitary Napkins, etc</p>	<p>0.25%</p>  <p>Cut & Semi-polished Stones</p>	<p>5%</p>  <p>Sugar, Spices, Edible Oil, etc</p>
<p>12%</p>  <p>Computer Monitor, Spectacles, etc</p>	<p>18%</p>  <p>Soaps, Hair Oil, etc</p>	<p>28%</p>  <p>AC, Refrigerator, etc</p>

Amended DTAA between India and Mauritius

Subject: Economy

Section: Fiscal policy

- **Purpose of Amendment:**
 - The amendment aims to plug **treaty abuse for tax evasion or avoidance**.
 - Introduces the **Principal Purpose Test (PPT)** to ensure tax benefits are not obtained as the primary purpose of a transaction or arrangement.
- **Key Amendments:**
 - **Article 27B** introduced, defining '**entitlement to benefits**' under the treaty.
 - **PPT will deny treaty benefits** (like reduction of withholding tax) if obtaining such benefits is one of the principal purposes of the transaction.
- **Effect on Investments:**

- **Mauritius** historically favored for investments due to **non-taxability of capital gains** until 2016.
- Last amended in **May 2016** to allow taxing **capital gains** on shares acquired by Mauritian tax residents, exempting investments until **March 31, 2017**.
- **Impact on FPIs:**
 - DTAA was a major reason for **foreign portfolio investors (FPIs)** routing investments through Mauritius.
 - Mauritius ranks **fourth** in FPI investments in India, after the US, Singapore, and Luxembourg.
- **Amended Preamble:**
 - Preamble now focuses on **eliminating double taxation** without creating avenues for **non-taxation** or **reduced taxation** through **tax evasion**.
 - Aims to prevent "**treaty shopping arrangements**" for indirect benefits to residents of third jurisdictions.
- **Expectations and Litigation:**
 - **BEPS MLI Impact:** Structuring investments through Mauritius should consider **BEPS MLI impact** for availing tax treaty benefits.
 - **Rise in Litigation:** Investors need to demonstrate **commercial rationale** behind transactions to avoid denial of treaty benefits.
 - Ongoing **litigation** on beneficial ownership and substance concerning Indian investments already prevalent.
- **India's Global Alignment:**
 - Reflects India's intent to align with global efforts against **treaty abuse**, particularly under the **BEPS framework**.
 - **Anticipated Developments:** Possible announcements in the budget post-elections in **July 2024** regarding **Pillar Two** amendments in domestic tax laws.
- **Global Tax Regime:**
 - **Pillar Two Regime:** Over **135 jurisdictions** agreed to implement a **minimum tax rate of 15%** for multinationals.
 - **Global Anti-Base Erosion (GloBE)** rules introduced to ensure a **global minimum corporate tax rate**.
 - Expected to generate around **\$150 billion** in additional global tax revenues annually.

Conclusion:

The amended DTAA between India and Mauritius aims to **prevent tax evasion, aligning with global efforts against treaty abuse under the BEPS framework**.

However, uncertainties remain regarding the **treatment of grandfathered investments**, highlighting the need for guidance from the CBDT. This amendment may lead to a rise in litigation as investors must demonstrate the commercial rationale behind their transactions. *India's intent to align with global tax regimes, such as the Pillar Two Regime, reflects a broader effort to ensure fair taxation and prevent tax avoidance on a global scale.*

About Principal Purpose Test (PPT)

The Principal Purpose Test (PPT) is a provision commonly found in modern tax treaties, including Double Taxation Avoidance Agreements (DTAAs). It is *designed to prevent treaty abuse and ensure that the benefits of a tax treaty are not granted inappropriately to those who do not have a legitimate claim to them.*

Objective:

- The main objective of the PPT is to **counteract tax avoidance** strategies that abuse tax treaties.
- It aims to ensure that the benefits of a tax treaty are granted only to those transactions or arrangements that have a genuine commercial or economic purpose.

Conditions for Application:

- The PPT provision comes into play when one of the **principal purposes** of a transaction or arrangement is to **obtain tax benefits**.
- If it is established that obtaining the tax benefit was a **principal purpose**, the treaty benefits can be denied.

In essence, the Principal Purpose Test is a mechanism to ensure that tax treaties are not used as a tool for tax avoidance. It *emphasizes the importance of genuine economic activities and commercial purposes in availing treaty benefits, discouraging artificial or abusive arrangements solely for tax advantages.*

Grandfathering rule

The "grandfathering rule" is a provision **often included in tax laws or treaties to protect existing investments or arrangements from the impact of new tax laws or changes in tax treaties**. It allows certain investments or transactions that were made **before the new rules came into effect to continue enjoying the benefits of the old rules**. It provides continuity of benefits, stability, and predictability for investors and businesses, ensuring that they are not unduly affected by sudden changes in tax regimes.

Summary of the African Debt Crisis

Subject: Economy

Sec: Fiscal Policy

Background:

- Ghana, like many other African countries, **faces a severe debt crisis after defaulting on a significant portion of its foreign debt in December 2022.**
- The debt crisis is exacerbated by the repayment schedule, leading to economic distress and hindering development efforts.

Rising Debt Burden:

- Debt service payments for 16 African countries surged to \$22.3 billion in 2023, straining government revenues and hindering economic growth.
- The loan interest to revenue ratio has doubled over the past decade, reaching 11%, significantly higher than in advanced economies.

International Conference on African Debt Crisis:

- Economists and policy experts gathered in Accra for an international conference on the African debt crisis, organized by the **International Development Economics Associates (IDEAs) network.**
- The conference highlighted **common features and distinct challenges faced by debt-distressed countries across Africa, Asia, and Latin America.**

Call for Reform:

- Experts called for substantial reform of the international financial architecture, advocating for a **more equitable system** that does not burden the **Global South.**
- They proposed a more active role for the UN in negotiating debt treatment, **including potential debt relief measures monitored by a transparent, multilateral body.**

Structural Issues and Predatory Lending:

- The debt crisis is attributed to structural issues rather than solely financial mismanagement or corruption, challenging prevailing narratives.
- Low-income countries increasingly borrow from private creditors **due to the unavailability of affordable credit from rich countries,** exacerbating the crisis.
- Predatory lending practices by private creditors receive less attention compared to narratives surrounding Chinese debt.

Zambia's Approach and Challenges:

- Zambia's comprehensive debt treatment plan under the **G20 Common Framework serves as a test case, but negotiations with creditors, both official and private, are protracted.**
- Despite endorsing the Common Framework, its effectiveness has been limited, leading to calls for an expanded role of multilateral banks and international cooperation on taxation.

Conclusion:

- The lack of monetary sovereignty and structural adjustment programs **perpetuate the debt crisis, hindering growth and development in indebted countries.**
- **Reforms in the international financial architecture are imperative to address the root causes of the crisis** and ensure sustainable development in Africa and other debt-distressed regions.

Understanding the Global South:

- **Definition and Characteristics:**
 - The Global South encompasses countries **primarily located in Africa, Asia, and Latin America.**
 - These nations are **often labeled as developing, less developed, or underdeveloped.**
 - Challenges include higher levels of poverty, income inequality, and difficult living conditions compared to the **wealthier nations of the Global North.**
- **Origins and Evolution:**
 - Coined in 1969 by political activist Carl Oglesby.
 - Gained prominence after the dissolution of the Soviet Union in 1991.
 - Shifted from the **previous term "Third World," associated with negative stereotypes, to a more neutral and inclusive alternative.**
- **Geopolitical and Economic Context:**
 - Transcends strict geographical boundaries, encompassing political, geopolitical, and economic similarities among nations.

- Many countries in the Global South have a history of imperialism and colonial rule, shaping their perspectives on the global political economy.
- Shared challenges include **advocating for fair trade practices, debt relief, and addressing climate change.**

US Support for G-4 at UNSC:

- **Reforming the Security Council:** The United States, acknowledging that the United Nations Security Council (UNSC) does not accurately represent contemporary global realities, has **expressed support for the G-4 members to attain permanent seats on the Council.**
- **US Ambassador's Statement:** US Ambassador to the UN, emphasized the need for reform in the UNSC, noting that the **Council's structure from 70 years ago is outdated and inadequate, however,** highlighted that Russia and China are the only nations in the Security Council opposed to its expansion and reform.
- **Support for G-4 Members:** The US supports the inclusion of G-4 members - **Japan, Germany, India, and Brazil - as permanent members of the Security Council** to better reflect the current global landscape.
- **Addressing Regional Representation:** Recognizing the lack of permanent seats for Africa and Latin America, the **US advocates for additional elected seats on the Council to ensure broader representation.**
- **India's Role:** India has long championed efforts to reform the Security Council, advocating for its rightful place as a permanent member to align with contemporary geopolitical realities.

United Nations Security Council (UNSC):

- **Establishment:** Established in 1945 by the United Nations Charter, the UNSC holds primary responsibility for maintaining international peace and security.
- **Membership:** The Security Council consists of 15 members:
 - Five permanent members: **United States, Russian Federation, France, China, and United Kingdom.**
 - **Ten non-permanent members elected for two-year terms.**
- **Voting:** Each member has one vote. Decisions require an affirmative vote of nine members, including concurring votes from all five permanent members. **A single "No" vote from any permanent member can block the passage of a resolution.**
- **Participation:** Non-members of the Security Council may participate in discussions without voting rights if their interests are directly affected by the matter at hand.

Group of Four (G-4) Countries:

- **Composition:** The G-4 comprises Brazil, Germany, India, and Japan, all of whom aspire to attain permanent membership status in the UNSC.
- **Mutual Support:** The G-4 nations actively support each other's bids for permanent UNSC membership.
- **Annual Meetings:** Traditionally, the **G-4 nations convene on the sidelines of the UN General Assembly's annual high-level session to discuss their aspirations and strategies regarding UNSC reform.**

Sam Pitroda controversy: How inheritance tax works

Subject: Economy

Sec: Fiscal Policy

Context:

- Prime Minister Narendra Modi alleged on Wednesday that the Congress would snatch property left behind by people for their children.

More on news:

- Sam Pitroda, a former adviser to Rajiv Gandhi and an associate of Rahul Gandhi, described the inheritance tax in the United States as an "interesting law".
- There have been discussions about levying a global minimum corporate tax rate, and a proposal in the **US to levy a minimum 25% tax on taxpayers with wealth over \$100 million.**
- France and Brazil have pushed for a G20 declaration on taxing the super rich by July.
- The Biden Administration has proposed legislation for a **'Billionaire Minimum Income Tax' of at least 25% on their full income, including unrealised gains.**

History of Inheritance tax:

- India did have **an inheritance (or death) tax once.**
- The tax, which was known as estate duty, was introduced in 1953, and was abolished in 1985 by the government of Rajiv Gandhi.
- India also had a wealth tax and a gift tax, which were abolished in 2015 and 1998 respectively.

Ways to tax wealth:

- **Taxes are levied on the flow of income on wealth** or at the time of transfer of wealth or on the stock of wealth linked to the value of owned assets as a one-time levy.
- There can be a capital levy on income from wealth or ownership of assets resulting in capital gains, transfer taxes in the form of wealth tax, inheritance tax, estate tax, or gift tax at the time of transfer of wealth or assets.
- Taxes can also be levied on a combination of income and wealth.

The taxes in India:

- The now abolished estate duty was inheritance tax with a threshold of Rs 1 lakh, and progressive rates from **5% to 40% on the principal value of the estate exceeding Rs 20 lakh.**
- **The Estate Duty Act, 1953 was amended in 1958** to change the definition of accountable person, lower the applicable threshold, and redefine slabs.
- The Narendra Modi government announced the abolition of **wealth tax and its replacement with a surcharge on the super rich in the Budget for 2015-16.**

Cost and revenues:

- **High tax rates** do not make sense if the cost of collection and administration of these taxes are high compared to the revenues that arise.
- In the initial years of estate duty, collections were lower than the budgeted estimates.
- The **high cost of collection and double taxation** in various forms of wealth tax were cited as reasons for abolishing estate duty.
- The high cost of collection and double taxation in various forms of wealth tax were cited as reasons for abolishing estate duty.
- **Gift tax was abolished in 1998 citing lower revenues.**
- Gift tax has been levied in India since 1958.
- The Gift Tax Act has also not been successful as an instrument to curb tax evasion and avoidance.

Other international practices:

- A March 2024 note by the **International Monetary Fund (IMF)**, said tax rates on wealth have generally declined around the world over the past decades, with a decline in average corporate income tax rates being an important component across country groups of all income levels.
- The Organisation of Economic Cooperation and Development (OECD) countries, the IMF said 12 OECD members had wealth taxes in 1990, but only three (Switzerland, Spain, Norway) now levy a broad-based wealth tax.

Two reasons why food inflation may soften in the months ahead

Subject: Economy

Section: Inflation

Context:

- The **Reserve Bank of India's Monetary Policy Committee (MPC)** noted how food price pressures have been interrupting the ongoing disinflation process, **posing challenges for the final descent of inflation to the target [of 4%].**

More on news:

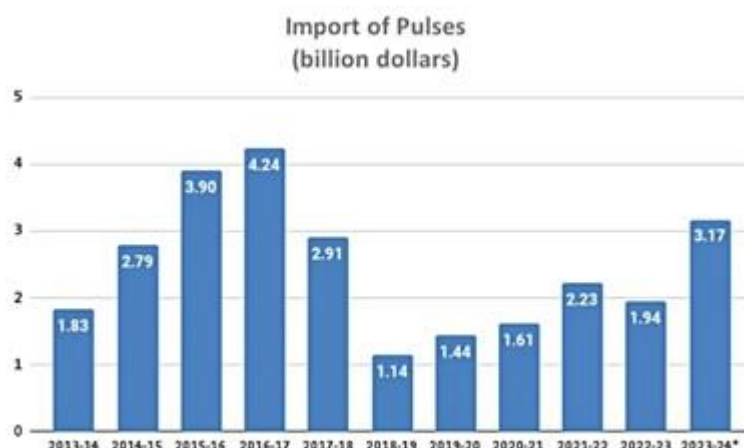
- At 8.7% in February, retail food inflation stood above the overall year-on-year consumer price increase of 5.1%.

The drivers for this are primarily two:

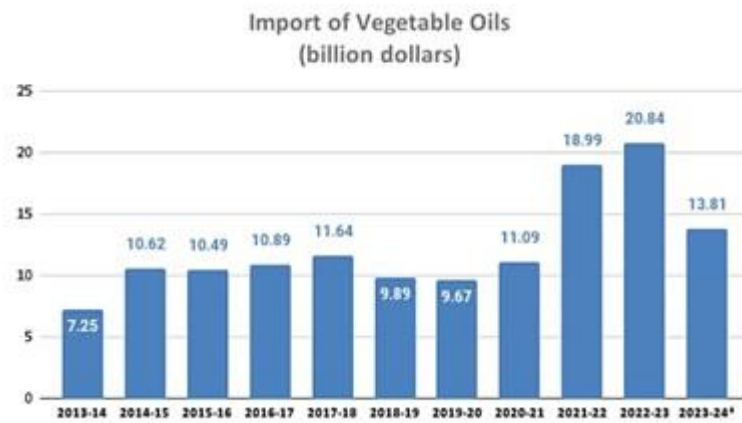
- **The first is international prices**
 - The **United Nations' Food and Agriculture Organization's food price index** averaged **118.3 points in March 2024.**
 - A 7.7% drop from a year ago and 26.2% lower than the all-time high of 160.3 points touched in March 2022, just immediately after Russia's invasion of Ukraine.
 - The index – a weighted average of the world prices of a basket of food commodities over a base period value (taken at 100 for 2014-16) – had fallen for seven months in a row, from July 2023 to February 2024, before edging up in March.
 - The above rise has been mainly courtesy of the index for vegetable oils registering a jump from 120.9 points to 130.6 points.
 - **The cereal price index, on the other hand, has continued its declining trajectory.**



- - Easing global food prices – a result of bumper harvests in key producing countries and supply lines being restored post the Covid and Ukraine War-induced disruptions – make imports more feasible.
 - For wheat, the estimated stocks of about 7.6 million tonnes (mt) on April 1 were at a 16-year-low and precariously close to the minimum buffer norm of 7.46 mt for this date.
 - **The primary reason for that has been the delayed onset of winter this time.**
 - Above-normal temperatures in November-December are said to have caused premature initiation of flowering and cut short the crop’s vegetative growth phase in many parts of central India.
- **The second driver is a possible La Niña**
 - India’s pulses imports were valued at **\$3.17 billion during April-February 2023-24, over 80% up from the \$1.76 billion for the corresponding 11 months of 2022-23.**



- - The above surge in imports was attributable to El Niño i.e. the abnormal warming of the central and eastern equatorial Pacific Ocean waters towards Ecuador and Peru, generally known to suppress rain in India.
 - 2023 did see patchy southwest monsoon (June-September) rainfall, extending to the succeeding northeast (October-December) and winter (January-February) seasons as well.
 - The brunt of dry weather was borne by Karnataka and Maharashtra, which are also major pulses-growing states.
 - The Union Agriculture Ministry has estimated the country’s pulses output to have dipped to 23.4 mt in 2023-24, from 26.1 mt and 27.3 mt in the preceding two years.
 - Imports – especially of red lentil (masoor), arhar (pigeon pea) and yellow/white peas (matar) – have kept a lid on prices.
 - This is unlike with vegetable oils (minus 14%), where the disinflation has come largely on the back of a global price crash and three years of record imports (chart 3).



The good news is that El Niño is weakening.

- The latest three-month-running **Oceanic Niño Index (ONI)** – which measures the average sea surface temperature deviation from the normal in the east-central equatorial Pacific region – for January-March 2024 was 1.5 degrees Celsius.
- Given the **past association of La Niña with surplus rainfall** in India and **these conditions expected to set in by the second half of the southwest monsoon season** it raises hopes of a bountiful agricultural year in 2024-25.
- To the extent that helps mitigate food inflation pressures, it would be manna from heaven for the government to take charge after the Lok Sabha election results in June 2024.

Impact of Imported Inflation on Goods and services

Subject: Economy

Sec: Inflation

Imported inflation refers to the **increase in prices of goods and services within a country caused by a rise in the price or cost of imports into that country.**

Effect on Local Prices:

A rise in input costs for producers, due to higher import costs, leads them to increase the prices they charge local customers. This **rise in prices for imported goods can boost inflation within the economy.**

Factors Affecting Imported Inflation:

Fall in the Rupee (Currency Depreciation):

- The depreciation of a country's currency is a significant factor in imported inflation.
- When a currency depreciates, it means more local currency is needed to purchase foreign currency for imports.
- This leads to higher costs for imported goods, translating to higher prices for consumers.
- For instance, a rise in interest rates in Western countries can cause the rupee to depreciate, increasing import costs for India.

Rise in Import Costs (Even without Currency Depreciation):

- Increased international prices of commodities like crude oil can raise import costs.
- This rise in costs for imported raw materials or goods can lead to inflation in sectors reliant on imports.

Cost-Push Inflation Concept:

- Imported inflation is a form of cost-push inflation, where rising costs of inputs lead to higher prices of final goods and services.

Critics' View on Imported Inflation:

- **Input Costs vs. Consumer Prices:**
 - Critics argue that the idea that rising import costs lead to higher inflation is flawed.
 - They suggest that while businesses may raise prices when costs rise, it's ultimately consumer demand that determines prices.
 - Prices of final goods and services are set based on what consumers are willing to pay, not just the cost of inputs.
- **Imputation of Value:**
 - Austrian economist Carl Menger's concept, elaborated in 1871, explains this process.
 - Value is imputed backward **from final consumer goods to the inputs used to produce them.**
- **Currency Depreciation and Demand:**

- Even when a currency depreciates, leading to higher import costs, it reflects a change in nominal demand for imports.
- The rise in import costs due to currency depreciation is seen as a reflection of higher consumer demand for imported goods.

Conclusion:

- While imported inflation is influenced by factors **such as currency depreciation and rising import costs, its impact on local prices** ultimately depends on consumer demand.
- The relationship **between input costs, currency values, and final consumer prices is complex**, with consumer demand **playing a central role in determining the prices of goods and services within an economy.**

Imported Inflation in India

Definition:

- Imported inflation occurs **when the general price level rises in a country due to the increase in prices of imported goods and commodities.**
- In India, two significant contributors to imports are Crude Oil and Gold, and their price increases can lead to a rise in the country's import bill.

Factors Affecting Imported Inflation:

- **Crude Oil Prices:**
 - The global outlook for crude oil prices is expected to affect India's imported inflation.
 - Dull global growth prospects may keep crude oil prices stable, reducing the impact on imported inflation.
- **Gold Prices:**
 - Higher demand for gold can push its prices higher, impacting India's import bill and potentially leading to imported inflation.
- **Currency Depreciation:**
 - When the domestic currency, like the Indian Rupee, depreciates against foreign currencies, it raises the rupee cost of imported items.
 - For instance, a **20% depreciation of the rupee against the US dollar means that the cost of imported products also increases by the same proportion.**

In conclusion, *imported inflation in India is influenced by various factors such as changes in global commodity prices, currency depreciation, and geopolitical events.* The depreciation of the rupee against foreign currencies can lead to higher costs for imported goods, potentially impacting inflation within the country.

'Extreme Weather, Geopolitical Issues Risk to Near-Term Inflation'

Subject: Economy

Sec: Inflation and unemployment

- **Adverse Weather Conditions and Geopolitical Tensions:**
 - Pose threats to near-term inflation, according to the Reserve Bank of India's (RBI) monthly bulletin.
 - Recent trends show **Consumer Price Index (CPI) inflation at 4.9% in March, down from a peak of 5.7% in December 2023.**
 - Food inflation remains elevated, adding to risks despite some signs of moderation.
 - Overlapping food price shocks and geopolitical tensions may impact inflation in the short term.
- **Weather Alerts and Global Warming:**
 - The World Meteorological Organization (WMO) warns of global warming in its "State of the Global Climate 2023" report.
 - Urgent response needed as **extreme weather events escalate, reflecting in Indian Meteorological Department (IMD) data.**
 - Possibility of 2024 becoming the hottest year on record heightens freshwater shortage concerns.
- **La Nina and Economic Outlook:**
 - Australia's Bureau of Meteorology and the US National Oceanic and Atmosphere Administration suggest increased chances of La Nina, leading to heavy rainfall in India.
 - Economic conditions in India favor an extension of the upward GDP growth trend, **aiming for 8-10% growth annually over the next decade.**
 - Capital deepening and resurgence of private investment contribute to growth trajectory.
 - Favorable credit quality of Indian corporates and sustained domestic demand support economic outlook.
- **Developmental Strategy:**

- India's developmental strategy should focus on maximizing the contribution of its **young and rising labor force to Gross Value Added (GVA)**.
- Aim to breach the low middle-income barrier and achieve sustained economic growth over the next few decades.

Economic terms in news

CLIMATEFLATION	As the number of natural disasters and severe weather events is rising, so is their impact on economic activity and prices. For example, exceptional droughts in large parts of the world have contributed to the recent sharp rise in food prices that is imposing a heavy burden on people who are struggling to make ends meet.
FOSSILFLATION	<ul style="list-style-type: none"> • Fossilflation reflects the legacy cost of the dependency on fossil energy sources, which has not been reduced forcefully enough over the past decades. • The fight against climate change is one factor that is contributing to making fossil fuels more expensive, and hence their environmental damage more visible.
GREENFLATION	<ul style="list-style-type: none"> • Green technologies require significant amounts of metals and minerals, such as copper, lithium and cobalt, especially during the transition period. • green technologies are set to account for the lion's share of the growth in demand for most metals and minerals in the foreseeable future. • as demand rises, supply is constrained in the short and medium term. It typically takes five to ten years to develop new mines. • This imbalance between rising demand and constrained supply is why the prices of many critical commodities have increased measurably in recent month
GREEDFLATION	<ul style="list-style-type: none"> • It is the inflation and hike in prices not driven by economic flow, but by corporate greed

Santosh Sir

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India Employment Report 2024

Subject: Economy

Section: Unemployment and Inflation

Highlights:

- Key labor market indicators have shown improvement recently.
- **Labour Force Participation Rate (LFPR)**, **Workforce Participation Rate (WPR)**, and **Unemployment Rate (UR)** deteriorated between 2000 and 2019 but improved thereafter.

Women's Participation:

- Female LFPR is significantly lower compared to male counterparts.
- In 2023, male LFPR was **78.5**, while female LFPR was **37**.
- **World** female LFPR rate is **49**.
- Female LFPR declined since 2000, **reaching 24.5 in 2019, before a slight increase**.
- Increase in labor force participation, **especially in rural areas, mostly in self-employment (often unpaid)**.

Reasons for Low Women's Participation:

- **Barriers** include **lack of jobs, caregiving duties at home, low wages, patriarchal mindsets**, and safety concerns.
- **Economist Jayati Ghosh** notes women squeezed out of employment due to scarcity of paid work.
- **Prof. Basole** cites reasons on supply and demand side:
- India's growth pattern not job-intensive.
- Social norms limit women's mobility and make them primary caregivers.
- Concerns over public safety and lack of transport confine job options.

Insights from Economics Nobel Laureate Claudia Goldin:

- Factors influencing supply and demand for female labor include:
- Opportunities for combining paid work and family.
- Decisions related to education and childrearing.
- **Technical innovations, laws, and norms.**
- **Structural transformation of the economy.**
- Women's choices often limited by marriage and responsibilities for home and family.

Needed Changes:

- **Interventions** required on **both demand and supply sides** of the labor market.
- **Prof. Basole** suggests policies promoting labor-intensive sectors, public investment in safety, transport, and affordable child and elderly care.
- These interventions can **enable women to work outside the home and access better-paying opportunities**.

Improving women's participation in the labor force involves addressing various barriers such as **societal norms, safety concerns, lack of job opportunities, and caregiving responsibilities**. **Effective policies and interventions** are needed to create an environment where women can work outside the home and access better-paying opportunities.

Goldin's U-Curve

The Goldin's U-Curve, named after Claudia Goldin, an American economist, refers to a theory that suggests **how the gender wage gap changes over the course of a woman's career**.

This theory is often used to explain the phenomenon **where the wage gap between men and women widens during the early and middle stages of a woman's career and then narrows again as she reaches higher levels of seniority**.

1. **Early Career:**

- At the beginning of a woman's career, the wage gap between men and women tends to be **smaller**. This is because **women and men often have similar education levels and job roles at this stage**.
- Factors such as education, skills, and experience are more comparable among individuals starting out in their careers, leading to a smaller observed wage gap.

2. **Mid-Career:**

- As individuals progress in their careers, differences in career interruptions and work-life balance choices start to emerge.
- **Women may be more likely to take time off for caregiving responsibilities**, such as raising children or caring for elderly relatives.
- These interruptions can **lead to slower wage growth or fewer opportunities** for promotions, **widening the gender wage gap during the mid-career stage**.

3. **Later Career:**

- As women reach higher levels of seniority in their careers, **the gender wage gap tends to narrow again**.
- At this stage, women who have remained in the workforce **often have more negotiating power, experience, and proven track records of success**.
- Factors such as seniority, leadership roles, and specialized skills become more important, leading to a narrowing of the wage gap.

The Reserve Bank of India (RBI): A Journey Through Time

Subject: Economy

Section: Monetary Policy

Establishment and Early Years:

- The Reserve Bank of India is the central bank of the country.
- The Reserve Bank of India was set up on the basis of the recommendations of the Hilton Young Commission. The Reserve Bank of India Act, 1934 (II of 1934) provides the statutory basis of the functioning of the Bank, which commenced operations on April 1, 1935.
- The Bank was constituted to
 - * Regulate the issue of banknotes
 - * Maintain reserves with a view to securing monetary stability and
 - * To operate the credit and currency system of the country to its advantage.
- The Bank began its operations by taking over from the Government the functions so far being performed by the Controller of Currency and from the Imperial Bank of India, the management of Government accounts and public debt. The existing currency offices at Calcutta, Bombay, Madras, Rangoon, Karachi, Lahore and Cawnpore (Kanpur) became branches of the Issue Department. Offices of the Banking Department were established in Calcutta, Bombay, Madras, Delhi and Rangoon.
- **Burma (Myanmar)** seceded from the Indian Union in 1937 but the Reserve Bank continued to act as the Central Bank for Burma till Japanese Occupation of Burma and later upto April, 1947. After the partition of India, the Reserve Bank served as the central bank of Pakistan upto June 1948 when the State Bank of Pakistan commenced operations. **The Bank, which was originally set up as a shareholder's bank, was nationalised in 1949.**
- The first Governor was **Sir Osborne Arkell Smith, followed by the first Indian Governor, Sir C.D. Deshmukh.**
- An interesting feature of the Reserve Bank of India was that at its very inception, the Bank was seen as playing a special role in the context of **development, especially Agriculture.**
- The Bank was also instrumental in institutional development and helped set up institutions like **the Deposit Insurance and Credit Guarantee Corporation of India, the Unit Trust of India, the Industrial Development Bank of India, the National Bank of Agriculture and Rural Development, the Discount and Finance House of India** to build the financial infrastructure of the country.
- With liberalisation, the Bank's focus has shifted back to core central banking functions like Monetary Policy, Bank Supervision and Regulation, and Overseeing the Payments System and onto developing the financial markets.

Being Central bank of India, following functions are performed by RBI

1. **Issue of Bank Notes:** The Reserve Bank of India has the sole right to issue currency notes except one rupee notes which are issued by the Ministry of Finance. Currency notes issued by the Reserve Bank are declared unlimited legal tender throughout the country
2. **Banker to Government:** As banker to the government the Reserve Bank manages the banking needs of the government. It has to maintain and operate the government's deposit accounts. It collects receipts of funds and makes payments on behalf of the government. It represents the Government of India as the member of the IMF and the World Bank.
3. **Custodian of Cash Reserves of Commercial Banks:** The commercial banks hold deposits in the Reserve Bank and the latter has the custody of the cash reserves of the commercial banks.
4. **Custodian of Country's Foreign Currency Reserves:** The Reserve Bank has the custody of the country's reserves of international currency, and this enables the Reserve Bank to deal with crisis connected with adverse balance of payments position.
5. **Lender of Last Resort:** The commercial banks approach the Reserve Bank in times of emergency to tide over financial difficulties, and the Reserve bank comes to their rescue though it might charge a higher rate of interest.
6. **Controller of Credit:** Since credit money forms the most important part of supply of money, and since the supply of money has important implications for economic stability, the importance of control of credit becomes obvious. Credit is controlled by the Reserve Bank in accordance with the economic priorities of the government through Repo rate, reverse repo rate.

Chronology of Events

1 Apr 1935	Reserve Bank of India commences operations. Sir Osborne Smith the first Governor of the Bank. The Bank was constituted as a shareholders' bank.
5 Jul 1935	Scheduled banks required to maintain the Cash Reserve Ratio, i.e., hold cash balances with the RBI equivalent to 5% of their Demand Liabilities and 2% of their Time Liabilities.

1937	RBI acts as banker to the Government of Burma and also responsible for note issue in Burma.
1940	The silver rupee replaced by the quarternary alloy rupee. One Rupee note reintroduced. This note had the status of a rupee coin and represented the introduction of official fiat money in India.
11 Aug 1943	Sir C. D. Deshmukh assumes office of Governor.
30 Jun 1948	RBI ceased to function as the Central Bank of Pakistan. State Bank of Pakistan commenced operations wef July 1, 1949.
1 Jan 1949	Reserve Bank of India nationalised.
16 Mar 1949	Coming into force of the Banking Companies Act, 1949. This formed the statutory basis of bank supervision and regulation in India.
1 Jul 1949	Sir Benegal Rama Rau assumes office as Governor
19 Jul 1969	14 major Indian Scheduled Commercial Banks with deposits of over Rs 50 crores nationalised ' to serve better the needs of development of the economy in conformity with national policy objectives'. On February 10, 1970 the Supreme Court held the Act void mainly on the grounds that it was discriminatory against the 14 banks and that the compensation proposed to be paid by Govt was not fair compensation.
Dec 1969	Lead Bank Scheme introduced which envisaged an area approach to banking to meet the credit gaps in the economy.

Reforms of 1991:

- In response to the economic crisis of 1990, the RBI took significant measures.
- **It transferred gold reserves to manage liquidity and devalued the rupee twice.**
- Full convertibility of the rupee on trade account was allowed.
- **Banking reforms, deregulation of interest rates, and issuing new private bank licenses** were key steps.

Manmohan Singh and Pranab Mukherjee Era:

- Manmohan Singh, as Governor, strengthened **monetary policy actions and initiated banking reforms.**
- Singh had differences with Finance Minister Pranab Mukherjee, **notably over licensing foreign banks like Bank of Credit and Commerce International (BCCI)**

Subbarao and Urjit Patel vs. Government:

- Subbarao, during his tenure as Governor, had disagreements with Finance Minister P. Chidambaram.
- Urjit Patel faced a feud with the Finance Ministry **over surplus dividend income from the RBI.**
- Patel resigned after serving two years as Governor.

Handling the 2008 Crisis:

- Under Y.V. Reddy's leadership, the RBI's policies against capital inflows pre-crisis were praised.
- Post-crisis, the **RBI managed the situation well under D. Subbarao's liberal accommodative policy.**
- Raghuram Rajan introduced plans to **internationalize the rupee and boost exports.**

Demonetization of 2016:

- The sudden demonetization of high-value currency notes in 2016 led to significant challenges.
- The RBI faced the **task of managing liquidity shortages and economic disruptions.**
- The **pace of remonetization was slow, affecting businesses and GDP growth.**

Monetary Policy Committee and Asset Quality Review:

- Patel chaired the first meeting of the **Monetary Policy Committee (MPC).**
- Despite **calls to ease the asset quality review initiated by Rajan,** Patel continued the exercise.
- The RBI utilized the **Insolvency and Bankruptcy Code (IBC) to address the debt pile of major defaulters.**

COVID-19 Pandemic Response:

- Shaktikanta Das, the current Governor, **adopted an accommodative monetary policy during the pandemic.**
- The repo rate was reduced to 4% to stimulate growth.
- The **pandemic accelerated the RBI's push for digital payments, with the launch of UPI revolutionizing the banking system.**

The RBI's journey over the last 90 years has seen it navigate **through various economic challenges, implement crucial reforms, and adapt to evolving financial landscapes**, solidifying its role as India's central bank and a key player in the country's economic development.

Monetary Policy Committee (MPC) - Overview

The Monetary Policy Committee (MPC) is a **statutory body constituted by the Government of India under the amended Reserve Bank of India (RBI) Act, 1934**. Its primary objective is to determine the policy rate needed to achieve the inflation target set by the government.

Purpose:

- The MPC is responsible for **fixing the benchmark interest rate, also known as the repo rate, which is used to guide other interest rates** in the economy.
- It aims to **maintain price stability while supporting the objective of economic growth**.

Composition:

- **Members:** The MPC consists of six members:
 - RBI Governor (Chairperson)
 - Deputy Governor of RBI in charge of monetary policy
 - One officer nominated by the RBI Board
 - Three members appointed by the Central Government
- **Criteria for Appointment:**
 - Members are appointed based on their expertise and experience in economics, banking, finance, or monetary policy.
 - They are expected to have the ability, integrity, and standing in their fields.

Decision Making:

- **Voting:** The MPC takes decisions on monetary policy by a majority vote.
- **Quorum:** A minimum of four members must be present, including the Governor or the Deputy Governor.
- **Binding Decision:** The decision of the MPC is binding on the RBI.

Functions and Instruments of Monetary Policy:

- **Repo Rate:**
 - The rate at which the RBI lends money to commercial banks.
 - It influences borrowing and lending rates in the economy.
- **Reverse Repo Rate:**
 - The rate at which the RBI borrows money from commercial banks.
 - It affects the liquidity in the banking system.
- **Liquidity Adjustment Facility (LAF):**
 - Consists of repo and reverse repo auctions to manage short-term liquidity.
- **Marginal Standing Facility (MSF):**
 - Banks can borrow overnight funds from the RBI against government securities.
- **Bank Rate:**
 - Rate at which the RBI lends money to commercial banks for longer durations.
- **Cash Reserve Ratio (CRR):**
 - Specifies the percentage of deposits that banks must keep with the RBI.
 - Affects the liquidity available to banks for lending.
- **Statutory Liquidity Ratio (SLR):**
 - Mandates banks to maintain a certain percentage of their deposits in specified liquid assets.
 - Influences credit availability and liquidity.
- **Open Market Operations (OMOs):**
 - Buying and selling of government securities to manage liquidity.
 - Affects money supply and interest rates.
- **Market Stabilization Scheme (MSS):**
 - Used to absorb excess liquidity from the market.

Policy Stances:

- **Accommodative:**
 - Central bank aims to boost economic growth.
 - Willingness to cut interest rates and expand money supply.
- **Neutral:**
 - Balanced stance when equal priority is on inflation and growth.
 - No bias towards rate hikes or cuts.
- **Hawkish:**
 - Focus on controlling inflation.
 - Willingness to raise interest rates to curb inflationary pressures.
- **Calibrated Tightening:**
 - Gradual increase in interest rates over time.
 - Indicates a cautious approach towards monetary tightening.

Asset Quality Review (AQR)

An Asset Quality Review (AQR) is a detailed examination or review conducted by a regulatory authority, often a central bank viz. Reserve Bank of India (RBI), to **assess the true quality of a bank's assets, particularly loans. The primary objective of an AQR is to identify and recognize the actual level of bad loans or non-performing assets (NPAs) within the banking system.**

Purpose:

- **Assessment of Bad Loans:** The main aim of an AQR is to evaluate the extent of bad loans or NPAs held by banks.

Criteria for NPAs:

- **90-Day Rule:** In India, a loan is classified as a non-performing asset (NPA) if the borrower fails to pay interest or repay the principal for a period of 90 days or more.

Need for AQR:

- **Prevention of Crisis:** Banks sometimes use technical adjustments to mask or delay the classification of stressed loans as NPAs. This can create a false picture of the bank's health and lead to a potential crisis.
- **Enhanced Transparency:** AQRs aim to enhance transparency in the banking system by ensuring that the true state of asset quality is reflected in the books.

Process:

- **Thorough Examination:** The RBI conducts a thorough and detailed review of the bank's loan portfolio, scrutinizing each loan account.
- **Identification of NPAs:** During the AQR, the RBI identifies loans that are not being serviced as per the stipulated criteria.
- **Forcing Recognition:** Banks are required to recognize these identified NPAs on their balance sheets, reflecting the true state of their asset quality.

Impact:

- **Clear Picture:** AQRs provide a clear and accurate picture of a bank's financial health by identifying and recognizing troubled assets.
- **Provisioning:** Banks are then required to set aside provisions to cover potential losses from these NPAs, affecting their profitability and capital adequacy.
- **Market Confidence:** A transparent assessment through an AQR can improve investor and market confidence in the banking sector.

Significance:

- **Financial Stability:** AQRs are crucial for maintaining financial stability by addressing potential risks and vulnerabilities in the banking system.
- **Regulatory Vigilance:** It reflects the regulator's vigilance in ensuring that banks adhere to prudential norms and maintain asset quality standards.

Basel III Endgame

Subject: Economy

Sec: Monetary Policy

- **Basel III Endgame: Overview:**
 - The U.S. Federal Reserve has announced significant changes to a proposal for stricter bank capital requirements known as the "**Basel III endgame.**"
- **What is Basel and Why is it Contentious:**

- The **Basel Committee on Banking Supervision**, convened by the **Bank for International Settlements (BIS)** in Basel, Switzerland, aims to ensure global regulators apply similar minimum capital standards for banks.
- **Basel III** standards, agreed **after the 2008 global financial crisis**, include **capital, leverage, and liquidity requirements**.
- The "endgame," agreed upon in 2017, represents the final iteration of Basel III standards.
- **Proposed Changes:**
 - The U.S. proposal focuses on **overhauling** how banks assess risk and determine capital requirements.
 - Main areas of focus include **credit risk, market risk, and operational risk**.
- **Credit Risk:**
 - Regulators aim to end banks' use of **internal risk models** for determining capital against lending activities like mortgages and corporate loans.
 - Federal Reserve Vice Chair Michael Barr cites the potential for banks' internal models to **underestimate risk**.
- **Market Risk:**
 - Proposed changes include **establishing new requirements** for banks to assess risks from market fluctuations and trading losses.
 - Regulators suggest that current market risk assessments may be **understated**.
- **Operational Risk:**
 - A key new area of focus is **operational risk**, covering potential losses from internal policy failures, management errors, legal costs, or external events.
 - Regulators aim to replace existing internal models with a **standardized approach** to calculate capital levels.
- **Industry Concerns:**
 - Banks argue that the *proposed changes would lead to unnecessary capital burdens and could impact the economy*.
 - They have lobbied against the project, citing concerns about **higher costs** and potential limitations on fee income.
 - Some banks fear disproportionately **higher capital requirements** due to the proposed changes.
- **Regulatory Response:**
 - Regulators counter that banks are **well-capitalized** and can raise funds by retaining earnings for a short period.
 - The Fed and other regulators are expected to **reduce the impact** of the proposal in a significant rewrite.
 - Fed Chair Jerome Powell confirmed the expectation of "**broad, material**" changes to the plan.

The "Basel III endgame" represents a **culmination of efforts to strengthen bank capital requirements globally**.

The U.S. proposal, part of this initiative, aims to revise how banks assess and manage risks. While regulators stress the need for a robust financial system, banks argue that the changes could impose undue burdens. The ongoing review and expected revisions highlight the contentious nature of these regulatory reforms.

Basel Norms Overview:

- **Basel norms**, or Basel accords, are international banking regulations issued by the **Basel Committee on Banking Supervision**.
- They aim to coordinate banking regulations globally to strengthen the international banking system.

Basel Committee on Banking Supervision (BCBS):

- The BCBS is the primary global standard setter for the prudential regulation of banks.
- It provides a forum for cooperation on banking supervisory matters among central banks of different countries.
- Established by Central Bank governors of the Group of Ten countries in **1974**.
- Expanded membership in **2009** and **2014**; now has **45 members** from **28 jurisdictions**.

Objectives:

- Enhance understanding of key supervisory issues and improve the quality of banking supervision worldwide.
- Ensure regulators globally apply similar minimum capital standards for banks.

Need for Basel Norms:

- Banks lend to various borrowers, each carrying its own risk.
- Banks utilize public deposits and market-raised funds (equity and debt), exposing them to **default risks**.
- Basel norms are designed to mitigate these risks by requiring banks to maintain a certain percentage of capital as security.

Why Basel:

- **Basel** is a city in Switzerland, home to the **Bank for International Settlements (BIS)**.

- BIS fosters cooperation among central banks toward financial stability and common banking regulation standards.
- Founded in **1930**.

Types of Basel Norms:

Basel-I:

- Introduced in **1988**, focused mainly on **credit risk**.
- Defined capital and risk weights for assets; set minimum capital requirement at **8%** of risk-weighted assets (RWA).
- Example: Assets backed by collateral had lower risk weights than unsecured personal loans.
- India adopted Basel-I guidelines in **1999**.

Basel-II:

- Published in **2004**, these were refined versions of Basel I.
- Based on three pillars:
- **Capital Adequacy Requirements** (minimum 8% of risk assets).
- **Supervisory Review** (better risk management for credit, market, and operational risks).
- **Market Discipline** (increased disclosure requirements).
- Basel II norms are yet to be fully implemented in India and overseas.

Basel-III:

- Released in **2010** after the **2008 financial crisis**.
- Aims to promote a resilient banking system focusing on **four parameters**:
- **Capital:**
- Capital Adequacy Ratio to be **maintained at 12.9%**.
- Minimum Tier 1 and Tier 2 capital ratios of **10.5%** and **2%** of risk-weighted assets respectively.
- **Leverage:**
- Leverage ratio at least **3%** (ratio of tier-1 capital to average total assets).
- **Funding and Liquidity:**
- **Liquidity Coverage Ratio (LCR)**: Banks to hold a buffer of high-quality liquid assets for 30-day stress scenarios.
- **Net Stable Funding Ratio (NSFR)**: Banks to maintain stable funding for off-balance-sheet assets over a one-year horizon.

Basel norms are crucial for ensuring the stability and resilience of the international banking system. They require banks to maintain adequate capital, manage risks effectively, and enhance transparency through disclosures. The ongoing evolution from Basel-I to Basel-II and Basel-III reflects the continuous efforts to address the complexities and challenges in the banking sector.

RBI MPC Meeting April 2024 Highlights: RBI holds repo rate at 6.5%

Subject: Economy

Section: Monetary Policy

Context: In the post monetary policy press conference, RBI Governor Shaktikanta Das said inflation is moderating and the GDP growth is robust.

Highlights

- **Benchmark interest rate or repo rate** kept **unchanged** at 6.5%
- GDP growth for 2024-25 retained at 7% , lower than 7.6% last fiscal
- Retail inflation to average 4.5% this fiscal, lower than 5.4% in FY24
- Food price uncertainties to continue to weigh on inflation outlook
- With rural demand catching up, consumption is expected to support economic growth in FY25
- Outlook for agriculture, rural activity appears bright, with good rabi wheat crop and improved prospects of kharif crops, due to expected normal monsoon
- Strong rural demand, moderating inflationary pressures and sustained momentum in manufacturing and services sector to boost private consumption
- The headwinds from protracted geopolitical tensions and increasing disruptions in trade routes, however, pose risks to the outlook
- Strong growth momentum, along with GDP projections for 2024-25, gives RBI the policy space to unwaveringly focus on price stability
- **Trading of Sovereign Green Bonds permitted in International Financial Services Centre (IFSC)**

- RBI to launch a mobile app to facilitate retail participation in G-secs
- RBI to allow cash deposits in banks through UPI
- The central bank permits non-bank payment system operators to offer CBDC (Central Bank Digital Currency) wallets
- Net inflows by foreign portfolio investors (FPI) stood at \$41.6 billion during 2023-24, the second highest level of FPI inflow after 2014-15
- India continues to be the largest recipient of remittances in the world
- Current Account Deficit in 2024-25 to remain at a level that is both viable and eminently manageable
- RBI to allow UPI payments from PPI wallets via third-party apps
- The Indian rupee remained largely range-bound as compared to its emerging market peers as well as a few advanced economies during 2023-24
- The Indian rupee most stable among major currencies in FY24
- RBI to modify **LCR framework** to facilitate better management of liquidity risk by banks
- Next MPC meeting scheduled during **June 5 to 7, 2024**

Concept-

- **Repo Rate:** The interest rate that the RBI charges when commercial banks borrow money from it is called the repo rate.
- **Reverse Repo:** The interest rate that the RBI pays commercial banks when they park their excess cash with the central bank is called the reverse repo rate.
- Since RBI is also a bank and has to earn more than it pays, the repo rate is higher than the reverse repo rate.
- At present, the repo rate is 4%, and the reverse repo rate is 3.35%.
- It is a key deciding factor for the interest rates that commercial banks themselves pay (or get) when they borrow (or deposit) money from (or in) the Reserve Bank of India.

Monetary Policy Committee

- The Monetary Policy Committee is a statutory and institutionalized framework under the **Reserve Bank of India Act, 1934**, for maintaining price stability, while keeping in mind the objective of growth.
- An RBI-appointed committee led by the then deputy governor **Urjit Patel in 2014 recommended the establishment of the Monetary Policy Committee.**
- The **Governor of RBI is ex-officio Chairman of the committee.**
- The committee comprises **six members** (including the Chairman) – three officials of the RBI and three external members nominated by the Government of India.
- Decisions are taken by majority with the Governor having the casting vote in case of a tie.

The MPC determines the **policy interest rate (repo rate)** required to achieve the inflation target (4%)

Guidelines may be issued by RBI to upgrade SFBs to Universal Banks

Subject: Economy

Section: Monetary Policy

Current Scenario:

- SFBs can seek universal bank status **after 5 years of operations.**
- No additional conditions in existing licensing norms for conversion.

Expected Assessment Criteria:

- Circular may include criteria such as:
- **Asset quality and composition.**
- **Branch network.**
- **Corporate governance adherence.**
- **Quality of leadership.**
- **IT capabilities.**

Apprehensions:

- Questioning introduction of **additional riders** beyond existing norms.
- Potential conflict with essence of **licensing norms** raised.

Intentions of SFBs:

- Four SFBs - Equitas SFB, AU SFB, Ujjivan SFB, and Jana SFB - intend to convert.
- Informal talks with regulator, plans to apply for universal bank status once window opens.

Small Finance Banks (SFBs):

Purpose:

- Financial institutions catering to unserved and unbanked regions.
- Offer financial services to individuals and businesses previously excluded from mainstream banking.

Eligibility to Become SFB:

- Existing non-banking financial companies (NBFCs), microfinance institutions (MFI), and local area banks (LAB) can apply.
- Must register as a **public limited company under the Companies Act, 2013**.

Scope of Activities:

- Primarily engage in basic banking activities:
- *Acceptance of deposits.*
- *Lending to small business units, small farmers, micro-industries, and unorganized sector entities.*
- Can offer other non-risk sharing financial services such as:
- Distribution of mutual fund units, insurance, pension products, etc.
- Can act as an Authorised Dealer in foreign exchange for clients' needs.
- **75%** of net credits should be in **priority sector lending**.
- **50%** of loans in the portfolio must be below **₹25 lakh**.

Universal Banks:

Activities:

- Financial entities offering a wide array of financial services under one roof.
- Act as a "financial supermarket" providing various services.
- Offer services like investment banking, commercial banking, insurance, etc.

Activities under Universal Banking:

- Includes functions such as:
- Investment banking.
- Commercial banking.
- Development banking.
- Insurance.
- Merchant banking.
- Mutual funds.
- Factoring.
- Housing finance, and more.

RBI issues draft Directions on Payment Aggregators (PAs)

Subject: Economy

Sec: Monetary policy

Physical Point-of-Sale (PoS) Activities:

- RBI issues two draft directions concerning regulation of PAs.
- Includes **regulations on physical PoS activities, net worth, and licensing requirements**.

Revision and Updates to KYC and Due Diligence:

- Second circular covers **revisions in KYC, due diligence of merchants, and operations in escrow accounts**.
- Aims to strengthen the payment ecosystem, according to the central bank.

Regulation Announcement:

- In September 2022, **RBI announced regulations for offline PAs handling face-to-face payments**.
- Draft circular seeks comments and feedback by May 31, 2024.

Types of Payment Aggregators:

- Payment ecosystem includes **online PAs (PA - O) and those facilitating face-to-face or proximity transactions (PA - P)**.
- Non-bank PAs require approval from DPSS, RBI, CO before starting physical or online PA activities.

Compliance Deadline:

- PA-P banks must comply within three months of final norms issue.
- Non-bank entities offering PA-P services must inform RBI within 60 days and apply by May 2025.
- Non-bank PA-Os must seek RBI's approval **within 60 days to continue PA-P operations.**
- **Minimum net worth for non-bank PA-P entities:**
 - ₹ 15 crore at application time.
 - ₹ 25 crore by March 31, 2028.
 - New non-bank PA-Ps **need ₹15 crore initially, growing to ₹25 crore by third financial year end.**
- Non-bank PA-Ps unable to comply must wind up activities by July 31, 2025, or face penalties.

Engagement of Agents:

- Non-bank PAs can engage agents for merchant onboarding, subject to a Board-approved policy and due diligence.

Data Storage Regulations:

- For face-to-face/proximity card transactions:
 - No entity except card issuers or networks **can store card-on-file data from August 1, 2025.**
 - **Previously stored data must be purged.**
 - **Limited data (last four digits of card number, card issuer's name) can be stored for tracking/reconciliation in line with standards.**

Understanding Payment Aggregator (PA):

Overview of PA:

- A PA, also known as a merchant aggregator, is a **third-party service provider facilitating customer payments on merchant platforms.**
- It integrates payment options into websites or apps, enabling various transaction types.

Types of Transactions Handled:

- Facilitates cash/cheque, online payments from multiple sources, or offline transactions.
- Enables **merchants to accept bank transfers without direct bank merchant accounts.**

Legal Incorporation:

- PAs in India are incorporated under the **Companies Act 2013.**

Bank vs. Non-Bank PAs:

- PAs can be either banks or non-bank entities.
- Non-bank PAs **need specific authorization from RBI due to their handling of funds.**

RBI License Requirement:

- Since PAs handle funds, they **require licensing from the Reserve Bank of India (RBI).**

Examples of PAs in India:

- Amazon (Pay) India, Google India, Razorpay, Pine Labs, among others.

Understanding Payment Gateway:

Overview of PG:

- It is a **software service linking bank accounts to platforms** for money transfers.
- Authorizes online transactions using various modes like net banking, credit cards, debit cards, UPI, or online wallets.

Role of Payment Gateway:

- Acts as a **secure intermediary transferring funds from customer bank accounts to merchant payment portals.**

Comparison: Payment Aggregator vs. Payment Gateway:

Payment Gateway:

- Software allowing online transactions.
- **Directly conducts transactions between banks and merchants.**

Payment Aggregator:

- Aggregates multiple payment gateways into a single platform.
- Acts as an **interface where payment gateways process transactions.**

3. Summary of remarks of RBI

Subject: Economy

Sec: Monetary Policy

Concerns About Inflation: Dr. Patra emphasized the need to restore price stability to sustain economic growth, indicating that current economic conditions do not support easing the restrictive monetary stance.

Food Inflation Risks: He noted that recent inflation data and high-frequency indicators showed elevated risks of food inflation, particularly as temperatures rise during summer, leading to a buildup of price momentum.

Persistent Food Inflation: Official retail inflation data for March revealed sticky food prices, with inflation barely slowing down from February, especially in cereals and meat.

Challenges for Inflation Alignment: Dr. Patra highlighted that despite steady core disinflation and fuel price declines, there is no assurance of faster alignment of headline inflation with the target. Inflation is expected to remain in the upper reaches of the RBI's tolerance band until favorable base effects kick in.

Maintaining Restrictive Stance: He stressed that conditions do not favor any relaxation in the restrictive stance of monetary policy. Downward pressure on inflation must be sustained until a better balance of risks emerges and uncertainties in the near term dissipate.

Importance of Confidence: Dr. Patra underscored that a stronger revival in private consumption and corporate sales growth hinges on greater confidence that inflation is declining on a durable basis.

Focus on Price Stability: Governor Das emphasized the importance of maintaining unwavering focus on ensuring durable price stability, even amid successes in the disinflation process.

Risk of Supply Shocks: He warned against the vulnerability of the inflation trajectory to supply-side shocks, particularly in food inflation due to adverse weather events and other factors, which could also spill over into core inflation.

Call for Rate Cut: Mr. Varma, the sole dissenting voice on the MPC, advocated for a 25 basis points cut in the policy repo rate. He argued that the current real interest rate is excessively high and imposes costs on the economy's growth momentum.

Monetary Policy Stances Explained:

Hawkish Monetary Policy Stance:

Meaning: Favors high-interest rates to control inflation.

High interest rates discourage borrowing, leading to reduced consumer spending and credit uptake.

Reduced demand for goods and services stabilizes prices and prevents inflation.

Increased interest rates may strengthen the country's currency.

Dovish Monetary Policy Stance:

Meaning: Involves low interest rates to stimulate economic activity.

Low-interest rates encourage borrowing, boosting consumer spending and demand for goods and services.

Increased demand may lead to inflation, which balances economic growth.

Advocates believe lower rates can increase employment and economic growth, potentially weakening the country's currency.

Accommodative Monetary Policy Stance:

Meaning: Implemented to expand the money supply and boost the economy during a slowdown.

Also known as "easy monetary policy."

Achieved by reducing interest rates to encourage borrowing and spending.

Aimed at stimulating consumer and business spending by making borrowing cheaper.

Neutral Monetary Policy Stance:

Meaning: Policy rates neither stimulate nor restrain economic growth.

Economic conditions are considered balanced.

Key policy rates remain unchanged, with no increase or decrease.

Neither expansionary nor contractionary measures are implemented through taxation or government spending.

Centre's Plan for Disinvestment in Public Sector Banks (PSBs)

Sub: Economy

Sec : Monetary Polly

Background:

- The Centre considers disinvesting a **minority stake** in five PSBs if they fail to comply with the **minimum public shareholding (MPS)** norm by raising fresh capital from the market within a year.

Minimum Public Shareholding Norm:

- As per **SEBI rules**, companies are required to maintain an MPS of **25% within three years** after listing.

Deadline for PSBs:

- The government set a deadline of **August 2024** for five PSBs to meet the MPS norm.

Equity Capital Raising Plans:

- PSBs are urged to work out their **equity capital raising plans** to meet MPS. Extensions cannot be indefinite as it may send the wrong message to the market.

Possible Extension and Disinvestment:

- The government may extend the timeline for these banks by another year. If any bank doesn't need capital, the government could **sell a minority stake** at an appropriate time.

Current Public Holding in PSBs:

- Punjab & Sind Bank: 1.75%
- Indian Overseas Bank: 3.62%
- UCO Bank: 4.61%
- Central Bank of India: 6.92%
- Bank of Maharashtra: 13.54%

Government Stake in PSBs:

- Punjab & Sind Bank: 98.25%
- Indian Overseas Bank: 96.38%
- UCO Bank: 95.39%
- Central Bank of India: 93.08%

Challenges in Diluting Stake:

- Difficult for PSBs to dilute **18-23% stake** through Qualified Institutional Placements (QIPs) to meet MPS.

Reason for High Government Holding:

- Capital infusion by the government between FY17 and FY22 to help PSBs overcome stress due to **rise in NPAs**.

Impact of Capital Raising on PSBs:

- Capital raising depends on the banks' need to grow business and meet capital adequacy norms.

Disinvestment Strategy:

- Disinvestment in PSBs would contribute to the Centre's **non-tax and non-debt receipts**.

Recent Capital Raising Efforts by PSBs:

- PSBs have been using the **QIP route** to raise capital. For example, Union Bank raised Rs 3,000 crore through QIP in March 2024.

Timeline for MPS Compliance:

- The original deadline for achieving 25% MPS was 2013, but it was extended multiple times for state-run companies due to compliance issues.

Centre's Authority to Exempt from MPS Norm:

- In 2021, the Centre empowered itself to **exempt selected public sector companies** from the 25% MPS norm.

Reasons for Privatizing Public Sector Banks:

- **High NPAs in Public Sector Banks (PSBs):**
 - RBI data shows PSBs have significantly higher NPAs compared to private sector banks.
 - Public sector lenders accounted for over 90% of the gross NPAs with banks as of March 2016.
- **Poor Lending and Governance:**
 - PSBs criticized for poor lending decisions, inadequate risk controls, and bad governance.
- **Ineffectiveness of Previous Reform Measures:**
 - Years of capital injections and governance reforms have not substantially improved PSBs' financial position.
- **Aligned with Long-Term Goal:**
 - Privatization aligns with a long-term project envisioning fewer state-owned banks, either consolidated with strong banks or privatized.
- **Reduces Government Burden:**
 - Frees the government from continuously providing equity support to banks.
 - Reduces fiscal deficit and promotes long-term financing through revenue receipts.

- **Rationalization in Post-COVID Scenario:**
 - Post-COVID, banks may report higher NPAs, necessitating further equity injections.
 - Privatization strengthens strong banks and reduces their number.
- **Market-Led Solutions in Financial Sector:**
 - Privatization reflects a shift towards market-led solutions for financial sector challenges.
 - Encourages innovation, technological advancement, and better services.
- **Efficiency and Governance:**
 - Private ownership is associated with efficiency, financial prudence, and better governance.
 - Market discipline forces loss-making PSBs to rectify their strategies.
- **Improved Financial Performance:**
 - Involvement of strong financial institutions as significant shareholders ensures better financial performance.

Factors against Privatization of PSBs:

- **Undermining Social Welfare:**
 - Private banks may not prioritize services in non-profitable rural or poorer areas.
 - Profit motive may overshadow the goal of serving the public.
- **Difficulty in Providing Low-Cost Services:**
 - Government may face challenges in providing low-cost financial services to rural and poor sections.
- **International Precedent:**
 - Success stories in East Asia often involve government-controlled financial systems.
 - Private sector dominance in banking may lead to government bailouts, as seen in Western countries.
- **Historical Failure of Private Sector Banks:**
 - Past history shows failures in private sector banks, raising concerns about their reliability.
- **Impact on Inclusive Banking:**
 - Privatization may undermine inclusive banking principles, defeating the purpose of nationalization.
- **Duty of Public Sector Banks:**
 - PSBs, created with public money, are duty-bound to provide services to all customers, regardless of profitability.

RBI Orders Kotak Bank to Stop Adding Customers Online

Subject: Economy

Sec: Monetary Policy

- **Directive:** The Reserve Bank of India (RBI) issued a directive to Kotak Mahindra Bank Ltd. (Kotak Bank) instructing it to **immediately halt onboarding new customers through its online and mobile banking channels** and refrain from issuing fresh credit cards.
- **Existing Customer Services:** Kotak Bank is permitted to continue providing services to its existing customers, including those with credit cards.
- **Reasoning:** The directive stems from significant concerns identified during the RBI's IT examination of the bank for the years 2022 and 2023. These concerns pertain to various areas, **including IT inventory management, user access management, data security, and business continuity and disaster recovery practices.**
- **Regulatory Compliance:** Kotak Bank was found to be **deficient in its IT risk and information security governance for two consecutive years**, contrary to regulatory guidelines. Despite corrective action plans issued by the RBI, the bank was significantly non-compliant.
- **Operational Resilience:** The **bank's Core Banking System (CBS) and digital banking channels experienced frequent and significant outages** over the past two years, leading to customer inconveniences. The RBI noted the bank's material deficiency in building necessary operational resilience due to inadequate IT systems and controls.
- **Engagement with RBI:** Despite continuous high-level engagement with Kotak Bank to address these concerns and strengthen its IT resilience, the outcomes remained unsatisfactory.
- **Rapid Growth in Digital Transactions:** The **volume of the bank's digital transactions, including credit card transactions, has witnessed rapid growth, further straining its IT systems.**

Law :

The curbs have been imposed under Section 35A of the Banking Regulation Act. This section is invoked in lieu of public interest, interest of banking policy or when affairs of a bank are detrimental to depositors or prejudicial to the interest of the bank.

Minimum Requirements for SFBs Transitioning to Universal Banks

Subject: Economy

Sec: Monetary Policy

The Reserve Bank of India (RBI) has **outlined a roadmap for small finance banks (SFBs) voluntarily transitioning to universal banks**, setting forth specific criteria for eligibility:

- **Financial Criteria:**
- **Minimum Net Worth:** SFBs aspiring to become universal banks must have a **net worth of at least ₹1,000 crore**, as audited at the end of the previous quarter.
- **Profit Track Record:** A **track record of net profit in the last two financial years** is essential.
- **NPA Ratio:** SFBs should maintain a low non-performing asset (NPA) ratio, with **gross and net NPA norms not exceeding 3% and 1%**, respectively, in the last two financial years.
- **Operational Requirements:**
- **Stock Exchange Listing:** SFBs seeking conversion must be **listed on a stock exchange**. (Note: North East Small Finance Bank is not listed)
- **CRAR Compliance:** Compliance with the prescribed Capital to Risk-Weighted Assets Ratio (CRAR) of **15% for SFBs is mandatory**.
- **Scheduled Status:** SFBs should have a **satisfactory track record of performance for a minimum of five years**.
- **Shareholding Pattern:**
 - While there is no mandatory requirement for an identified promoter, existing promoters, if any, must continue post-transition to a universal bank.
 - No addition of new promoters or change in promoters is permitted during the transition.
- **Lock-In Requirement:**
 - Existing promoters are not subject to new mandatory lock-in requirements for minimum shareholding in the transitioned universal bank.
 - The **lock-in period of five years for promoters**, as per the guidelines, remains unchanged.
- **Loan Portfolio Diversification:**
 - SFBs with **diversified loan portfolios will be preferred for transition**.
- **Transition Process:**
 - Eligible SFBs must furnish a detailed rationale for the transition.
 - Upon transition, the bank will be subject to all norms, including those governing non-operative financial holding company structure, as per guidelines.

Current Status:

- As of now, there are 11 SFBs, including **AU, Capital, Equitas, Suryoday, Ujjivan, Utkarsh, ESAF Jana, North East, Shivalik, and Unity**.

About Small Finance Banks (SFBs):

Small Finance Banks (SFBs) are **specialized banks licensed by the Reserve Bank of India (RBI) to cater to the financial needs of low-income individuals** and underserved communities.

Objective: The primary aim of SFBs is to **promote financial inclusion by providing access to banking services for segments of the population** often excluded from traditional banking channels.

Services Provided: SFBs offer a **range of financial products and services** tailored to the needs of their target clientele, including **microfinance, micro-enterprise services, small loans, savings accounts, insurance, and other basic banking facilities**.

Regulatory Framework:

- SFBs are registered as **public limited companies under the Companies Act, 2013**, and are governed by various banking regulations, including the **Banking Regulation Act, 1949, the RBI Act, 1934, and other relevant statutes and directives issued by RBI**.
- The RBI introduced guidelines for SFBs in 2014 to regulate their operations and ensure compliance with regulatory standards.

Key RBI Guidelines for SFBs:

1. **Scheduled Bank Status:** SFBs are granted scheduled bank status after meeting operational criteria and being deemed suitable under section 42 of the RBI Act, 1934.
2. **Financial Requirements:** SFBs must maintain a minimum Capital to Risk-Weighted Assets Ratio (CRAR) of 15% and extend 75% of their Adjusted Net Bank Credit to Priority Sector Lending.

3. **Branch Expansion:** They are mandated to open at least 25% of their total branches in unbanked rural areas to promote financial inclusion.
4. **Minimum Capital Requirement:** The minimum paid-up voting equity capital for SFBs is set at Rs. 200 crore.
5. **Microfinance Focus:** SFBs are required to allocate at least 50% of their loan portfolio to microfinance and extend advances of up to Rs. 25,00,000.
6. **Compliance:** SFBs must adhere to various prudential norms and regulations concerning income recognition, asset classification, and provisioning.
7. **Technology Adoption:** Encouragement is provided for SFBs to leverage technology to enhance operational efficiency and expand their reach to target segments.

Emerging Oil Trade Scenario in India

Subject: Economy

Sec: National Body

- Indian refiners are **increasingly sourcing higher quantities of Murban from UAE.**
- This shift is due to payment issues and western sanctions on ships **transporting Sokol, Russia's light sweet crude.**

Factors Strengthening Murban's Prospects:

- Higher cost of transporting WTI from the US.
- Limited availability of light sweet crude from Nigeria.

Murban Shipments and Trends:

- Murban shipments to Indian refiners have consistently risen since January 2024.
- Average daily sourcing of Murban **increased from over 104,200 barrels in 2023 to more than 265,000 barrels in the first four months of 2024.**

Crude Oil Processing Dynamics in India:

- India heavily processes heavy sulfur or sour grades, accounting for over three-fourths of total crude oil processing.
- Processing of light sweet crude decreased from 1.24 mb/d in FY20 to 1.13 mb/d in FY24.

Cost Dynamics and Arbitrage:

- Murban's cost-efficiency makes it a preferred option for Indian refiners.
- Murban-Dubai swaps spread decreased in 2024, making Murban more competitive.
- Middle East to West coast of India transport **is quicker and more cost-effective compared to US Gulf coast shipments.**

Murban vs. WTI:

- Competition between Murban and WTI is intensifying in Asia.
- Indian refiners are modifying import strategies **due to the unavailability of Sokol and the increasing cost of Nigerian barrels.**

Origins of Brent and WTI:

- Brent crude oil originates from oil fields in the **North Sea between the Shetland Islands and Norway.**
- West Texas Intermediate (WTI) is primarily **sourced from US oil fields in Texas, Louisiana, and North Dakota.**

Sulphur Content and Sweetness:

- WTI has a lower sulphur content (0.24%) compared to Brent (0.37%), making it "sweeter" in terms of sulphur content.

API Gravity:

- Both Brent and WTI are relatively light oils, **but WTI has a slightly higher API gravity, indicating that it is lighter than Brent.**
- API gravity is an indicator of the density of crude oil or refined products.

Benchmark Prices:

- Brent crude price serves as the international benchmark price used by OPEC (Organization of the Petroleum Exporting Countries).
- WTI crude price is a benchmark for US oil prices.

Usage in India:

- Since India primarily imports from OPEC countries, **Brent serves as the benchmark for oil prices in India.**

Cost of Shipping:

- The cost of shipping Brent crude is typically lower because it is produced near the sea, allowing for immediate shipment.

- Shipping of WTI is priced higher as *it is produced in landlocked areas like Cushing, Oklahoma, where storage facilities are limited.*

Defence Indigenisation

Subject: Economy

Section: National Income

Capital procurement of defence equipment are undertaken from various domestic as well as foreign vendors, based on threat perception, operational challenges and technological changes so as to keep the Armed Forces in a state of readiness and to meet the entire spectrum of security challenges.

Defence Procurement Procedure (DPP) and **Defence Acquisition Procedure (DAP 2020)** with a focus on ‘**Aatmanirbhar Bharat**’ and ‘**Make in India**’ introduced major policy initiatives for boosting indigenous defence capability and reduction of reliance on imports. Further, DAP-2020 provides the highest preference to ‘**Buy Indian (IDDM)**’ category of acquisition and ‘**Buy Global**’ is only permitted in exceptional situations with specific approval of Defence Acquisition Council (DAC)/Raksha Mantri.

To achieve self-reliance in defence sector and to provide impetus to design, development and manufacture of defence equipment/platforms in India, the following initiatives/policies have been taken/made by the Government:

- A new category of ‘**Buy (Global- Manufacture in India)**’ has been introduced to enable **ab-initio indigenisation of spares**. This category encourages Foreign OEMs to set up ‘**Manufacturing/maintenance entities**’ through its subsidiary in India.
- The Government has introduced **Make III** categories with the objective of self-reliance through import substitution.
- Notification of the ‘**Positive Indigenisation lists**’ of weapons/platforms banned for import to be indigenously manufactured.
- Reservation of Cases with AoN cost ≤ 100 Crs, extendable to Cases of AoN cost ≤ 150 Crs if annual cash flow based on deliveries is below Rs. 100 Crs for MSMEs.
- Launch of **innovations for Defence Excellence (iDEX)** scheme involving start-up & Micro, Small and Medium Enterprises (MSMEs).
- Reforms in **Offset policy** with thrust on attracting investment and transfer of Technology of Defence manufacturing by assigning higher multipliers.
- Launch of indigenisation portal namely **SRIJAN** to facilitate indigenisation by Indian Industry including MSMEs.
- Establishment of two Defence Industrial Corridors, one each in Uttar Pradesh and Tamil Nadu.
- Opening up of Defence Research & Development (R&D) for industry, start-ups and academia with 25 percent of defence R&D budget earmarked to promote development of defence technology in the country.
- Progressive increase in allocation of Defence Budget of military modernisation for procurement from domestic sources.
- In line with Government of India’s initiative of **Aatmanirbhar Bharat**, MoD has earmarked funds amounting to Rs. 84,598 Cr (68% of the total Capital Acquisition Budget) for the domestic capital procurement in 2022-23.

Path to Viksit Bharat: why India should target per capita, not aggregate GDP

Subject: Economy

Section: National Income

- **China-India Comparison (1990):**
 - In 1990, China's *per capita GDP* trailed India's, with an overall GDP only *23% higher*.
 - **Both ranked 11th and 12th by nominal GDP, showcasing comparable economic standings.**
- **China's Accelerated Growth:**
 - China experienced **10% annual real GDP growth in the 1990s and 2000s**, propelling it to the *world's second-largest economy* by 2010.
 - By 2010, **China's nominal GDP soared to \$6.1 trillion, a whopping 4 times the 1990 level.**
 - 1990s and 2000s marked China's **era of expansion, surpassing even the US economy of 1990 by 2010.**
 - Sustained growth rates, even at 7% to 3% since 2010, drove China's **per capita GDP past \$10,000 by 2019.**
 - In 2022, China's economy stood at *\$18 trillion*, eclipsing even the *US economy of 2014.*
 - **Projection:** China poised to become the **world's largest economy** by *early to mid-2030s.*
- **India's Growth Trajectory:**
 - India's *real GDP growth* has *slowed*, averaging 9% from 2010-22 and 5.7% since 2014.
 - Despite reaching *\$3.4 trillion* in 2022, India lags as a **relative growth underperformer.**

- **Comparative Economies (2022):**
 - In 2022, *Japan* and *Germany* boasted *nominal GDPs* of \$4.3 trillion and \$4.1 trillion
 - **Projection:** India requires *6% annual growth*, compared to 2% for others, to claim the **world's No. 3 economy by 2028**.
- **Focus on Per Capita Growth:**
 - While *aggregate GDP* boosts *geopolitical influence*, India's *vast population* makes **per capita GDP** equally vital.
 - A *5% annual GDP growth* over 30 years could yield *332% expansion*, as explained by economist *Thomas Piketty's "law of cumulative growth"*.
- **India's Transformation (1990-2022):**
 - India has *transformed* with *6% annual real GDP growth* during 1990-2022, despite the potential for 7-8% growth.
 - **Comparison:** China's *46-fold economic growth* from 1990-2022 (compared to India's *11-fold*) showcases its *exceptional expansion*.
- **Per Capita GDP Rise (China vs. India):**
 - China's **remarkable rise** in *per capita GDP* from \$348 to \$12,720 (against India's \$369 to \$2,411) highlights its *extraordinary growth*.
- **Path to "Viksit Bharat" (Developed India):**
 - The Modi government aims for a "**Viksit Bharat**" or *developed India* by 2047, emphasizing *per capita GDP*
 - India's current "*lower-middle-income*" status (\$1,136-4,465 range) vs. China's "*upper-middle-income*" status (\$4,466-13,845) underscores the *goal for higher living standards*.
- **Conclusion and Future Target:**
 - India's **2030s Vision:** Aims for a "*high-income*" status, targeting *per capita GDP* of \$13,846 or more.
 - The journey to a "**Viksit Bharat**" involves *sustained growth*, focusing on *per capita prosperity* for *economic excellence*.

Per Capita GDP:

- Per capita GDP, or Gross Domestic Product per capita, is a **measure of the average economic output per person in a country. It is calculated by dividing the country's total GDP by its population.**
- **Formula:** Per Capita GDP = Total GDP / Population
- **Significance:**
 - Reflects the *average standard of living* in a country.
 - Indicates the *economic well-being* of the average individual.
 - Helps compare the *economic performance* of different countries.
- **Importance:**
 - High per capita GDP generally correlates with *higher living standards*, better *education*, *healthcare*, and *infrastructure*.
 - It is a key indicator of a country's *economic development* and *prosperity*.

Aggregate GDP (Gross Domestic Product):

- **Definition:** Aggregate GDP, or Gross Domestic Product, is the **total value of all goods and services produced within a country's borders in a specific period, usually a year.**
- **Calculation:** Aggregate GDP is the sum of *consumption*, *investment*, *government spending*, and *net exports* (exports minus imports).
- **Significance:**
 - Measures the *size* of a country's economy.
 - Reflects the *total economic output* of a nation.
 - Indicates the *overall economic activity* within a country.
- **Importance:**
 - Governments use GDP to *monitor economic growth* and *performance*.
 - It helps policymakers in *formulating economic policies*.
 - GDP is a crucial factor in *comparing the economic strength* of different countries.

Comparison:

- **Per Capita GDP:**
 - Focuses on the *average individual* and their *economic well-being*.

- Reflects *income distribution* and *standards of living*.
- Important for assessing *quality of life* and *human development*.
- **Aggregate GDP:**
 - Provides an overview of the *entire economy*.
 - Measures the *total economic output* of a nation.
 - Essential for understanding a country's *economic size* and *growth trends*.

In essence, **per capita GDP** tells us how much each person contributes to the economy on average, offering insights into the standard of living. On the other hand, **aggregate GDP** gives a broad view of the entire economy's size and activity, providing a snapshot of the nation's economic output. Both metrics are crucial for understanding and analyzing a country's economic health and development.

Rising Household Debt Levels in India

Subject: Economy

Section: National Income

Current Status:

- India's household debt levels have reached an all-time high of **40% of Gross Domestic Product (GDP)** by December 2023.
- **Net financial savings** had likely dropped to their lowest level at around **5% of GDP** during the same period.

Motilal Oswal Research:

- A research report from leading financial services firm Motilal Oswal highlighted these trends.
- **Household Debt:**
 - Estimated at approximately **40% of GDP** by December 2023, marking a new high.
 - Breakdown:
 - **Unsecured Personal Loans:** Growing at the fastest pace within household debt.
 - **Followed by Secured Debt, Agricultural Loans, and Business Loans.**

Previous Estimates:

- In September 2023, the Reserve Bank of India (RBI) estimated **net financial savings** at **5.1% of GDP** in 2022-23, a 47-year low.
- The Finance Ministry argued that the lower savings were due to households taking loans for real assets like homes and vehicles, seen as "**confidence in future employment and income prospects.**"

Revised Estimates:

- **Net Financial Savings:**
 - Revised estimates for 2022-23 raised to **5.3% of GDP**, still the lowest in 47 years.
 - Weaker than the average of **7.6% of GDP** recorded between **2011-12 and 2019-20**.
- **Household Debt:**
 - Scaled up to **38% of GDP** in 2022-23, second only to the **39.1% of GDP** recorded in **2020-21**.

Factors Contributing:

- **Reasons for Dismal Savings:**
 - *Weak Income Growth*
 - *Robust Consumption*
 - *Growth in Physical Savings*

Impact on Consumption and Investment:

- With income growth remaining weak and household net financial savings at **5% of GDP**, private consumption and household investment growth have considerably weakened in **2023-24**.

Analysis:

- **Consistent Trends:**
 - The report suggests that **falling net financial savings and lower savings in 2022-23 were not an exception but consistent.**
 - Estimates indicate households' net financial savings were broadly unchanged at around **5% of GDP** in the first nine months of **2023-24**.
- **Projections:**

- For the full year, savings could end up between **5% and 5.5% of GDP**.

Financial Trends:

- **Gross Financial Savings:**
- Rose slightly to **10.8% of GDP** in the first nine months of last year, from **10.5%** in the corresponding period of **2022-23**.
- **Financial Liabilities:**
- Also rose to **5.8% of GDP** from **5.5% of GDP** during the same period.
- **Annual Borrowings:**
- Surged to **5.8% of GDP** in **2022-23**, the second-highest in the post-Independence period.

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NIIF Invests \$200 Million in iBUS Network and Infrastructure Pvt Ltd

Subject: Economy

Section: National Income

The National Investment and Infrastructure Fund Ltd. (NIIF) has made a significant investment of \$200 million in iBUS Network and Infrastructure Pvt Ltd. This **investment aims to support the growth of India's digital infrastructure, particularly in the connectivity technology sector.**

Purpose of the Investment:

- **Scaling Operations:** The funds from NIIF will be **utilized by iBUS Network to scale its operations.** This includes both organic and inorganic growth initiatives to expand its reach and capabilities.
- **Focus Areas:**
 - **In-Building Solutions:** Strengthening its offerings in in-building solutions for improved connectivity within buildings.
 - **Outdoor Small Cells:** Enhancing outdoor small cell networks to bolster connectivity in outdoor environments.
 - **Managed Wi-Fi Services:** Expanding its managed Wi-Fi services for businesses and consumers.
 - **Emerging Sectors (IoT Solutions):** iBUS aims to expand into emerging sectors such as Internet of Things (IoT) solutions, aligning with the evolving technological landscape.

Ownership Structure:

- Post the completion of the transaction, **NIIF will hold a significant majority stake in iBUS Network and Infrastructure Pvt Ltd.**

Vision for Connectivity Transformation:

- iBUS highlighted the *partnership with NIIF as aligned with their goal to transform connectivity in India at scale, speed, and value.*

Conclusion:

The investment by NIIF in iBUS Network and Infrastructure Pvt Ltd signifies a strategic move to bolster India's digital infrastructure. With a focus on expanding connectivity solutions, **including in-building, outdoor, and managed services, iBUS aims to meet the evolving demands of the market.** This investment not only supports growth initiatives but also aligns with the broader vision of transforming India's digital landscape.

National Investment and Infrastructure Fund (NIIF)

1. **Establishment:**
 - NIIF was **established in 2015** as India's **first sovereign wealth fund.**
 - It is **anchored by the Government of India (GoI)** and collaborates with **leading global and domestic institutional investors.**
2. **Purpose and Goals:**
 - NIIF aims to **enhance infrastructure financing** in India.
 - **Optimizing Economic Impact:** The primary goal is to **optimize the economic impact** through investments in:
 - **Greenfield (new), brownfield (existing), and stalled infrastructure projects.**
 - Strategic investments to support India's vision of robust infrastructure for **economic growth.**
3. **Types of NIIF Funds:**
 - **Master Fund:**
 - Focuses on investments in sectors such as **roads, ports, airports, and power.**
 - Also invests in **established enterprises** operating in **regulated environments.**
 - **Fund of Funds:**
 - Invests in funds managed by renowned fund managers with **excellent track records.**
 - Acts as an **anchor investor** to attract funds from **institutional investors.**
 - **Strategic Fund:**
 - Registered as **Alternative Fund II** under **SEBI.**
 - Focuses on investments in **equity** and **equity-linked instruments** for **strategic growth.**
4. **Regulatory Status:**
 - All NIIF funds are registered as **Alternative Investment Funds (AIF)** with **SEBI.**
 - This ensures compliance with **investment norms** and provides **transparency and oversight.**

Why have private investments dropped?

Subject: Economy

Sec: National Income

Context:

- The **Indian economy** has faced significant challenges due to a **decline in private investment**, as indicated by the **decreasing Gross Fixed Capital Formation (GFCF)** relative to **GDP** since **2011-12**.
- In an effort to **reverse this trend**, the **government reduced corporate taxes** from **30% to 22%** in **2019**, with the aim of **encouraging large corporations to increase their investment levels**.

What is GFCF and why does it matter?

- **Gross Fixed Capital Formation (GFCF)** measures the **increase in fixed capital** in an economy, including assets like **buildings and machinery** that are necessary for production.
- **Components of GFCF:**
 - **Private GFCF** indicates the **investment level by the private sector**, while **overall GFCF** also includes **investments made by the government**.
- **Importance of GFCF:**
 - **Fixed capital is crucial** as it enables workers to produce more goods and services, thereby **fostering economic growth and elevating living standards**.
 - The **amount of fixed capital** is a **key factor** in determining a **country's output and consumer market capacity**. **Developed countries** like the **U.S.** generally have **higher fixed capital per capita** compared to **developing countries like India**.

What is the trend seen in private investment in India?

- **Private investment in India** has experienced notable **fluctuations**, influenced significantly by **economic reforms and global events**.
- Initially, from **India's independence** until the **economic liberalization** in the **late 1980s and early 1990s**, **private investment** was **relatively stable**, hovering around **10% of GDP**. The **economic reforms** during this period **boosted private sector confidence**, leading to a **surge in private investment**.
- This **upward trend in private investment** continued **robustly** until it **peaked** at about **27% of GDP** in **2007-08**, just before the **global financial crisis**. Following this period, from **2011-12 onward**, there was a **noticeable decline in private investment**, which further **dropped to 19.6% of GDP** by **2020-21**.
- This **decline reflects** the challenges and shifts in the **economic environment post-liberalization and post-global financial crisis**.

Why has private investment fallen?

- Many Indian economists attribute the lacklustre performance of private investment over the past decade, particularly **post-pandemic**, to **low private consumption expenditure**.
- They argue that **high consumer spending is essential for boosting business confidence and necessary for investments in fixed capital**.
- As a solution, these economists **recommend** that the **government increase disposable income** for the populace to spur consumption and thereby **encourage private investment**.
- Contrary to this view, **historical data reveals an inverse relationship between private consumption and investment in India**.
- Specifically, **private consumption expenditure steadily declined** from about **90% of GDP** in **1950-51** to **54.7% in 2010-11**, coinciding with a **peak in private investment** just before its prolonged **decline** began in **2011-12**. Since then, as **private consumption has risen, private investment has notably decreased**.
- This **inverse trend** suggests that **increases in savings and investment funds**, whether by **government action or private enterprise**, typically come at the expense of **reduced consumption expenditure**.
- Other economists point to **structural issues and policy uncertainties** as the **primary reasons** for the **significant decline in private investment as a percentage of GDP** over the last decade. They cite **unfavourable government policies** and a **slowdown in economic reforms**, particularly under the later terms of the **UPA** and current **NDA** governments, as major deterrents to private investment.
- Additionally, the **correlation** between the **rise in private investment during the 1990s and early 2000s** with the **1991 economic reforms** contrasts sharply with the **investment slump** associated with the **recent slowdown in reform efforts**, highlighting the importance of consistent policy direction to maintain investor confidence.

What about low private investment?

- **Low private investment** could lead to **slower economic growth** since a **robust fixed capital base** is essential for **increasing economic output**.
 - Some critics argue that **increased government investment** might **crowd out private investment**, further **dampening the private sector's role in the economy**.
 - On the other hand, proponents believe that **government investment** can make up for the **shortfall in private investment**, potentially **stabilizing economic growth**.
- Despite this, **private investors** are generally viewed as **more efficient allocators of capital than public officials**, thus helping to **minimize wasteful expenditure**.
- Additionally, **raising taxes** to fund public spending can significantly **hinder economic performance**, as it **reduces disposable income and consumption**.

Source: [TH](#)

India must invest more in education, and health to capitalise on demographic dividend: IMF

Subject: Economy

Sec: National Income

Context:

- The **International Monetary Fund (IMF)** has advised **India** to **significantly invest in education and health** to **capitalize** on its **large, young, and growing labour force**.

Details:

- The suggestion comes in light of concerns about **India potentially wasting its demographic dividend**, as noted by the **World Bank**.
- With **15 million people joining the labour force annually**, strategic investments in **education and health** are **crucial for equipping the workforce** with the necessary **skills** to compete in a **changing global economy**, including **challenges from AI**.
- Despite a **high unemployment rate** among the **youth**, which was **over 40%** in **2022-23**, the **IMF** projects a **6.8% growth rate** for **India's economy** in **FY2024/25**.
- This growth has been **primarily driven by public investment and private consumption**.
- The **impact of public capital expenditure**, such as **infrastructure**, has been beneficial for **economic growth**. However, it **raised concerns** about whether it has sufficiently stimulated **private investment**, which until recently, was **described as weak**.
- There has been a **recent uptick in private investment** and a pickup in **consumption**, attributed to a **deceleration in inflation**, which **currently stands** close to a **4%** target at **4.7%**. This is expected to **further boost consumption**.
- The **IMF** official also mentioned **short-term risks to economic growth** from **volatile commodity prices**, including **oil**, and **potential food price shocks**.
- **Long-term challenges** could arise from **weather-related shocks** and **geo-economic issues**, which could have mixed impacts on growth.

Government Initiatives:

- To address these drawbacks in **education, skill development, and job creation**, the government has initiated several programmes/ schemes, including **Sarva Shiksha Abhiyan, Rashtriya Madhyamik Shiksha Abhiyan, National Skill Development Mission**, under which programmes like **Skill India, Pradhan Mantri Kaushal Vikas Yojana (PMKVY), and National Apprenticeship Promotion Scheme (NAPS), Atal Innovation Mission, National Education Policy (NEP) 2020, Startup India, National Research Foundation, and Digital India** campaign.

Demographic Dividend

- According to the **UN Population Fund**, the **demographic dividend** refers to the **economic growth potential** arising from **changes in a population's age structure**, specifically when the **working-age population** (typically defined as **ages 15-64**) exceeds the **non-working-age population**.
- **India** is expected to **experience its demographic dividend peak** around **2041**, with projections suggesting that the **working-age population** will constitute **59%** of the total population at that time, according to the **Economic Survey 2018-19**.
- Currently, over **two-thirds** of **India's population** falls within the **working-age category**, while the **elderly (aged 60 and above)** make up **less than 7%**.
- This **demographic advantage** provides an **opportunity** to **generate resources** for significant investments in **human capabilities**, potentially **fostering broader societal and economic growth and development**.

Importance of India's demographic dividend:

- The burgeoning **young population in India** leads to an **increased labour supply** as more individuals enter working age.
- With **fewer dependents**, individuals are likely to **save more**, **boosting national savings rates** and **capital stock**, and thereby **facilitating enhanced capital formation** through investment.
- The **demographic shift** contributes to **increased GDP per capita** and **reduced dependency ratios**, fostering **demand-driven economic growth**. Historically, similar **demographic dividends** have accounted for up to **15% of overall growth** in advanced economies.
- A **sizeable young population fosters entrepreneurship and innovation**, driven by **lower risk aversion** and a **propensity to innovate**. India ranks as the **third largest startup ecosystem globally**, following the **USA and China**.
- **Lower fertility rates** lead to **healthier women** and **reduced economic pressures at home**, creating opportunities to **integrate more women** into the **workforce** and enhance overall human capital.

About the United Nations Population Fund:

- It is an **international development agency** created in **1968** to **support the execution of projects and programmes** in the area of **population** and **sexual and reproductive health**.
- Its **mission** is to **deliver a world where every pregnancy is wanted, every childbirth is safe and every young person's potential is fulfilled**.
- In **1987**, it was officially renamed as the **United Nations Population Fund** but the **original abbreviation UNFPA** (United Nations Fund for Population Activities) was retained.
- Headquarters: **New York**
- It is **not directly responsible for the collection of primary statistics**; it plays an **important role** in the **technical and financial support** of **statistical activities** in countries, such as **population censuses** and **thematic surveys etc.**
- **UNFPA funds assistance, research, and advocacy programs in three major areas:**
 - **Reproductive health**, including **family planning, safe motherhood, and the prevention and treatment of sexually transmitted diseases**,
 - The **population problems of developed and developing countries** and possible strategies for addressing them.
 - **Issues related to the status of women**, including the gender gap in education.
- **UNFPA assistance programs** are undertaken **only in response to government requests**.

Source: [TH](#)

Fall in Household Savings: Causes and Implications

Subject: Economy

Sec : National Income

- **Overview:**
 - The decline in household savings has sparked debates in India, with the household net financial savings to GDP ratio hitting a four-decade low.
 - Factors contributing to this decline include a **significant reduction in net financial savings despite marginal recovery in physical savings**.
- **Interpreting Lower Financial Savings:**
 - Net financial savings of households **represent the difference between gross financial savings and borrowing**, primarily comprising bank deposits, currency, and financial investments.
 - Factors influencing the **reduction in net financial savings include increased borrowing for consumption or tangible investment** and higher interest payments.
- **Role of Borrowing and Investment:**
 - Increased borrowing or depletion of financial savings may finance additional consumption expenditure, stimulating aggregate demand.
 - Higher borrowing for tangible investment can also drive aggregate demand through the investment channel.
 - Rising interest payments contribute to the reduction in net financial savings, primarily due to higher interest rates.
- **Implications of Higher Debt Burden:**
 - Concerns arise regarding debt repayment and financial fragility, as households' debt sustainability depends on the difference between interest rates and income growth rates.
 - Higher household debt burdens can lead to reduced consumption expenditure and affect the financial sector's income if repayment capacity is compromised.
- **Macroeconomic Implications:**

- The increasing trend in household liabilities to disposable income and debt to net worth ratios makes households vulnerable.
- **Policies aimed at higher interest rates to counter inflation may exacerbate household debt burdens,** potentially affecting consumption and aggregate demand.
- Trends in household balance sheets suggest a shift **towards financial assets, indicating a degree of financialization in the economy,** which may render it jobless and fragile.
- **Conclusion:**
 - The declining trend in household savings poses significant challenges for India's economic stability and growth, necessitating policy interventions to address underlying causes and mitigate potential risks.

Health Insurance for Seniors

Sub: Economy

Sec : National Income

Ageing India

India's declining fertility rate and increasing life expectancy means that its population is growing old. At the time of the 2011 census, only 8.6% of India's population was over the age of 60 years. This proportion is, however, expected to increase to 19.5% by 2050, according to the government's Longitudinal Ageing Study in India (LASI), published in 2020. In terms of absolute numbers, the population over the age of 60 years will nearly triple, from 103 million in 2011 to 319 million in 2050.

The ageing population will mean increased expenditure on health and long-term care, labour force shortages, public dissaving, and old-age income insecurity.

- **Expansion of Ayushman Bharat:**
 - BJP's manifesto promises to **extend Ayushman Bharat health insurance scheme to cover senior citizens, ensuring access to free and quality healthcare.**
 - **Ayushman Bharat-Pradhan Mantri Jan Arogya Yojana (AB-PMJAY)** will be expanded to include coverage for senior citizens.
- **Aging Population and Health Challenges:**
 - India's aging population is growing, leading to increased healthcare needs and expenditures.
 - Senior citizens face higher prevalence of chronic health conditions, driving up healthcare costs.
- **Diseases Among the Elderly:**
 - Senior citizens are prone to cardiovascular diseases, hypertension, diabetes, chronic lung disease, bone or joint disease, and cancer.
 - They are also more susceptible to infectious diseases due to weakened immune systems.
- **Current Health Insurance Coverage:**
 - Only about 20% of India's population above 60 years is covered under health insurance schemes.
 - Reasons for lack of coverage include low awareness and non-affordability.
- **Impact of Ayushman Bharat:**
 - AB-PMJAY has significantly reduced out-of-pocket healthcare expenditures for beneficiaries.
 - Government expenditure is highest for key specialties and specific procedures required by the elderly.
- **Comparison of Healthcare Costs:**
 - In rural areas, patients spend significantly less in government hospitals compared to private facilities for cardiovascular disease and cancer treatment.
 - Urban areas witness a substantial increase in healthcare costs, especially in private hospitals.
- **Government Initiatives and Expenditures:**
 - Government hospitals offer more affordable healthcare options compared to private hospitals, especially for musculoskeletal issues.
 - Ayushman Bharat has helped alleviate financial burdens on patients, particularly senior citizens, by providing access to essential medical treatments.

Health Insurance

- **Definition:**
 - Health insurance is a form of coverage that pays for medical expenses incurred by the insured individual.
 - It provides financial protection against various healthcare costs, including hospitalization, doctor visits, surgeries, medications, and preventive care.
- **Significance:**

- Acts as a mechanism to pool high levels of Out of Pocket Expenditure (OOPE) in India, offering greater financial protection against health shocks.
- Pre-payment through health insurance serves as a crucial tool for risk-pooling, guarding against catastrophic health expenditures.
- Pre-paid pooled funds can enhance the efficiency of healthcare provision, ensuring better access to essential medical services.
- **Issues:**
 - Uneven Distribution of Life Status: Disparities in life expectancy across different regions remain a concern, with health problems persisting in various parts of the country.
 - Low Government Expenditure: Inadequate government spending on health restricts the capacity and quality of healthcare services in the public sector, leading to a reliance on costlier private healthcare options.
 - Lack of Coverage: A significant portion of the population, estimated at 30% or 40 crore individuals, lacks financial protection for health expenses.
- **Government Initiatives:**
 - Ayushman Bharat – Pradhan Mantri Jan Arogya Yojana (AB-PMJAY): Offers a sum insured of Rs. 5 lakh per family for both secondary and tertiary care.
 - National Health Authority (NHA): Reconstituted in 2019 to implement Ayushman Bharat, responsible for developing the National Health Claims Exchange (HCX) to ensure interoperability of health claims.

How has Daniel Kahneman's work in psychology withstood the test of time?

Subject: Economy

Section: Msc

Context:

- **Daniel Kahneman** (passed away on March 27, 2024) was a **psychologist** who spent a large part of his career at Princeton University. He did some of his best-known work with **Amos Tversky**, a **mathematical psychologist** who passed away in 1996.

Work of Kahneman and Tversky:

- **Kahneman and Tversky significantly influenced the field of judgment and decision-making, merging psychological insights with economics to understand human behaviour.**
- Their work in the **1980s** laid the **foundation for behavioral economics**, even though they did not initially aim to contribute to the economic sphere.
- Kahneman gained popularity outside academia, especially with his 2011 book **'Thinking, Fast and Slow,'** and his partnership with **Tversky** was highlighted in **Michael Lewis' book 'The Undoing Project'.**
- Before focusing on **decision-making**, Kahneman studied attention and **perception, fundamental aspects of human cognition** leading to action or inaction.

Attention and decision-making:

- Kahneman's initial work focused on **attention and mental effort**, as detailed in his **1973 book 'Attention and Effort',** covering aspects like **divided, focused, and selective attention.**
- Collaborating with **Anne Treisman**, his spouse and a **renowned cognitive psychologist**, he also **explored attention, memory, and perception**, contributing significantly to these fields until **Treisman's passing in 2018.**
- **Kahneman's 1982 book 'Judgement Under Uncertainty'** bridged his early research with **decision-making**, highlighting their seminal **1974 paper** which is highly cited for its contribution to psychology.

Loss aversion theory:

- This work introduced **prospect theory**, particularly the **concept of loss aversion, demonstrating through experiments that individuals are more affected by losses than equivalent gains**, challenging previous notions of decision-making that viewed outcomes in absolute terms.
- **Limits on Loss aversion:**
 - **Kahneman and Tversky's** initial experiments on **loss aversion didn't explore the context or scale of decisions in depth.**
 - Later research, such as **Zeif and Yechiam in 2022**, indicated that **loss aversion mainly occurs with significant losses (over \$40 or Rs 3,300)**, suggesting it's somewhat **context-specific** and **more pronounced in specific areas** like **automobile purchases and household finances.**
 - Despite these nuances, **Kahneman's Nobel Prize in Economics in 2002**, shared with **Vernon L. Smith**, acknowledged the **impact of psychological insights on economics.**

- **Kahneman** dedicated his **share of the Nobel Prize to Tversky**, honouring their **collaborative work**, despite the prize not being awarded posthumously.

Measuring happiness:

- **Kahneman** significantly **contributed to happiness and well-being research**, introducing **innovative methods to measure happiness**.
 - One notable method, **the day reconstruction method**, involves **participants reflecting on their previous day in segments and rating their happiness levels by contrasting positive feelings against negative emotions**, thereby applying principles from **hedonic psychology**.
 - This approach underlines the **importance of experiences over mere outcomes**.
- His work, emphasizing the **limitations of assessing well-being solely in economic terms**, aligns with studies like **Anna Alexandrova's in 2005**, which argued that **economic metrics capture only a portion of subjective well-being**.
- Kahneman's research also **distinguished** between the **effects of income on life satisfaction and actual happiness**, highlighting that while **high income might influence life satisfaction**, it **does not necessarily equate to increased happiness**.

Rethinking thinking:

- **Kahneman is renowned for differentiating between two types of thinking**:
 - **System 1**, which is **fast, intuitive, and automatic**, and **System 2**, which is **slower, more deliberate, and cautious**.
- This **dichotomy** has been widely studied and validated within **psychology**.
- However, further research suggests this framework may not universally apply, particularly in **non-WEIRD (Western, educated, industrialized, rich, and democratic) cultures**.
- Despite these **limitations**, **Kahneman's contributions** significantly **impact psychology, behavioural economics, public policy, and beyond**.
- His work, while **not universally applicable in every context**, has **nonetheless laid foundational principles** that continue to **guide and inspire ongoing research and application in understanding human cognition and decision-making**.

Source: [TH](#)

Topic no. 21 - China industrial overcapacity has peaked as global demand picks up: EIU

Subject: Economy

Sec: MSC

Peak in Overcapacity: The Economist Intelligence Unit (EIU) suggests that China's overall manufacturing overcapacity has peaked. This comes as global demand rises, especially in consumer sectors.

- **Outlook on Capacity Growth:** A slowdown in investment by firms, influenced by lower profitability, is expected to lead to slower capacity growth.
- **Consumer Sectors and Overcapacity:** Chinese electronics and other consumer goods sectors are experiencing some overcapacity, but this is seen as temporary. The EIU predicts a cyclical upturn in global retail sales for 2024.
- **Industries with Most Overcapacity:**
 - **Steel, Cement, Construction Machinery:** These sectors face overcapacity due to a structural contraction in demand linked to China's prolonged property market slump.
- **Milder Overcapacity Pressure in Other Sectors:**
 - **Electrical Machinery (Batteries, Solar Panels):** Overcapacity pressure is less severe.
 - **Automotive Sector, Pharmaceuticals:** These sectors also have milder overcapacity challenges.
- **Outlook for 2024:**
 - Capacity utilization and profitability are expected to remain below pre-pandemic levels throughout 2024.
 - Sectors like solar, batteries, and wind turbines might see excess supply in parts of the supply chain with yet-to-materialize demand.
- **Factors Influencing Overcapacity:**
 - **Optimistic Forecasts:** Producers increased supply based on *optimistic forecasts following China's 2020 carbon neutrality target announcement by President Xi Jinping and Europe's 2022 energy crisis*.
- **Trade Tensions:**
 - Rising competitiveness of Chinese products, especially in strategic sectors, could lead to continued trade tensions.
 - Protectionist moves by other countries, particularly in sectors like electric vehicles, might persist.

Concerns raised by US

- **Risk of Global Economic Resilience:**
 - US Treasury Secretary Janet Yellen warned that **Beijing's subsidies for industries like solar, electric vehicles (EVs), and batteries could threaten global economic resilience.**
 - She expressed concerns about China's "overcapacity" resulting from significant government support, which could **lead to a surplus of cheap goods in global markets.**
- **Effects of Overcapacity:**
 - Yellen highlighted that **overcapacity can result in large volumes of exports at depressed prices, affecting sectors worldwide.**
 - It could also lead to an **overconcentration of supply chains, posing a risk to global risk resilience.**
- **Intentions of the Warnings:**
 - Yellen clarified that these **concerns are not part of an "anti-China policy" but are aimed at mitigating risks from the current policies.**
 - The goal is to manage US-China ties to **make them "resilient" and capable of withstanding shocks.**
- **Concerns for US Businesses:**
 - She also mentioned addressing challenges faced by US businesses operating in China, **such as barriers to access and coercive actions against American companies.**
- **Calls for Fair Practices:**
 - Yellen emphasized that ending unfair practices would benefit both American firms and China by improving the business climate.
 - She seeks a **"level playing field for American workers and firms" and open communication on areas of disagreement.**

IRDAI removes age bar for purchasing health insurance

Subject: Economy

Sec: Msc

Context:

- The **Insurance Regulatory and Development Authority of India (IRDAI)** has removed the age limit for purchasing health insurance policies, with effect from **April 1.**

Key changes:

- Earlier, there was an **age limit of 65 years** to buy new health insurance policies. IRDAI's latest move is aimed at bringing in extended health benefits to the elderly.
- The **IRDAI directive mandates health insurance** providers to develop specialized policies catering to senior citizens, and to establish dedicated channels for addressing their claims and grievances.

Premiums may be higher:

- The **recent decision to lift the age restriction on insurance coverage** is a significant advancement.
- Previously, only individuals up to 65 years old were eligible for insurance, leaving senior citizens, who often need healthcare the most, without coverage.
- Now, with the removal of this restriction, even the elderly can access cashless insurance benefits, though premiums for this demographic may be higher.
- This change will greatly benefit those in need of medical insurance, including children, maternity cases, and senior citizens, ensuring a healthier life for many.

About Insurance Regulatory Development Authority (IRDA):

- **IRDA is a statutory body set up by the IRDA Act, 1999.**
- It is an **autonomous and apex body which has the responsibility to regulate and control the Insurance sector in India.**
- **Insurance Regulatory Development Authority (IRDA)** was established after the recommendations of Malhotra Committee report of 1994.
- The committee had recommended the establishment of an **independent authority for the regulation of the Insurance sector in India.**
- As per the **section 4 of IRDAI Act' 1999, Insurance Regulatory and Development Authority of India** has a composition of a Chairman; five whole-time members; four part-time members, all appointed by the Government of India.

New shoe sizing system proposed for Indians: What is 'Bha' and the need for it?

Subject: Economy

Sec: Msc

Context:

- A pan-India survey on the feet sizes of Indians was recently carried out as part of a **larger project for developing an Indian sizing system for footwear.**

More on news:

- Proposed to be named '**Bha**' (भ) **to represent Bharat**, it could form the basis for manufacturing footwear in India.
- Upon its implementation, **Bha will replace the existing UK/European and the US sizing systems.**
- Many Indians were found to be wearing extra-long, ill-fitted and tight footwear.
- In the case of high-heeled women's footwear, wearing a bigger size was both inconvenient and a cause for potential injuries.

What did the survey find?

- Initially, the hypothesis was that at **least five footwear sizing systems would be required for Indians to be inclusive of various ethnicities.**
- Prior to the survey, it was thought that people from **northeast India, on average, had smaller feet sizes compared to the rest of India.**
- A survey was conducted between **December 2021 and March 2022**, covering 1,01,880 people across 79 locations in five geographical zones.
- **3D foot scanning machines were deployed for understanding the size, dimensions and structure of an average Indian foot.**
- It found that the growth of the foot size of an average Indian woman peaked at the **age of 11 years whereas that of an Indian man peaked at about 15 or 16 years.**
- Indians' feet were found to be wider than that of **Europeans or Americans.**
- Due to the narrow footwear available under the UK/European/US sizing systems, Indians have been wearing footwear which are a size bigger than required.

Why was the need for an Indian shoe sizing system felt?

- The British introduced **UK sizes in India before Indian independence.**
- According to it, an average **Indian woman wears footwear sizes between 4 and 6, and the average man between 5 and 11.**
- With an Indian user now owning an average of 1.5 footwears each and India being the world's most populated country, it is one of the world's biggest markets and manufacturers of shoes.

What are the survey's recommendations?

- **Bha** proposes eight footwear sizes:
 - **I – infants (0 to 1 year),**
 - **II – babies (1 to 3 years),**
 - **III – small children (4 to 6 years),**
 - **IV – children (7 to 11 years),**
 - **V – girls (12 to 13 years),**
 - **VI – boys (12 to 14 years),**
 - **VII – Women (14 years and above) and**
 - **VIII – Men (15 years and above).**
- The biggest advantage of adopting **Bha** would be that footwear manufacturers would need to develop only eight sizes as against the present **10 sizes (English system) and seven sizes (European system).**
- In addition, half-sizes would not be needed.

What is the current status of Bha?

- The Chennai-based **Council of Scientific and Industrial Research–Central Leather Research Institute (CSIR–CLRI) conducted the survey.**
- It submitted its recommendations to the **Department of Promotion of Industry and Internal Trade (DPIIT), which comes under the Union Ministry of Commerce.**
- The DPIIT has forwarded them to the **Bureau of Indian Standards (BIS)**, which is the Indian authority to implement this sizing system, for approval.

Environment

Russia's war is weakening scientists' ability to track the climate

Subject: Environment

Section: Climate change

Context:

- **Human activities are warming the Earth**, and war is now obstructing precise climate change measurements. The **Arctic** is heating up nearly **four times faster than the global average**, which could lead to severe consequences such as **melting permafrost** and **rising sea levels**, impacting **ecosystems** and the **climate worldwide**.

How the Russia-Ukraine War Impacts Climate Tracking:

- **Arctic research** deteriorated due to Russia's invasion of Ukraine.
- **Russia**, which comprises nearly **half of the Arctic region**, has become **inaccessible to foreign scientists**.
- This situation has disrupted the **work** of the **International Network for Terrestrial Research and Monitoring in the Arctic (INTERACT)**, hindering comprehensive climate studies due to the lack of data flow from Russian territories.
- Researchers utilized **earth-system models (ESMs)** to study **Arctic ecosystem conditions**, focusing on **eight key variables** such as **temperature, vegetation, precipitation, and snow depth**.
- **Excluding Russian data from Arctic climate studies**, particularly from **Siberia**, has **significantly increased biases in understanding the Arctic's ecosystem changes**.
- **INTERACT stations**, generally located in regions not fully representative of the **Arctic's diversity**, **miss crucial data** from **colder, drier, and carbon-rich areas of Siberia**.
- This exclusion has led to predictions that underestimate the **ecosystem variables' changes**, equating to an **80-year advance in climate change impacts**.

International Network for Terrestrial Research and Monitoring in the Arctic (INTERACT):

- **INTERACT** is an **infrastructure project** under the auspices of **SCANNET**, an **arctic network of 74 terrestrial field bases** (with an **additional 21 research stations in Russia on pause**) in **northern Europe, the US, Canada, Greenland, Iceland, the Faroe Islands and Scotland** as well as **stations in northern alpine areas**.
- The **project aims to enhance research and monitoring capabilities** across the Arctic via the **Transnational Access Program**, supported by **EU funding**.
- Its **primary goal** is to **enable the identification, understanding, prediction, and response to environmental changes** in the Arctic, a region with **limited observing capacity due to its vastness and sparse population**.
- **INTERACT** is **multidisciplinary**, supporting **thousands of scientists globally** in fields like **glaciology, permafrost, climate, ecology, biodiversity, and biogeochemical cycling**.
- Besides research, **INTERACT stations support international networks in single disciplines** and contribute to education by hosting summer schools.

What share of global CO₂ emissions comes from aviation?

Subject: Environment

Section: Climate change

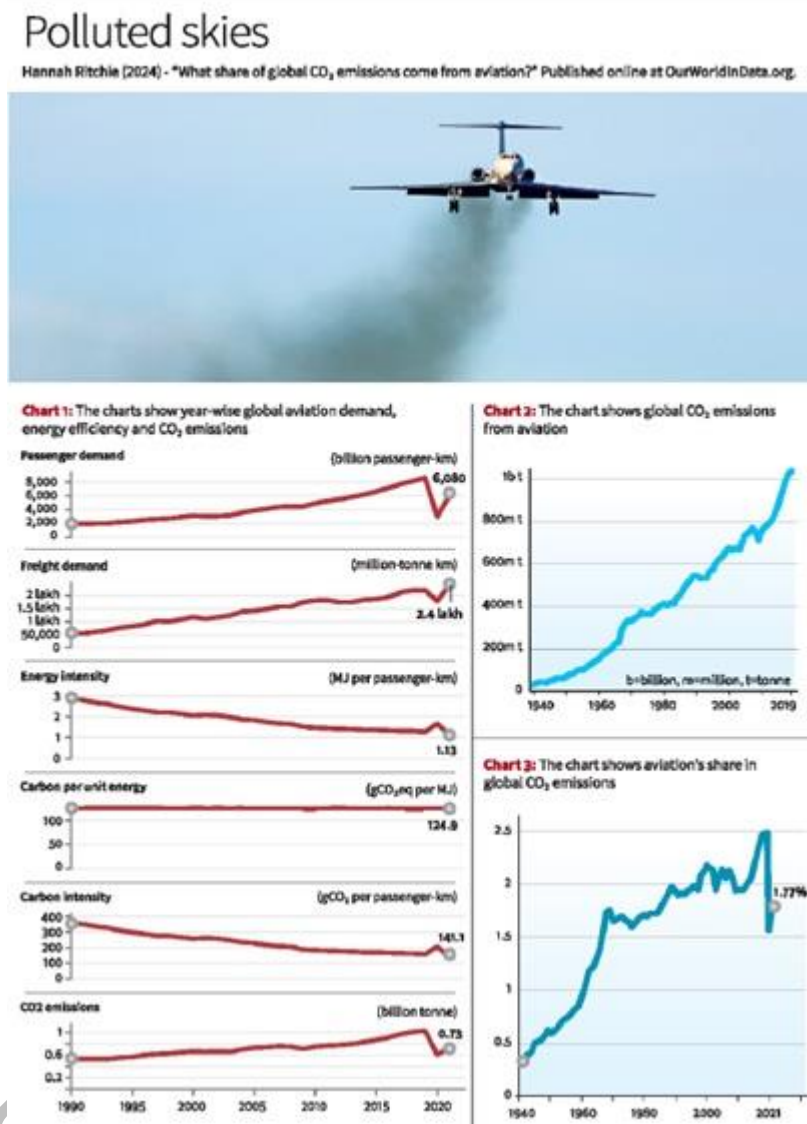
Context:

- **Flying**, despite being **highly carbon-intensive**, contributes **only 2.5% to global carbon emissions** because **only about 10% of the world's population flies regularly**.

Details:

- As **global incomes rise**, however, this **percentage** and the **consequent emissions** are expected to **increase**.
- **Total CO₂ emissions** are often explained through the **Kaya identity**, which considers **population, income, energy efficiency, and carbon intensity**. Since **1990**, demand for air travel and freight has **quadrupled**, with **passengers travelling over 8 trillion kilometres by 2019**, equivalent to **nearly a light-year**.
- Despite this **surge in demand**, the **carbon efficiency** of flying has **improved significantly** due to advancements in **aircraft design, technology, and higher passenger load factors**, which have **more than doubled the energy efficiency of flying from 2.9 megajoules per passenger-kilometre in 1990 to 1.3 megajoules in 2019**.
- However, the **carbon intensity of aviation fuel** has remained unchanged, as **jet fuel** used today is the same as in **1990**, with **biofuels making up only a minor fraction of the fuel mix**.
- As a result, while the **efficiency gains** have helped **reduce per-kilometre emissions** from **357 grams of CO₂ in 1990 to 157 grams in 2019**, the **overall CO₂ emissions from aviation** have **doubled from about 0.5 billion tonnes in 1990 to about 1 billion tonnes in 2019** due to the **increased demand**.

- Looking back further, **emissions** have **quadrupled** since the **1960s**, highlighting the **significant impact of rising aviation demand over time**.
- Despite **efficiency improvements**, the **increase in aviation's share of global emissions since 2010** underscores the ongoing challenge of mitigating aviation's environmental impact.



Source: [TH](#)

Centre reveals forest records after 28 years; seven states miss deadline

Subject: Environment

Section: Env law and body

Context:

- As many as 27 states and Union Territories (UT) have furnished details about their records concerning forests, according to the interim judgment passed by the Supreme Court on February 2, 2024.

More on news:

- The Supreme Court issued an interim directive to the Centre to refer to its understanding of 'forest' as "broad and all-encompassing" in order to classify India's forests as per the order given in the T N Godavarman judgment of December 1996.
- The order came in the backdrop of a Public Interest Litigation **Ashok Kumar Sharma, IFS (Retd.) & Ors -Vs- Union of India & Ors**, challenging the constitutionality of the Van Sanrakshan Evam Adhiniyam, 2023.
- The Forest (Conservation) Act, 1980 was amended to Van Sanrakshan Evam Adhiniyam, 2023** by the Centre.
- This was done with an aim to bring clarity to a **28-year-old issue in defining 'forest' as per the Godavarman judgment**.

- As per the Forest Survey of India, the **Union ministry of environment, forest and climate change (MoEFCC)** states that 0.167 million sq of forest areas lie outside notified forests.

Key findings:

- The information uploaded on the government Parivesh website does not include forest records of seven states — **Andhra Pradesh, Kerala, Manipur, Sikkim, Tamil Nadu, Telangana and Tripura**.
- Other states and UTs — **Himachal Pradesh, Jammu & Kashmir, West Bengal and Ladakh** — do not mention any information about forest records.
- States and UTs such as **Jharkhand, Karnataka, Uttarakhand, Andaman and Nicobar islands, Bihar as well as Dadra and Nagar Haveli** have given generic figures and there is no data on ‘unclassified forests’.

About T N Godavarman Thirumalpad:

- In a landmark judgment case — **T N Godavarman Thirumalpad v. Union of India (December 12, 1996)** — the court ruled that ‘forest’ has to be understood in terms of its dictionary meaning, irrespective of ownership.
- The **Godavarman judgment** had also included **forest-like areas, unclassified forests and community forest lands, including non-notified forest in its ambit**.
- The states and UTs were expected to form expert committees to identify forest areas within a month of the **1996 Godavarman order issued on December 12**.

Forests a national asset and major contributor to financial wealth: SC

Subject: Environment

Sec: Env Law

Context:

- The **Supreme Court of India** has emphasized in a recent judgment that **forests are a crucial national asset**, significantly contributing to the **nation's financial wealth**. This decision arose from a case where the **State of Telangana** appealed a High Court ruling that allocated forest land to a private individual.

Details:

- This judgment is particularly significant in light of the controversial **Forest Conservation (Amendment) Act of 2023**, which has been **criticized** for potentially facilitating the **commercial exploitation of forests** and allowing for the **regularization of encroachments in protected areas**.
- The Act also **exempts certain infrastructure projects** from **environmental clearance requirements**.
- The **court highlighted the economic importance of forests** in terms of **carbon credits** and **green accounting**, noting that **forests as carbon sinks** can offer **substantial financial value**.
- For instance, **India's forests**, containing about **24,000 million tonnes of CO₂**, are estimated to be worth approximately **\$120 billion** or **₹6 lakh crores**.
- The judgment further referenced a **2009 Ministry of Environment and Forests report**, noting an **increase in carbon stocks in Indian forests** between **1995 and 2005**, underscoring their **growing role as a carbon sink** and their contribution to mitigating climate change.

Climate Change:

- Justice Sundresh, in a recent judgment, underscored the **critical role of forests in combating climate change** and their significance in **protecting the environment** and the **economy**.
- Citing a **2022-2023 Reserve Bank of India report**, the judgment highlighted the severe **macroeconomic impacts of climate change**, including **altered rainfall patterns**, which could **reduce India's GDP by 2.8%** and adversely affect the **living standards of nearly half the population by 2050**.
- The judgment further noted projections from the **RBI report** that **India** could lose between **3% to 10%** of its **GDP annually by 2100** due to **climate change**.
- The **RBI report** describes a troubling future where **climate change** could lead to substantial **job losses across all sectors**, posing a grave threat to the **nation's overall future** rather than just specific groups.

Why are forests critical to fighting the climate crisis?

- **Carbon Sinks:** Forests are powerful carbon sinks, absorbing and storing about **7.6 billion metric tonnes of CO₂** annually between **2001 and 2019**, which helps mitigate climate change by **removing greenhouse gases** from the atmosphere.
- **Emissions Reduction:** The **agriculture, forestry, and other land use (AFOLU)** sector, largely through **forests**, can contribute up to **30%** of the **GHG emissions reductions** needed to keep **global warming below 2°C**, according to the **IPCC**.
- **Nature-Based Solutions:** Forests are among the **most effective natural solutions** for **climate recovery and adaptation** but are threatened by **human activities** like **deforestation, agricultural intensification, and urbanization**.

- **Vulnerability to Climate Change:** Increasing global temperatures make forests more susceptible to **drought, wildfires, pests, and diseases**, compromising their ability to store carbon.
- **Contribution to Global Emissions:** Deforestation and forest degradation are significant sources of **global greenhouse gas emissions**, accounting for **up to a fifth of the total**.
- **Holistic Management:** Sustainable forest management, including preventing deforestation and promoting regrowth and landscape restoration, is crucial for reducing overall GHG emissions.
- **Global Warming Threshold:** To avoid surpassing the **critical 2°C increase in global temperatures**, it is essential to **conserve, restore, and manage forests sustainably**, recognizing their **vital role in achieving climate goals**.

The blurry lines between wildlife ‘capture’ and ‘rescue’

Subject: Environment

Section: Env legislation

Context:

- In **India**, the **increasing frequency of human-wildlife encounters** highlights the need for **effective management strategies** beyond **reactive capture and relocation**, which often result in **unsustainable outcomes or harm to the animals**.

“Rescue” vs “Capture”:

- The distinction between genuine **"wildlife rescue"** and mere **"capture"** is complex.
- **True rescues** may involve **skilled teams and specialized techniques** to handle scenarios like leopards in wells or elephants in irrigation tanks.
 - However, **not all wildlife encounters in human spaces** require **intervention**, such as when **leopards prey on livestock** or **elephants damage crops**.
- **Effective conflict management** should **aim** to resolve these situations without **resorting to capturing or relocating the animals**, focusing instead on **preventive measures and coexistence**.

Advice on ‘capture’ that is ignored:

- **Guidelines** from the **central government in India** **discourage capturing leopards and elephants** merely based on sightings and recommend **preventative measures**, with **capture as a last resort**.
- However, these **guidelines** are often overlooked in practice. A case in **south India** involved an **elephant being captured under the guise of a rescue from a coffee plantation**, only to be released **200 km away in unfamiliar territory**, which led to its death after further misguided rescue attempts.
- Similarly, a **leopard in Uttar Pradesh** died shortly after being **'rescued'** from an **agricultural field**. These incidents highlight the problematic practice of **mislabeling captures as rescues**.
- Similarly, **high interaction rates** with snakes result in **frequent, poorly executed removals from their habitats**, often followed by **relocation to unfamiliar areas** and **even exploitation for social media**.
 - Evidence suggests that **relocated snakes have low survival rates** and that **relocating them does not resolve human-snake conflict** but may **increase it by creating vacancies that other snakes then fill**.

The Karnataka example:

- In **Karnataka**, a **realistic and ethical approach to human-wildlife conflicts** involves assessing the situation carefully, **minimizing stressors for the animals**, and **exhausting proactive measures** before intervening.
- The **Karnataka Forest Department** is **testing strategies** such as **early warning systems, regular monitoring, fencing, improved lighting, public education**, and **better waste management** to prevent conflicts.
- These initiatives **aim to prepare communities for potential wildlife interactions** and **promote coexistence**.

Swiss women win landmark climate victory at human rights court

Subject: Environment

Section: Int Conventions

Context:

- The **European Court of Human Rights (ECtHR)** ruled in favour of a **group of Swiss women**, affirming that **Switzerland's insufficient actions to mitigate climate change infringe on their human rights**, particularly the **right to a private and family life**.

Details:

- This **landmark decision**, influenced by the case brought forward by over **2,000 women** citing the **increased risk of death from heatwaves**, sets a precedent in **Europe** for **future climate litigation based on human rights**.

- The court found that **Switzerland failed to adequately outline national greenhouse gas emissions limitations** and to **achieve its greenhouse gas emission reduction targets**.
- This ruling **hailed as a significant milestone** by the **global civic movement Avaaz**, establishes a **legally binding precedent that could guide future legal actions against governments for failing to address climate change adequately**.
- Despite the **ECtHR** dismissing two similar cases, the Swiss verdict represents a victory not just for the plaintiffs but also for broader efforts to **hold governments accountable for their climate policies**.
- This decision, which **cannot be appealed**, may **compel the Swiss government to intensify its emission reduction efforts and align its 2030 targets with the Paris Agreement's objective to limit global warming to 1.5 degrees Celsius**.
- The ruling is part of a larger trend of using human rights law as the foundation for climate litigation against governments.

European Court of Human Rights (ECtHR):

- ECtHR, also known as the **Strasbourg Court**, is an **international court of the Council of Europe** which interprets the **European Convention on Human Rights (ECHR)**.
- The court **hears applications alleging that a contracting state has breached one or more of the human rights** enumerated in the **convention** or its **optional protocols** to which a member state is a party.
- The court is based in **Strasbourg, France**.
- The court was **established on 21 January 1959** on the basis of **Article 19** of the **European Convention on Human Rights** when its **first members** were elected by the **Parliamentary Assembly of the Council of Europe**.
- The court **decided its first case in 1960 in Lawless v. Ireland**.
- An application can be lodged by an **individual, a group of individuals, or one or more of the other contracting states**.
- Aside from judgments, the court can also **issue advisory opinions**. The convention was adopted within the context of the **Council of Europe**, and **all of its 46 member states are contracting parties to the convention**.
- The **court's primary means of judicial interpretation** is the **living instrument doctrine**, meaning that the **Convention is interpreted in light of present-day conditions**.
- International law scholars consider the **ECtHR** to be the **most effective international human rights court in the world**.
- Nevertheless, the court has faced challenges with verdicts not implemented by the contracting parties.

What do countries and companies want in global plastic treaty talks?

Subject: Environment

Sec: Int Conventions

Context:

- Global leaders will gather **in Canada's capital this week** to discuss progress in drafting a first-ever global treaty to rein in soaring plastic pollution by the end of the year.

More on news:

- The hoped-for treaty, due to be agreed at the end of this year, could be the most significant deal relating to climate-warming emissions and environmental protection since the **2015 Paris Agreement, which got 195 parties to agree to keep global temperatures from rising beyond 1.5C**.

What is the Global Plastic treaty?

- **In March 2022, the UN Environmental Assembly convened in Nairobi, Kenya, to debate the global plastic crisis.**
- **In a historic move, 175 nations voted to adopt a global treaty for plastic pollution—agreeing on an accelerated timeline so that the treaty could be implemented as soon as 2025.**

Why are we having plastic treaty talks?

- At the **U.N. Environmental Assembly in 2022**, the world's nations agreed to develop a legally binding agreement by the end of 2024 to address the world's plastic pollution crisis.
- The treaty is meant to **address plastics through their entire lifecycle** – from when they are produced, to how they are used and then disposed of.

WHAT'S THE PROBLEM WITH PLASTICS?

- While **plastic waste has become a global menace polluting landscapes** and waterways, producing plastics involves releasing greenhouse gas emissions.
- The plastic industry now accounts for 5% of global carbon emissions, which could grow to 20% by 2050 if current trends continue.
- Plastic production is on track to triple by 2060 – unless the treaty sets production limits, as some have proposed. Most virgin plastic is derived from petroleum.

What do countries want in the treaty?

- Many plastic and petrochemical-producing countries including **Saudi Arabia, Iran and China** – known collectively as **the group of Like-Minded Countries** – have opposed mentioning production limits.
- They blocked other countries from formally working on **proposed treaty language calling for production caps, chemical disclosures or reduction schedules after last year’s Nairobi session.**
- The 60-nation “**High-Ambition Coalition**”, which includes EU countries, island nations and Japan, wants to end plastic pollution by 2040.
- This coalition has called for common, legally binding provisions to **restrain and reduce the production and consumption of primary plastic polymers to sustainable levels.**
- They also are proposing measures such as phasing out “problematic” single-use plastics and banning certain chemical additives that could carry health risks.

What does the petrochemical industry want?

- The trade group **Global Partners for Plastics Circularity** represents major petrochemical producers including members of the **American Chemistry Council and Plastics Europe.**
- The group argues that production caps would **lead to higher prices for consumers, and that the treaty should address plastics only after they are made.**
- These companies want to focus on encouraging the reuse or recycling of plastics, including deploying technology that can turn plastic into fuel.

What do corporate brands want?

- More than 200 consumer-facing companies including **Unilever, PepsiCo and Walmart** have joined the so-called **Business Coalition for a Plastics Treaty.**
- Like the **petrochemical industry**, these companies that rely on plastic packaging for their products have been a major presence in the plastics negotiations.
- They support a treaty that includes production caps, use **restrictions and phase-outs, reuse policies, product design requirements, extended producer responsibility, and waste management.**

Earth Day 2024: Bhutan will host global meet today to mobilise finance for tiger conservation across Asia

Subject: Environment

Sec: Int Conv

Context:

- The **Bhutanese government** is set to host the **Sustainable Finance for Tiger Landscapes Conference on Earth Day 2024 (22 April)** to raise **\$1 billion** over the next decade for **tiger conservation across Asia.**

Sustainable Finance for Tiger Landscapes Conference:

- The conference, under the **patronage of Bhutan’s queen, Jetsun Pema Wangchuck**, will focus on **generating new funding to preserve tiger habitats**, crucial for biodiversity, carbon sequestration, and supporting over **100 million people.**
- **Co-organized** by the **Royal Government of Bhutan** and the **Tiger Conservation Coalition**, the event will feature discussions on **sustainable finance**, the **United Nations’ Global Biodiversity Framework**, and public-private partnerships.
- The **Global Environment Facility** has already contributed significantly to **tiger conservation**, providing over **\$197 million** in financing.
- The conference aims to further these efforts by **securing sustainable financing for these vital ecosystems**, which play a significant role in **maintaining ecological balance and supporting local communities.**

Tiger conservation coalition:

- **Announced on:** World tiger day
- **Announced by:** IUCN with its partners working on tiger conservation
- **Aim:** To support enhanced ambition and financing for tiger recovery, while delivering impact for nature and people.
- It brings together leading biologists and experts in wildlife crime, human-wildlife coexistence, policy, finance, development and communications, with unprecedented alignment on achieving tiger conservation at scale.
- Its **member organisations** include **IUCN, the Environmental Investigation Agency; Fauna & Flora; Panthera; TRAFFIC; the United Nations Development Programme; the Wildlife Conservation Society; and the World Wildlife Fund.**
- It is an **independent group of organisations** that have worked extensively together on **major tiger assessments**, including the **latest assessment** by the **IUCN Red List of Threatened Species** and **IUCN’s Green Status of Species assessment** under a common vision for tiger conservation.

IISc researchers design novel hydrogel to remove microplastics from water

Subject: Environment

Section: Pollution

Context:

- Researchers at the **Indian Institute of Science (IISc)** have developed a **sustainable hydrogel** specifically designed to **remove microplastics from water**.
- **Microplastics**, which are **small plastic fragments** that can **contaminate water sources**, pose significant health risks to humans and are **harmful to both aquatic and terrestrial ecosystems**, even reaching remote locations like **polar ice caps** and **deep-sea trenches**.

Hydrogel- Three-layer polymer:

- Researchers at the **Indian Institute of Science (IISc)** have developed a **novel three-layer hydrogel** that effectively **removes microplastics from water**.
- **Hydrogel** is created from **chitosan, polyvinyl alcohol, and polyaniline**, forming an **interpenetrating polymer network (IPN)**.
- This structure is enhanced with **copper substitute polyoxometalate (Cu-POM) nanoclusters**, which act as **catalysts** under **UV light** to **degrade microplastics**.
- To **monitor the effectiveness of the hydrogel**, the researchers used a **fluorescent dye** to **track the absorption and degradation of microplastics under various conditions**, achieving **removal rates** of about **95%** and **93%** for **two different types of microplastics** at a **near-neutral pH**.
- The study, which **aimed** also to **address the challenge of microplastic detection**, confirmed the **hydrogel's durability and stability** across different temperatures, making it a promising solution for microplastic pollution.

India in favour of 'regulating', not banning, single-use plastic

Subject: Environment

Sec: Pollution

Context: Ahead of week-long negotiations involving 192 countries that are expected to begin in Toronto, Canada, next week on getting the globe to progress on eliminating plastic pollution, India is in favour of “regulating”, and not eliminating, single-use plastic, according to an analysis of various countries’ public negotiating positions by the Centre for Science and Environment (CSE), a not-for-profit based in New Delhi.

Details:

In 2022, India brought into effect the **Plastic Waste Management Amendment Rules (2021)** that banned 19 categories of ‘single-use plastics’

Single Use Plastics

- Single-use plastics, or **disposable plastics**, are used **only once** before they are thrown away or recycled.
- Plastic is **so cheap and convenient** that it has replaced all other materials from the packaging industry but it takes **hundreds of years to disintegrate**.
- If we look at the data, out of **46 million tonnes of plastic waste** generated every year in our country, **43%** is single use plastic.
- Further, **Petroleum-based plastic is non biodegradable** and usually goes into a landfill where it is buried or it gets into the water and finds its way into the ocean.
- The Prime Minister of India was also conferred the **“champions of the earth” award** by the **United Nations Environment Programme (UNEP)** in 2018 for pledging to eliminate all single-use plastic by 2022.
- These are defined as disposable goods that are made with plastic but are generally use-and-throw after a single use and include plastic cups, spoons, earbuds, decorative thermocol, wrapping or packaging film used to cover sweet boxes and cigarette packets, and plastic cutlery. It, however, does not include plastic bottles – even those less than 200 ml— and multi-layered packaging boxes (such as milk cartons).

Plastic Waste Management Amendment Rules, 2021

- Plastic Waste Management Amendment Rules, 2021 amend the 2016 rules.
- The manufacture, import, stocking, distribution, sale and use of the identified single-use plastic will be prohibited with effect from the 1st July, 2022.
- The ban will not apply to commodities made of compostable plastic.
- For banning other plastic commodities in the future, other than those that have been listed in this notification, the government has given industry ten years from the date of notification for compliance.

- The permitted thickness of the plastic bags, currently 50 microns, will be increased to 75 microns from 30th September, 2021, and to 120 microns from the 31st December, 2022.
- Plastic bags with higher thickness are more easily handled as waste and have higher recyclability.
- Currently, the **Plastic Waste Management Rules, 2016**, prohibits manufacture, import, stocking, distribution, sale and use of carry bags and plastic sheets less than 50 microns in thickness in the country.
- The **Central Pollution Control Board**, along with state pollution bodies, will monitor the ban, identify violations, and impose penalties already prescribed under the **Environmental Protection Act, 1986**.
- The plastic packaging waste, which is not covered under the phase out of identified single use plastic items, shall be collected and managed in an environmentally sustainable way through the **Extended Producer Responsibility (EPR)** of the Producer, importer and Brand owner (PIBO), as per Plastic Waste Management Rules, 2016.

In search of skin lightening creams, kidneys take a hit

Subject: Environment

Sec: Pollution

Context:

- Researchers from Kerala have reported a series of cases from **Malappuram district where the regular use of fairness creams has been linked to nephrotic syndrome.**

More on news:

- **Heavy metal screening of the blood and urine samples** of these patients revealed high levels of mercury.
- **Keratin-based hair-straightening products** containing **glycolic acid derivatives led to severe kidney injury in women.**
- Heavy metal screening of the **blood and urine samples of these patients** revealed high levels of mercury, the toxic effects of which are well-known.

High proteinuria:

- They all had **non-specific symptoms — fatigue, mild edema and frothy urine — but high levels of proteinuria, in the range of 6.5-22.2 g/day.**
- **Membranous nephropathy (MN) is an autoimmune disease resulting in nephrotic syndrome**, a condition when too much protein is released into the urine (proteinuria), ultimately resulting in renal failure.
- In approximately **70% to 80% of cases of MN, the target antigen has been phospholipase A-2 (PLA2R).**
- Neural epidermal growth factor-like **protein 1 (NELL-1), has been linked to a rare form of MN.**

Fairness cream:

- **The mercury levels in blood/urine samples dropped** within three months of the patients stopping the use of their fairness creams.
- Also, all patients responded well to **RAAS (renin-angiotensin-aldosterone system) blockade** (the gold standard therapy for chronic kidney disease) and did not need immunosuppression.

Impact of mercury:

- **Mercury is a highly toxic heavy metal which is used in fairness/anti-ageing creams** as in its inorganic form (mercury salts) it can inhibit the formation of melanin, resulting in a lighter skin tone.
- The higher the levels of mercury in **face creams, the better the whitening effect.**
- The other adverse effects listed by **WHO include skin discolouration and scarring, reduction in the skin's resistance to bacterial and fungal infections, anxiety, depression, psychosis and peripheral neuropathy.**

About Minamata Convention:

- The **Minamata Convention on Mercury**, to which India is a signatory, is a **global treaty to protect human health and the environment from anthropogenic emissions** and releases of mercury and mercury compounds and is in force since 2017 According to a new **Zero Mercury Working Group (ZMWG) report** released in October 2023.

Bid to double global protected areas may affect India's tribes

Subject: Environment

Sec: Protected Area

Context:

- The bid to **safeguard biodiversity** by almost **doubling protected areas across the globe** will hit **India's tribal population** the hardest, warned experts at a **symposium on the rights of indigenous communities** organised by the **University of Arizona** in the **United States**.

Details:

- **Indigenous peoples** across the world will **suffer** if the U.N.'s **Kunming-Montreal Global Biodiversity Framework** pursues and achieves its **target of increasing protected areas** from the current **16%** to **30%** of the **world's terrestrial area**.
- The **Scheduled Tribes in India** will bear the **brunt of this expansion**, as **89** of the **106 notified national parks** in the country were **established in areas that they lived**.
- This means that **84%** of **protected areas in India** overlap with **tribal areas**.

Disproportionate impact:

- While there are **17 national parks** left that **do not include major human habitation**, such as those **purely marine or functioning as zoos**, others **contain tribal populations**.
- Specifically, **four national parks** (Col. Sherjung Simbalbara, Neora Valley, Singalila, and Fossil) house some **tribal communities**.
- **Scheduled Tribes (STs)**, who make up **8.6%** of **India's population**, are affected by **84%** of the **protected areas**, showing a targeted impact on these communities.
- Environmentalists have criticised the **historical and ongoing criminalization** of the **lifestyle and livelihood practices of indigenous peoples** through legislation like the **Forest Act of 1927**, underscoring a legacy of inequality in environmental conservation efforts.

No-win situation:

- **Odisha government** has withdrawn over **48,000 cases** against **tribal people** for offences like **excise, forest violations, and land encroachment**.
- Expansions of protected areas, such as **Kumbhalgarh Wildlife Sanctuary** in **Rajasthan** and **Nauradehi Sanctuary** in **Madhya Pradesh**, predominantly affect **Scheduled Tribes (STs)** and other **forest dwellers**.
- He also cites the notification for **Barak Bhuvan Wildlife Sanctuary** in **Assam**, which **declares the area free of encroachments**, despite the **indigenous Khasi people having documented residence there since 1914**.
- **Indigenous peoples** face a **no-win situation**: if they **stay within protected areas**, they **endure restricted freedoms, lack of access to development, surveillance, and violence**; if they **relocate**, there are **no successful cases of rehabilitation and resettlement**.

Human rights violations:

- At a **symposium**, participants highlighted severe **human rights violations** faced by **indigenous peoples in protected areas across Asia**.
 - For example, in **Ujungkulon National Park, Indonesia**, **indigenous peoples lack access to basic amenities like proper housing and education**.
 - In **Cambodia, Heng Saphen**, an **indigenous leader**, was **unjustly convicted for farming her own land within Beng Per Wildlife Sanctuary**. Additionally, **Botum Sakor National Park** saw its **forest cover diminish to 18%** due to logging after being transferred to a private firm.
- The **symposium** also emphasized the **detrimental effects** of the **increasing privatization of protected areas for ecotourism**, which often leads to the **exploitation of indigenous communities**.
- These communities are frequently showcased to tourists in a manner similar to exhibits in a **zoo**, where they are **expected to wear traditional attire and perform cultural acts for entertainment, diminishing their dignity and cultural autonomy**.

Important protected areas in news:

- **Global:**
 - Ujungkulon National Park, Indonesia
 - Beng Per Wildlife Sanctuary, Cambodia
 - Botum Sakor National Park, Cambodia
- **India:**
 - Col. Sherjung Simbalbara national park, Himachal Pradesh
 - Neora Valley national Park, Madhya Pradesh
 - Singalila national Park, West Bengal
 - Ghughwa National fossils Park, Madhya Pradesh
 - Kumbhalgarh Wildlife Sanctuary, Rajasthan

- Barak Bhuban Wildlife Sanctuary, Assam

Empower the guardians of the earth, do not rob them

Subject: Environment

Sec: Protected Area

Context:

- In the **southern region** of the **Andaman and Nicobar archipelago**, there are **seven small islands** near **Little Nicobar**, labeled as “**uninhabited**” by government records but essential to the **local indigenous Payuh people**.

Details:

- The **islands, Meroë and Menchal**—locally known as **Piruii and Pingaeyak**—are traditionally owned and used by the **southern Nicobarese indigenous communities**.
- These **islands** serve as **crucial resource reservoirs**, with their use and **conservation** deeply embedded in **spiritual beliefs**.



Nicobar group of Islands

Conservation colonialism:

- In May 2022, the **Andaman and Nicobar (A&N) administration** announced plans to establish **three wildlife sanctuaries** on **Meroë Island, Menchal Island, and Little Nicobar Island**, disregarding **indigenous land ownership and management systems**.
- Despite the presence of approximately **1,200 southern Nicobarese** who inhabit and hold **traditional rights over these islands**, the administration claimed it received **no objections to the sanctuaries**, stating that **no individual rights existed within the proposed sanctuary boundaries** and restricting local access to these areas in the name of national interest.
- This move exemplifies what is often criticized as “**conservation colonialism**,” where conservation efforts are imposed without **adequate consultation or consideration of the indigenous peoples’ rights and traditional practices**.

Masking an ecological disaster:

- The **decision to designate Meroë and Menchal Islands as conservation reserves** has been **criticized as arbitrary**, with **limited ecological justification** concerning the actual populations of **Megapode birds on Menchal and coral diversity on Meroë**.
- This move coincides with controversy surrounding the **denotification of the Galathea Bay Wildlife Sanctuary** for a **massive ₹72,000-crore development project on Great Nicobar, a UNESCO Biosphere Reserve**.
- **Megapod birds:**
 - Also known as incubator birds or mound-builders.
 - They are **stocky, medium-large, chicken-like birds** with **small heads and large feet** in the family **Megapodiidae**.
 - All are browsers, and all except the malleefowl occupy wooded habitats.
 - **They are of three kinds:** scrub fowl, brush turkeys, and mallee fowl or lowan.
 - They are found in the broader **Australasian region**, including islands in the **western Pacific, Australia, New Guinea**, and the **islands of Indonesia east of the Wallace Line**, but also the **Andaman and Nicobar Islands in the Bay of Bengal**.

Earth’s guardians:

- Globally, **indigenous peoples**, who make up about **6% of the world's population** and **steward lands** that hold **80%** of the **planet's biodiversity**, are often **evicted from their ancestral territories** under various pretexts like **development and conservation**.
- These territories encompass approximately **22%** of the **Earth's land surface**.
- **Indigenous communities** are recognized as the **original guardians of the Earth**, possessing **crucial knowledge and practices** for sustainable living.

SC stays construction of 4 dams in Kalesar Wildlife Sanctuary

Subject: Environment

Sec: Protected Areas

Context:

- The **Supreme Court** has **halted the construction of four dams** planned within the **Kalesar Wildlife Sanctuary** in **Haryana's Yamunanagar district**.

Details:

- The court highlighted concerns that the **dams would negatively impact the local wildlife, population, and ecosystem**, and **questioned the effectiveness of the dams** in fulfilling their intended purpose.

Kalesar Wildlife Sanctuary:

- **Kalesar National Park** and adjacent **Kalesar Wildlife Sanctuary** are located in **Kalesar, Yamunanagar district, Haryana, India, 46 km from Yamunanagar city and 122 km from Chandigarh**.
- Established in **2003**.
- Named after the **Kalesar Mahadev temple** located in this national park.
- These areas are **contiguous with Simbalbara National Park in Himachal Pradesh and Rajaji National Park in Uttarakhand**.
- **Kalesar** is known for **leopards, panthers, elephants, red jungle fowl, and bird-watching**.
- **Vegetation:** The area, situated in the **Shivalik foothills**, is predominantly covered with **sal trees**, along with **Semul, Amaltas, and Bahera trees**.

Bringing 1000 elephants to Jamnagar makes no sense: Raman Sukumar

Subject: Environment

Section: Species in news

Context:

- On March 14, the **captive elephant's future came to be governed by new Rules—Captive Elephant (Transfer or Transport) Rules, 2024**, that regulate their transfer from one State to another.

What are Captive Elephants?

- **These elephants are owned and kept by humans**, often for various purposes such as historical roles in forest management, timber transport, religious ceremonies, or entertainment.
- **Captive Elephants are distinct from wild elephants** as they are subject to **regulations regarding their care and management**.
- **Elephants can be found in various captive facilities such as a zoo, sanctuary, circus, or camp, usually under veterinary supervision**.
- The earliest evidence of captive elephants dates to the **Indus Valley Civilization about 4,500 years ago**.

Provision for transfer and transport of elephant under Wildlife Protection Act (WPA) 1972:

- As per the **WPA 1972, elephants are a Schedule 1 species** they cannot be captured and traded under any circumstances
- **Section 12 of the act** allows scheduled animals to be translocated for special purposes like
 - Education and scientific research
 - Management of wildlife without harming any wild animal
 - Collection of Specimen for recognised zoos or museums
- **Section 40 of WLA 1972 prohibits the acquisition, possession and transfer of captive elephants without written permission** of the Chief Wildlife warden of the states

Provisions in updates rule:

- **Provides relaxation** under which captive elephants can change owners or transfer.
- Owners **must submit that they are no longer** in a position to maintain the animal and that it must be assured of better upkeep than its present circumstances.

- Under the **new Rules, the Chief Wildlife Warden of a State** can permit the transport of captive elephants within the State or between States.
- **Intra state transfer:**
 - Elephant health to be **ratified by veterinarian**
 - The **deputy conservator of the forest has to establish that the animal's current habitat and prospective habitat are suitable**
 - The **chief wildlife warden** on receipt of such documents may reject or approve the transfer.
- **Interstate transfer of elephants:**
 - The **genetic profile of the elephant** has to be registered with the environment ministry
 - Only the **permission of the Chief Wildlife warden of the originating and recipient states permission required (earlier required permission from all states' Chief Wildlife warden through which elephant passes).**
- **Regarding the transfer of elephants, the Rules make it mandatory for Chief Wildlife Wardens** of the source and recipient States to issue certificates that the transfer is genuine and necessary, and the animals ought to have been registered with the office of the Chief Wildlife Warden.
- **A genetic database of all captive elephants in the country is being created at the Wildlife Institute of India.**

About Kumki Elephants:

- **Kumki (also known as Thappana in Malayalam)** is a term used in India for trained captive Asian elephants used in operations to trap wild elephants, to rescue or to provide medical treatment to an injured or trapped wild elephant.
- They are used in **capturing, calming and herding wild elephants** or to lead wild elephants away in conflict situations.

Genetic profiling of captive jumbos of Kerala to begin soon

Subject: Environment

Section: Species in news

Introduction

The **Wildlife Institute of India (WII)** is set to initiate **genetic profiling for the approximately 400 captive elephants in Kerala**. This initiative, aimed at incorporating the **details of these elephants into a national database**, signifies a pioneering effort in the conservation and management of captive elephants.

Details of the Initiative

- **Objective:** The project is designed to create a **comprehensive database that includes photographs, physical details (such as height), and genetic features** of each captive elephant in Kerala.
- **Implementation:** **Assistant conservators** (social forestry) across districts have been tasked with collecting blood and dung samples. The **Kerala Forest Department, equipped with forensic kits provided by the WII**, will spearhead this effort
- **Training and Timeline:** An online training session for forest officials on sample collection and reporting is **scheduled for April 5 and 6**. The **actual sample collection** is expected to commence in the **second week of April**, coinciding with **Kerala's temple festival season**, a period of heightened activity involving captive elephants.

Context and Significance

- **Current Status:** **Kerala**, previously known for having the largest population of captive elephants, **now records about 25 elephant deaths annually, reducing the captive population to 407**.
- **National Perspective:** With an **estimated 3,000 captive elephants across India**, similar profiling has been completed in several states. The data collected will be accessible through "**Gaja Suchana**," a **mobile application developed by the WII**, facilitating monitoring of elephant transfers and welfare.
- **Regulatory Framework:** The initiative aligns with the **Ministry of Environment, Forest, and Climate Change's** efforts to regulate the transfer of elephants and ensure their welfare, highlighted by the recent introduction of the **Captive Elephant (Transfer or Transport) Rules, 2024**.
- **Previous Efforts:** Notably, in **2019, the Kerala Forest Department undertook DNA profiling of elephants with the Rajiv Gandhi Centre for Biotechnology, Thiruvananthapuram** supporting it, marking an initial step towards scientific management of captive elephants.

Implications

- **For Conservation:** This profiling is a crucial step towards **enhancing the welfare of captive elephants and combating illegal transfers**, offering a methodical approach to monitoring and management.
- **For Research and Policy:** The **data generated will provide valuable insights** into the genetic diversity and health of captive elephants, informing future conservation strategies and policies.

Conclusion

The **genetic profiling of captive elephants in Kerala by the Wildlife Institute of India** represents a significant advancement in elephant conservation efforts. By **integrating modern scientific techniques with traditional practices**, it aims to ensure the **health, welfare, and sustainable management** of these majestic animals, embodying Kerala's rich cultural heritage.

Kerala researchers battling for better understanding of the flying mammal

Subject: Environment

Section: Species in news

Context:

- The **Kerala State Council for Science, Technology and Environment and the Kerala Forest Research Institute (KFRI), Peechi, Thrissur**, have recently organized training programmes on bat taxonomy, acoustics and biogeography.

More on news:

- **Myth, superstition, and zoonotic diseases such COVID-19 and the Nipah virus infection**, have created a negative impression of bats.
- The fallout is that these **nocturnal, flying mammals** are losing their habitat and their numbers are falling.
- **Taxonomy forms the foundation** of bat research and conservation efforts.
- Proper identification and classification of **bat species are essential for implementing effective** conservation strategies and understanding their ecological roles
- The campaign originated from the pressing need **to address the challenges posed by emerging zoonotic diseases** and the ongoing threats faced by bat populations, including habitat loss and the cutting down of fruit bat roosts.
- Under **clear-the-air campaign for bats, a team from Kerala** is on a mission to train the next generation of bat researchers and to create awareness about the species' diversity and ecosystem functions.

About Citizen Science:

- **Citizen science can be used as a methodology where public volunteers help in collecting and classifying data, improving the scientific community's capacity.**

About National Bat Monitoring Programme:

- The **National Bat Monitoring Programme has been running since 1996.**
- It gives us, and the government, the information needed to help inform bat conservation.
- The programme was supported by the **Conservation Leadership Programme and Bat Conservation International.**
- The fallout is that these nocturnal, flying mammals are losing their habitat and their numbers are falling.

Kerala Forest Research Institute (KFRI) initiatives:

- The **first is a long-term study that focuses** on the community ecology of bats in Kerala across various vegetational gradients.
- The **second is on participatory conservation efforts for Salim Ali's fruit bat, the only endangered bat species in Kerala**, with support from the Conservation Leadership Programme.
- The **third is a citizen science programme called the Indian Fruit Bat Project launched in June 2022.**
- This project aims to map and conserve the roosting sites of Indian flying fox, one of the world's largest bats, which is threatened by hunting for meat and cutting down of habitat trees.

Up to a Trillion Cicadas Are About to Emerge in the U.S.

Subject: Environment

Section: Species in news

Context:

- **Two periodical cicada broods** are appearing in a 16-state area in the Midwest and Southeast for the first time in centuries.

More on news:

- In a rare occurrence, a **trillion cicadas from two different broods** are expected to begin appearing in the **Midwest and Southeast regions of the United States at the end of April.**
- It's the first time since 1803 that Brood XIX, or **the Great Southern Brood, and Brood XIII**, or the Northern Illinois Brood, will appear together in an event known as a dual emergence.

When are the cicadas coming out?

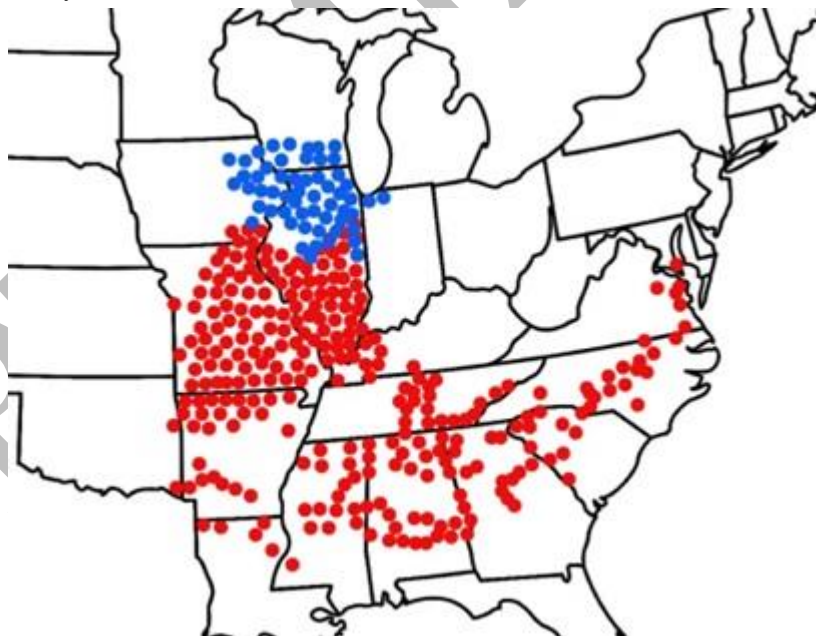
- The **first cicadas are expected to start emerging in late April.**
- **Temperature determines when they come out.**
- First the soil needs to reach **64 degrees Fahrenheit, about six inches deep, and then you get a good soaking rain, and that's when they really pop.**

- They use their forelegs to tunnel out from the earth, their beady red eyes looking for a spot where they can peacefully finish maturing.
- A few days after they **emerge and molt, the males will start buzzing** in an effort to find a mate, a slow-building crescendo of noise that as a chorus can be louder than a plane.



Where will they be?

- The first waves of cicadas will emerge in **northern Louisiana, southern Arkansas, Alabama, Mississippi, northern Georgia, and up into western South Carolina.**
- A map of a portion of the United States with red dots in **southern states like North Carolina, South Carolina, Georgia, Alabama and Mississippi.**
- There are blue dots in northern Illinois, northwestern Indiana and southern Michigan.
- Red dots are also in **southern Illinois and neighboring Missouri.**
- Brood XIII is shown by blue dots, and Brood XIX is shown with red dots.



How long will the dual emergence last?

- **Cicadas are beneficial to the environment, acting as natural tree gardeners.**
- **The bugs are beneficial to the environment, acting as natural tree gardeners.**
- The holes they leave behind when they **emerge from the ground help aerate the soil** and allow for rainwater to get underground and nourish tree roots in hot summer months.
- The slits they make in trees can **cause some branches to break, and the leaves then turn brown in a process known as “flagging,” which is a kind of natural pruning.**
- When the branch grows again, **the fruits it yields will tend to be larger.**

- When they die, the cicadas' rotting bodies provide nutrients that trees need.

Are cicadas dangerous?

- **Cicadas don't bite or sting, nor do they carry any diseases.**
- But since they're not great fliers and even worse landers, cicadas often end up on sidewalks and city streets, where they can be squashed by people or cars and could conceivably make things slick.

Cicadas in India:

- **Cicadas** are members of the superfamily **Cicadoidea** and are physically distinguished by their **stout bodies, broad heads, clear-membraned wings, and large compound eyes.**
- **Cicadas** emerge annually in most parts of India, there is a **one periodic cicada, the Chremistica ri bhoi** in Meghalaya that emerges only once in four years.
- They are listed as **near threatened** by IUCN.

Right against climate change part of right to life, equality: Read the Supreme Court's exact arguments

Subject: Environment

Section: Species in news

Context:

- On April 5, 2024, the **Supreme Court of India**, in a **landmark judgment** led by **Chief Justice DY Chandrachud**, **recognized** the **right against the adverse impacts of climate change** as a **fundamental right**, linking it to the **right to life and equality (Articles 14 and 21)** under the **Indian Constitution**.

Details:

- This decision came during a case concerning the **conservation of the great Indian bustard** and the **lesser florican**, challenging a **2021 verdict** that **imposed a blanket ban on overhead powerlines in certain areas to protect these birds.**
- The verdict underscored the distinction between **climate mitigation** and **ecological conservation**, emphasizing the **necessity of balancing environmental protection with the advancement of clean energy.**
- It highlighted India's legislative and policy efforts to combat climate change, including various acts and missions **aimed at protecting the environment and promoting renewable energy**, but noted the **absence of a comprehensive climate change law.**
- Nonetheless, the Court interpreted constitutional provisions, such as **Article 48A** and **Clause (g) of Article 51A**, which **mandate environmental protection and the promotion of wildlife conservation**, as **implicitly providing a right to be safeguarded from the negative effects of climate change.**
- This interpretation affirms the constitutional basis for the right to a clean environment and protection against climate change, rooted in the broader rights to life and equality.
- The **2015 United Nations Environment Programme report** also outlined **five human rights obligations related to climate change**, including both **mitigation and adaptation efforts.** 22 In 2018, the **UN Special Rapporteur on Human Rights and the Environment** emphasized that **human rights necessitate states to establish effective laws and policies to reduce greenhouse gas emissions**, aligning with the framework principles on human rights and the environment.
- In **Virender Gaur vs State of Haryana, 1995** this Court recognised the **right to a clean environment** as a **fundamental right.**
- While **India** has **several environmental legislations** that have a **bearing on climate action**, **India does not have an umbrella legislation governing climate change.**

In **MC Mehta vs Kamal Nath, 2000**, this Court held that **Articles 48A and 51A(g) must be interpreted in light of Article 21:**

- These **two articles** have to be considered in the light of **Article 21** of the Constitution which provides that **no person shall be deprived of his life and liberty except in accordance with the procedure established by law.**

Any disturbance of the basic environment elements, namely **air, water and soil**, which are necessary for **"life"**, would be hazardous to **"life"** within the meaning of **Article 21** of the Constitution."

The **Lesser Florican** (*Sypheotides indicus*) is a characteristic bird of grasslands, endemic to the Indian subcontinent. Locally, the bird is known as **Kharmor (grass peacock)** in **Gujarat** and **Khar titar (grass pheasant)** in **Rajasthan**. It belongs to the **Bustard family**, and is the smallest of all cousin species found in India. It inhabits the states of **Rajasthan, Gujarat, Madhya Pradesh, and parts of Andhra Pradesh, Maharashtra, and Karnataka.**

Individuals are generally solitary and shy, with males and females easily distinguished based upon their physical features. Male floricans are generally shorter and lighter than their female counterparts. An adult male is flashy, with black and white coloured feathers, while the females are brownish. Males are also equipped with attractive ornaments in the form of black, feathery ribbons on their head. While inhabiting low-lying grasses, dull females become inconspicuous due to their cryptic colouration.

Though it prefers open, grassy landscapes, the lesser florican is generally seen resting within thick bushes during the day. In non-breeding months, it can inhabit wooded lands and scrublands, along with grasslands. Being omnivorous, their diet ranges from small insects and critters to herbs and shoots.

Occasionally, Lesser Floricans inhabit agricultural fields – generally of cotton, millet, and some cereal crops. Crop fields of soybean, groundnut, sorghum, maize, sugarcane, rice, mustard, and wheat crops are also known to be habitats during the breeding season. Intensive grazing in grasslands has led to the species gradually shifting and relying upon croplands.

According to IUCN of all the bird conservation crises in India this is the most urgent and yet the most neglected. It was initially listed as ‘Critically Endangered’ in the 1994 Red List, but improved surveys indicated a slower rate of decline, and it was moved to the ‘Endangered’ list. In 2021, it was again reclassified as ‘Critically Endangered’

Why Botswana threatened to send 20000 elephants to Germany

Subject: Environment

Section: Species in news

Context:

- **Botswana**, which harbors the **world's largest elephant population** of approximately **130,000**, faces a **significant challenge** due to its **overabundant elephant numbers**. **President Mokgweetsi Masisi** has proposed **relocating 20,000 elephants to Germany** amidst discussions in the country to **tighten regulations on importing trophies from hunted animals**.

Details:

- Historically, **hunting** has served as a **means to manage the elephant population** in **Botswana**, also **generating income through the sale of trophy-hunting licenses**, predominantly to **affluent Western individuals**.
- Notably, **Germany** is recognized as the **leading European importer of African elephant trophies**.

Why are there so many elephants in Botswana?

- **Botswana** has become a **sanctuary for elephants**, distinguishing itself from neighbouring countries through its **stable government and sparse human population**.
- This safe environment, coupled with the **elephants' avoidance of crossing the Chobe River (a tributary of Zambezi River)** into areas like **Namibia and Angola** due to **conflict and mass poaching**, has contributed to their **large numbers** within **Botswana's borders**.
- Additionally, **Botswana's stringent conservation measures**, including a **shoot-to-kill policy against suspected poachers** initiated in **2013**, and a **temporary ban on licensed trophy hunting** between **2014 and 2019**, have played significant roles in protecting its **elephant population**.

And why was hunting allowed again?

- The **reintroduction of hunting in Botswana** was a **response to the significant growth of the elephant population**, which has **become a source of human-animal conflict**. From a population of **fewer than 10,000 elephants** in the **early 1960s**, numbers had surged to **80,000 by the mid-1990s**, and elephants now occupy about **40% of Botswana's territory**.
- This expansion has led to **elephants damaging homes, consuming and destroying crops, drinking from community water supplies, and causing deaths among people and cattle**. Residents in affected areas, such as **Gobojango town**, express fear and inconvenience due to the **elephants' presence**, adjusting their daily routines for safety.
- Additionally, the **large elephant population poses a threat to other species by leading to biodiversity loss and habitat degradation**.
- **Elephants' feeding habits**, which include **tearing down trees and consuming significant amounts of water**, **negatively impact the habitat and survival of other wildlife**.
- This combination of factors prompted **Botswana to lift its ban on licensed trophy hunting in 2019**, aiming to **manage the elephant population more effectively and reduce the negative impacts on human communities and other wildlife species**.

How does elephant hunting help?

- **Botswana's efforts to control its elephant population through donations to other countries** proved **insufficient**, prompting the **lifting of a trophy hunting ban**. This approach serves a **dual purpose: reducing elephant numbers and boosting the economy through substantial hunting fees**, with hunters paying up to **\$50,000 per elephant**.
- In **2021**, **trophy hunting** reportedly contributed **\$5 million to Botswana's local communities**, and in **South Africa**, it's estimated to **inject \$250 million into the economy annually**, supporting **17,000 jobs**.
- **Pros:**

- Proponents argue that **regulated trophy hunting benefits elephant conservation** by reinvesting in **conservation efforts** and **sharing profits with local communities**, potentially **preventing habitat loss**.
- **Cons:**
 - This practice faces **criticism** from **Western nations** and **animal rights advocates**, who argue **it's unethical and harms population numbers of endangered species** by targeting the strongest animals.
 - Moreover, there are **concerns** about the **economic benefits being overstated** and **corruption hindering the distribution of profits to local communities**.
- Despite the controversies, **some experts** believe that **banning trophy hunting without viable economic alternatives** could **exacerbate conservation issues**.

As abundant chital cost authorities dearly, a tiny Andaman island struggles to keep up

Subject: Environment

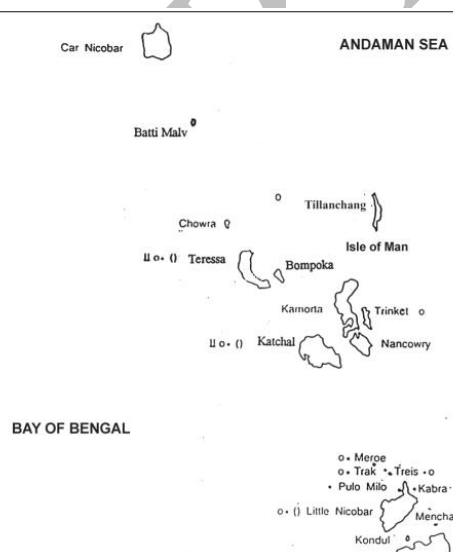
Section: Species in news

Chital- an invasive species in A&N islands:

- **Chital** were **introduced** to the **Andaman and Nicobar Islands** for **game hunting** in the **early 1900s** by the **British**.
- The **Chital** multiplied in an unchecked environment and in the **absence of large predators** had now become a **problem for authorities**.
- The chital is **predominantly found** in the **Netaji Subhash Chandra Bose Island**, which lies **east of Port Blair**.
- To deal with the **invasive species**, the department has been seeking solutions, to either **rehabilitate the chital** or **relocate them elsewhere**.
- **Legal provisions for translocation of an animal:**
 - Under the **Wildlife Protection Act, 1972**, an **officer of the rank of Chief Wildlife Warden** can permit **translocation for the purpose of scientific management**.
 - The law mandates that **such translocation** should **cause minimum trauma to animals**.

About Chital:

- **Scientific Name** – Cervus axis; Axis axis
- **Chital** is an **herbivorous, Asiatic deer**, belonging to the family **Cervidae**.
- It lives in **grasslands and forests** in **India and Sri Lanka** in **herds**.
- Its **spotted coat** is **reddish brown** above and **white** below.
- The **male chital** is **larger and heavier** than the **female chital**.
- The **male chital alone carries three-tined antlers**.
- **State Animal** – It is the state animal of **Telangana**.
- **Conservation Status** –
 - **IUCN** – Least Concern
 - **CITES** – Not Listed



House Sparrow disappearing

Subject: Environment

Sec: Species in news

- The House Sparrow (*Passer domesticus*) is a small bird belonging to the family **Passeridae**. **Distribution:** The House Sparrow is a **cosmopolitan bird** found across Europe, Asia, and Africa. It is also found in **North America, South America, and Australia**, where it was introduced by humans.
- **Physical characteristics:** The House Sparrow is a small bird, **about 14 to 16 cm in length**, with a wingspan of about 20 to 25 cm. The **male has a gray crown, black throat, and white cheeks**, while the **female has a brown crown and a buff-colored stripe behind the eye**.
- **Habitat:** The House Sparrow is a common bird found in **urban and rural areas**, and is often seen **around human habitation, such as houses, buildings, and parks**.
- **Diet:** The House Sparrow is an **omnivorous bird and feeds on a variety of food**, including seeds, insects, and scraps of food from humans.
- **Breeding:** The House Sparrow breeds **throughout the year and can lay up to 4 to 5 eggs at a time**. The incubation period is about 11 to 14 days, and the chicks fledge after about 14 to 16 days.

Around the start of agriculture, the urban house sparrow split from the wild birds; it has a pair of genes, AMY2A, that helps it digest complex carbohydrates, the reason that it shares our love of starchy wheat and rice.

- **Conservation status:**
 - IUCN Status: **Least Concern**
 - The Wildlife Protection Act, 1972: **Schedule IV**
- **Cultural significance:** The House Sparrow has been an **important part of human culture for centuries** and is mentioned in many folktales, songs, and poems. **House Sparrow is the State bird of Bihar and Delhi**.
- **Significance in agriculture:** The House Sparrow is **considered a pest in some agricultural areas due to its habit of feeding on crops** such as wheat and rice.
- **Threats:** Despite its large population size, the House Sparrow has experienced declines in some areas, particularly in urban areas, **due to habitat loss, pesticides, and other factors**.
- **Conservation steps:** In Odisha, the Rushikulya Sea Turtle Protection Committee started a campaign in 2007. They **distributed earthen pot bird nests to homes** in Odisha. This has **led to an increase in the sparrow population**.

How invasive species threaten natural ecosystems

Subject: Environment

Section: Species in news

Context:

- In a bid to manage the **teeming population of chital (spotted deer) in Ross Island (officially known as the Netaji Subhash Chandra Bose Island)**, the **Andaman and Nicobar Islands** administration recently sought help from the Wildlife Institute of India.

More on news:

- **Chital, native to mainland India**, were introduced to the tiny island (0.3 sq km small) by the British in the early 20th century.
- Having **no natural predators or competitors**, and being good swimmers, chital swiftly spread across the Andamans.

What are invasive alien species?

- The **Convention on Biological Diversity (CBD) defines invasive alien species (IAS)** as “species whose introduction and/or spread outside their natural past or present distribution threatens biological diversity”.
- These include **animals, plants, fungi, and even microorganisms, and can influence all kinds of ecosystems**.
- The **CBD, the United Nations’ global treaty on safeguarding biological diversity, sums up characteristics of IAS as follows: “arrive, survive and thrive.”**

- This means that these species need an **introduction either through natural or human intervention, survive on native food resources, reproduce at a fast rate, and edge out native species in the competition over resources.**
- In India, the legal definition of IAS under the **Wildlife Protection Act, 1972 (amended in 2022)**, is narrower.
- They are defined as **species of animal or plant which is not native to India, and whose introduction or spread may threaten or adversely impact wildlife or its habitat.**
- This leaves out species within India which might be invasive to a particular region — **like the chital in Andamans, which are protected in mainland India, but have become a menace in the island chain.**



What are some examples of invasive wildlife in India?

- The list of invasive wildlife in India is dominated by certain species of fish such as the African catfish, Nile tilapia, red-bellied piranha, and alligator gar, and turtle species such as the red-eared slider.
- The red-eared slider, for instance, is a favorite among India's exotic pet owners, and many have been abandoned in local water bodies.
- This turtle, native to North America, notoriously edges out local freshwater species, owing to its fast rates of reproduction, and the following competition for food.
- The African catfish was brought over from Bangladesh specifically for aquaculture purposes.
- The occurrence of *C. gariepinus* (the species' scientific name) has been reported from several inland systems of India including the mighty rivers like Ganga, Yamuna, Sutlej, Godavari, Periyar River and the lakes like Vembanad Lake.

How do IAS impact native flora and fauna?

- Invasive species act as disruptors in the food chain and disturb the balance of the ecosystem.
- In habitats where there is **no competition**, invasive species can dominate the entire ecosystem.
- In **Keoladeo Park, Bharatpur in Rajasthan**, which is a UNESCO World Heritage site, the African catfish has been known to prey on water fowls and migratory birds as well.
- Studies have shown that the proliferation of chital in the Andamans has affected the regeneration of native vegetation, as the deer are known to consume seeds and seedlings.

What is the IAS' economic impact?

- In September 2023, the UN-founded Intergovernmental Platform on Biodiversity and Ecosystem Services (IPBES) brought out an exhaustive report on invasive species.
- As per India's National Biodiversity Action Plan of 2019, published by the National Biodiversity Authority, the cotton mealy bug (*Phenacoccus solenopsis*) is an invasive species native to North America, which has severely affected cotton crops in the Deccan, leading to yield losses.

Invasive Alien Species

How they impact

Competition Grazing Predation Parasitism
Hybridisation Bio-fouling Poisoning Flamability
Disease transmission Interactions with other IAS

Outcomes of impact

Environmental

e.g.

Modification of hydrology
Native species declines
Soil erosion
Primary production alteration
Plant/animal health
Habitat degradation

Socio-economic

e.g.

Agricultural damage
Reduced access to water
Infrastructure damage
Human health
Damage to forestry
Reduction in tourism

As Lok Sabha race heats up, a ‘critically endangered’ turtle revered as god becomes poll mascot in Bengal

Subject: Environment

Section: Species in news

Context:

- The Election Commission has adopted “**Mohan Babu**”, an endangered black softshell turtle, as its mascot and plastered photos of the smiling turtle across the constituency.

More on news:

- In the **village of Baneswar in north Bengal**, about 10 km from the city of **Cooch Behar**, lies a **Shiva temple** that **Koch dynasty king Pran Narayan** is said to have built during his reign in the **17th Century**.
- Devotees believe the temple came up on the **ruins of a temple built by Asura king Banasura**.
- Shiva is not the sole resident deity in the temple.
- The temple pond is home to “**Mohan**”, the name locals have given to **endangered black softshell turtles**.
- These softshell turtles are considered an **incarnation of Lord Vishnu**.

About Black Softshell Turtles:

- The **black softshell turtle** or **Bostami turtle** (*Nilssonina nigricans*), previously placed in genus *Aspideretes*, is a species of freshwater turtle found in **India (Assam and Tripura)** and **Bangladesh (Chittagong and Sylhet)**.
- It was long believed to consist of inbred individuals of the Indian softshell turtle .
- **Protection Status:**
 - **IUCN Red List: Critically Endangered**
 - **CITES: Appendix I**
 - **Wildlife (Protection) Act, 1972: Schedule I**
- But it does not enjoy legal protection under the **Indian Wildlife (Protection) Act of 1972**, although it has traditionally been hunted for its meat and cartilage, traded in regional and international markets.
- The **black softshell turtle is being bred** in the pond of **Hayagriva Madhab Temple** at **Hajo** in **Guwahati, Assam**.

- Locals regard the turtles in the pond as Kurma avatar of Lord Vishnu to whom the Hajo temple is dedicated.
- India hosts 28 species of turtles, of which 20 are found in Assam.
- Threats to turtles include hunting for meat and eggs, silt mining, encroachment of wetlands and changes in flooding patterns have had a disastrous impact on the turtle population.
- Until sightings along the Brahmaputra's drainage in Assam, **the black softshell turtle was thought to be "extinct in the wild" and confined only to ponds of temples in northeastern India and Bangladesh.**



Three new fish species spotted using tools in the Laccadive Sea

Subject: Environment

Sec: species in news

Context:

- Researchers have discovered that **three fish species** in the **Laccadive Sea**, off the **southwest coast of India**, demonstrate tool use, a **cognitive behaviour previously considered rare among aquatic animals.**

Details:

- The **species, Jansen's wrasse** (*Thalassoma janseni*), **checkerboard wrasse** (*Halichoeres hortulanus*), and **moon wrasse** (*Thalassoma lunare*), use **coral structures** as anvils to crack open the **hard shells of sea urchins** to access the edible parts inside.
- This finding marks the **first documented instance of tool use** for the **Jansen's** and **checkerboard wrasses**, and a **novel observation** of the **moon wrasse** employing tools in the wild.
- This research contributes to the **expanding evidence of tool use among animals**, challenging the notion that such behaviours are less likely in species perceived as **'less intelligent'**, like fish.



Why do fish need tools?

- Researchers studying the **burrowing sea urchin** (*Echinostrephus molaris*) off the **western coast of Kavaratti, Lakshadweep**, inadvertently discovered that certain fish species use tools to prey on these urchins.
 - **E. molaris** like most **sea urchins** is covered in an **armour of spines**. It also has a **hard skeleton** called a test that protects its internal organs, making it difficult for fish with unspecialised mouth parts to prey on it.
- The **sea urchins**, which **erode reef structures** by **digging burrows**, have a **hard external skeleton** and **spine armour** that protect them from most predators.

- To **identify natural predators** that could help regulate the **urchin population**, researchers set up underwater cameras on the reef. These cameras **captured footage of Jansen's wrasse, checkerboard wrasse, and moon wrasse using nearby coral** as anvils to **break open the tough urchin shells**, similar to **cracking a walnut**.
- This tool use was mostly recorded autonomously by the cameras, although some instances were observed directly by the researchers.

How did the wrasses use tools?

- The **three species of wrasses** studied—**Jansen's wrasse, checkerboard wrasse, and moon wrasse**—exhibit **specialized tool-using behaviours** to **consume burrowing sea urchins**, despite not having specialized mouthparts like the **archer fish**, which uses **water jets to hunt**. The wrasses face **two main challenges: navigating the sea urchin's venomous spines and breaking through its hard external shell (test)**.
 - To address these challenges, the **wrasses first skillfully flip the urchin to expose its softer, less spiny underside**. They then pick up the **urchin** in their jaws and use nearby **hard coral** as an anvil. By **striking the urchin against the coral**, they first remove the dangerous spines and then crack open the hard shell.
- This method allows the **wrasses to access and consume the edible parts inside the urchin**.
- Through these actions, the **wrasses effectively use the coral reef as a multifunctional tool** to manage the physical barriers presented by their prey.

Why does finding matter?

- The **discovery of tool use among three species of wrasses** in the **Labridae family** underscores an **intriguing pattern** observed in a **limited number of fish species globally**.
- While tool use has been documented in about **18 fish species**, all from the **Labridae family**, these species **demonstrate varied prey preferences, methods of handling prey, and geographic distributions**.
- This raises questions about **why such tool-use behaviours are predominantly found within this specific family**. Is it related to **brain size**, similar to observations in primates, or is it due to a **lack of sufficient observations in other fish families**?
- The findings from this study highlight the **importance of continued and rigorous natural observations**.
- As researchers spend more time observing marine environments, they increasingly encounter **tool-use behaviours among fish**, often serendipitously.
- Documenting these behaviours is vital for understanding **broader ecological and evolutionary questions**, such as **fish habitat use, the development of animal intelligence, and dynamics in predator-prey relationships**.
- This research not only contributes to our understanding of fish behaviour but also emphasizes the need for comprehensive documentation to enhance our knowledge of marine life.

Tamil Nadu and Kerala to count Nilgiri tahrs in a first synchronised survey from April 29

Subject: Environment

Sec: Species in news

Context:

- **Tamil Nadu** is set to conduct a **population estimation of its State animal, the Nilgiri tahr**.
- The **Forest Departments of Tamil Nadu and Kerala** will collaborate on a three-day **synchronised census** to count the **mountain ungulate**.

Methodology:

- The census will employ the **bounded count and double observer methods** to estimate the **Nilgiri tahr population**.
- The census will cover key habitats including **Eravikulam and Silent Valley National Parks in Kerala**, which adjoin the **tahr habitats in Tamil Nadu**.

Participating Organizations:

- **WWF-India, the Wildlife Institute of India, and the Nature Conservation Foundation** are involved in **developing the scientific techniques** used for this population enumeration.
- This **census** marks a significant, organized effort to gather essential data on the Nilgiri tahr, which will be instrumental in shaping conservation strategies for this species.

About Nilgiri Tahr (*Nilgiritragus hylocrius*):

- It is the **state animal of Tamil Nadu**.
- **Nilgiri tahrs** inhabit **montane grasslands** with **steep, rocky terrains** at altitudes between **300 and 2,600 meters** above sea level.
- **Endemic species of the Western Ghats**.

- A **2015 study** by **WWF-India** estimated that there were slightly **over 3,100 Nilgiri tahrs** in highly fragmented habitats across the **Western Ghats**, ranging from the **Nilgiris** in the **north** to the **Kanniyakumari hills** in the **south**.
- The animal is **listed** as an **endangered species** by the **International Union for Conservation of Nature (IUCN)** and **protected** under **Schedule-I** of the **Wild Life (Protection) Act, 1972**.

Protected Areas	Description
Anamalai Tiger Reserve (ATR)	<ul style="list-style-type: none"> • Formerly known as Indira Gandhi Wildlife Sanctuary and National Park, and Anaimalai Wildlife Sanctuary. • Located in the Anaimalai Hills within Pollachi and Valparai taluks of Coimbatore District, and Udumalaipettai taluk in Tiruppur District, Tamil Nadu, India. • Re-designated as Anaimalai Tiger Reserve on 27 June 2007, under the Wildlife Protection Act, 1972. • Adjacent to Parambikulam Wildlife Sanctuary to the west. The core area of Manjampatti Valley is a 110 km² (42 sq mi) with a drainage basin at the eastern end of the park.
Eravikulam National Park	<ul style="list-style-type: none"> • Located along the Western Ghats in the Idukki and Ernakulam districts of Kerala in India. • First national park in Kerala. • It was established in 1978. • Administered by the Kerala Department of Forests and Wildlife, Munnar Wildlife Division, which also runs the nearby Mathikettan Shola National Park, Anamudi Shola National Park, Pambadum Shola National Park, Chinnar Wildlife Sanctuary and the Kurinjimala Sanctuary. • The terrain consists of high-altitude grasslands interspersed with sholas. • The largest surviving population of Nilgiri tahr is found here.
Sathyamangalam Tiger Reserve (STR)	<ul style="list-style-type: none"> • Located in Erode District, Tamil Nadu, spanning the Western and Eastern Ghats. • Initially part of the Bramhagiri-Nilgiris-Eastern Ghats Elephant Reserve notified in 2003. • The largest wildlife sanctuary in Tamil Nadu. • In 2013, 1,408.6 km² of the sanctuary was designated as a tiger reserve, the fourth in Tamil Nadu under Project Tiger and the third largest in the state. • Acts as a crucial ecosystem and wildlife corridor in the Nilgiri Biosphere Reserve, linking Western and Eastern Ghats. • Provides a genetic link between five other protected areas: Billigiriranga Swamy Temple Wildlife Sanctuary, Sigur Plateau, Mudumalai National Park, Bandipur National Park, and the Cauvery Wildlife Sanctuary. • Encompasses parts of Sathyamangalam and Gobichettipalayam taluks in northwestern Tamil Nadu. • The tiger population increased from 25 in 2011 to 80 in 2018. • Received the TX2 award in 2022 from the World Wide Fund and other wildlife conservation agencies for significant growth in tiger population.
Silent Valley National Parks	<ul style="list-style-type: none"> • Located in Kerala, India, within the Nilgiri Hills. • Explored in 1847 by botanist Robert Wight, it features rare species of flora and fauna. • Geographically, it borders Mannarkkad Taluk of Palakkad district, Nilambur Taluk of Malappuram district, Kerala, and Nilgiris district of Tamil Nadu. • The park is part of the Nilgiri Biosphere Reserve, which hosts several adjacent protected areas like Karimpuzha Wildlife Sanctuary, New Amarambalam Reserved Forest, and Mukurthi National Park. • Notable geographic features include Mukurthi Peak, the fifth-highest in South India, and Anginda Peak. • Rivers like Bhavani, Kunthipuzha, and Kadalundi originate in the park. • Silent Valley represents one of the last undisturbed tracts of South Western Ghats mountain rain forests and tropical moist evergreen forests in India.

- It is contiguous with **Karimpuzha** and **Mukurthi National Parks** and forms the **core** of the **extensive Nilgiri Biosphere Reserve**, recognized as part of the **UNESCO World Heritage Site**.
- The park was officially established in 1980 following the successful **Save Silent Valley movement**, which halted a proposed **hydroelectric project** threatening the area's biodiversity.

Geography

Heatwave conditions likely during election seasons, warns IMD

Subject: Geography

Section: Climatology

Context:

- The **India Meteorological Department (IMD)** predicts a **harsh and dry summer across most regions of India** for April-June, with **prolonged heatwave episodes** lasting 10 to 20 days.

What are Heat Waves?

- A heat wave is a **period of abnormally high temperatures**, more than the normal maximum temperature that occurs during the summer season in the **North-Western and South Central parts of India**.
 - It is a condition of **air temperature which becomes fatal to the human body** when exposed.
- The **IMD declares a heatwave when the maximum temperature crosses a certain threshold** — **40°C in the plains, 37°C along the coast, and 30°C in hilly regions**.
- Alternatively, a heatwave is declared if the maximum temperature rises by between **5°C and 6.4°C above normal**.
- A **severe heatwave** is declared when the maximum temperature rises **more than 6.4°C above normal**.
- A **third condition** for a **heatwave** arises when an area records a **maximum temperature of more than 45°C and up to 47°C on any given day**.

Cause of heatwave:

- The ongoing **El Niño conditions**, characterized by the **abnormal warming of the equatorial Pacific Ocean's surface**, have been **contributing to global temperature increases** and are **expected to suppress rainfall and elevate temperatures in India**.
- **Global climate models** predict that **El Niño conditions** will transition to **ENSO-neutral conditions by June**, coinciding with the **onset of India's southwest monsoon**.

Regions that will be affected by heatwaves:

- April's temperatures are expected to be significantly high in regions including **Madhya Pradesh, Maharashtra, Karnataka, Kerala, Lakshadweep, the Andaman and Nicobar Islands, Telangana, Andhra Pradesh, and Odisha**.
- **Pre-monsoon rainfall** is anticipated to be **below average**, continuing the **dry trend since February**, particularly over **coastal and southern peninsular India**.
- The **summer season** is set to see **above-normal maximum temperatures** in most parts of the country, with **normal or below-normal temperatures** expected in **Jammu and Kashmir, Himachal Pradesh, northern Odisha, Gangetic West Bengal, and eastern India**.
- Regions like **Rajasthan, Gujarat, Maharashtra, north Karnataka, Andhra Pradesh, and Odisha** are forecasted to experience **extremely high temperatures and heat waves**.

What is the Impact of these Heat Waves?

- **Crop Damage:**
 - The concurrence of heat and drought events is causing crop production losses and tree mortality.
 - India has already suffered the hottest March in **122 years of weather data**, and parts of the country are seeing **wheat yields drop 10-15 per cent partly due to the unseasonal heat**.
- **Less Food Production and High Prices:**
 - The risks to health and food production will be made more severe by the sudden food production losses exacerbated by heat-induced labour productivity losses.
 - These interacting impacts will increase food prices, reduce household incomes, and lead to malnutrition and climate-related deaths, especially in tropical regions.
- **Mortality and Morbidity:**
 - The **Intergovernmental Panel on Climate Change (IPCC)** in the **Second Part of the AR6 Report** flagged that **heat extremes are causing human deaths and morbidity**.

- The increased heat will lead to an **increase** in **diseases** like **diabetes, circulatory and respiratory conditions**, as well as **mental health challenges**.
- **Labour Productivity Loss:**
 - A higher urban population also implies heat-induced labour productivity loss, resulting in economic impacts.
- **Wildfires and Droughts:**
 - The **Lancet report** showed that populations of **134 countries** experienced an **increase in exposure to wildfires** with **droughts** becoming more widespread than ever before.

Source: [TH](#)

Brightening up to fight climate change

Subject: Geography

Section: Climatology

Marine Cloud Brightening (MCB) Program:

- The **Marine Cloud Brightening (MCB) program** at the **University of Washington** explores an **innovative geoeengineering strategy to combat global warming by enhancing the reflectivity of marine clouds**.
- **Method:**
 - This **method involves spraying tiny particles of sea salt into the clouds to increase their density and ability to reflect sunlight**.
- While this approach **builds on older concepts like cloud seeding and aerosol-based sunlight reflection, MCB's use of sea salt is distinct**.
- However, the **effectiveness of this technique, including the extent of brightness and potential climate cooling, remains uncertain**.

Challenges and Risks Associated with Marine Cloud Brightening (MCB):

- **Technical Feasibility:** MCB requires large-scale spraying of seawater into high altitudes, posing challenges in the design, cost, maintenance, and operation of the necessary equipment.
- **Environmental Impacts:** Potential alterations in cloud patterns and precipitation could disrupt regional climates and water cycles, possibly causing adverse effects such as droughts or floods.
- **Ethical Issues:** There are ethical concerns about human intervention in natural systems and the appropriate governance and decision-making processes for implementing such technologies.
- **Moral Hazard:** There is a risk that **MCB** could foster complacency among policymakers and the public, possibly detracting from efforts to reduce greenhouse gas emissions and pursue necessary adaptations to climate change.

Source: [TH BL](#)

What's behind heavy rainfall in Dubai

Subject: Geography

Sec: Climatology

Context:

- **The United Arab Emirates (UAE)** recorded the heaviest rain ever after a severe thunderstorm hit the country on Monday, killing at least one person, causing damage to homes and businesses, and bringing air travel to a standstill in **Dubai**.

More on news:

- Heavy rains are unusual in the UAE, which is an **arid, Arabian Peninsula country**.
- However, they occasionally occur in the region during cooler winter months.



What happened in Dubai?

- The thunderstorms began on **Monday night and by Tuesday evening had dumped more than 142 millimeters (mm) of rain onto the desert city of Dubai.**
- An average year sees 94.7 millimeters of rain at **Dubai International Airport — the world’s second busiest airport, which recorded more than 80 million visitors in 2023.**
- The city of Al Ain, which is nearly 130 kilometers (km) away from Dubai, witnessed a record rainfall of 254 mm.
- **Fujairah, located on the UAE’s eastern coast, saw 145 mm of rain on Tuesday.**

What led to the heavy rains in Dubai?

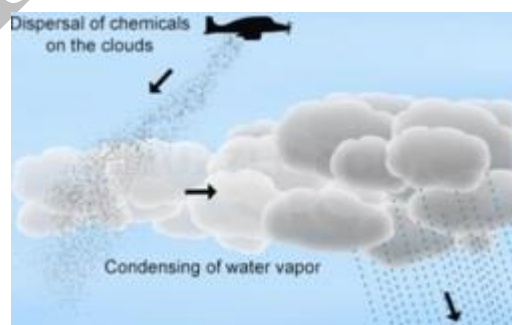
- **The primary reason for these heavy rains was a storm system, which was passing through the Arabian peninsula and moving across the Gulf of Oman.**
- **Rains could have been exacerbated by cloud seeding, a process of spraying salt mixtures in clouds that would result in condensation of the cloud and eventually cause rainfall.**

Is climate change responsible for the event?

- Some experts have suggested that the **soaring global temperatures could also be behind the event. Higher temperatures cause evaporation of water** not only from land but also oceans and other water bodies, meaning a warmer atmosphere holds more moisture.
- Studies have found that for **every 1 degree Celsius rise in average temperature, the atmosphere can hold about 7% more moisture.**
- This makes storms more dangerous as it leads to an **increase in precipitation intensity, duration and/or frequency, which ultimately can cause severe flooding.**
- Studies based in **India’s Thar desert and Australia’s desert regions** have shown that climate change could lead to more rainfall in these areas.
- While the average global temperature on the Earth has increased by at **least 1.1 degree Celsius since 1850, the UAE has witnessed an increase of almost 1.5 degree Celsius** in the past 60 years.
- The increase in temperatures is mainly caused by the rise of **heat-trapping greenhouse gas (GHG) emissions since the Industrial Revolution.**
- It is extremely difficult to attribute any particular extreme weather event to climate change.
- It is because there are multiple factors, like patterns of natural climate variability, **such as El Niño and La Niña, that contribute to such events.**

What is cloud seeding?

- **Cloud seeding involves injecting clouds with substances like silver iodide, potassium iodide, or sodium chloride to accelerate cloud microphysical processes.**
- These substances serve as **nuclei around which cloud droplets can form.**
- The process aims to **create larger droplets that can reach the Earth’s surface without evaporating.**
- Different salts are used to provide **cloud condensation nuclei and ice nuclei, essential for forming cloud droplets and ice crystals, respectively.**
- Cloud seeding is intended to **enhance precipitation by promoting the growth of droplets and increasing the likelihood of rainfall.**



On India’s ‘heat action plans’

Subject: Geography

Sec: Climatology

Context:

- As summer approaches, **India** typically braces for **heat alerts** from the **India Meteorological Department (IMD)**. This year, such **alerts** started unusually early, in February, with parts of **northeast** and **western India** already **experiencing temperatures 3.1-5 degrees Celsius above normal**.

Heatwaves:

- The **India Meteorological Department (IMD)** defines a **heatwave** based on the **maximum temperatures of different geographical areas: 40°C** or more in the **plains**, **37°C** or more along the **coast**, and **30°C** or more in the **hills**.
- A **heatwave** is categorized as '**normal**' when **temperatures exceed the normal by 4.5-6.4°C** and as '**severe**' when the **departure is greater**.
- Additionally, a **heatwave** can be **declared** based on **maximum temperatures alone: over 45°C** is considered a **heatwave**, and **over 47°C** is **severe**.
- The criteria also require that **at least two stations** in a **meteorological subdivision** report such **high temperatures**, or one station reports a significant departure from normal temperatures for **at least two consecutive days**.
- **How India Tackles Heatwaves?**
 - To **manage and mitigate** the **impact of heatwaves**, which are **increasing in frequency and severity**, **India** employs **Heat Action Plans (HAPs)**.
 - These plans are **developed** at **state, district, and city levels** with the collaboration of the **National Disaster Management Authority** and the **IMD**.
 - Currently, **23 states** are involved in **developing these plans**, though **no centralized database of HAPs exists**.
 - Plans typically include a **heat profile of the region**, **historical data on heat waves**, and a **vulnerability assessment to identify high-risk areas**.
 - They also **outline detailed response strategies** to be implemented before, during, and after **heatwave events** and define the roles of various governmental departments, such as **disaster management, labour departments, and police**, in **managing the heatwave response**.

What do the HAPs recommend?

- **Heat Action Plans (HAPs)** recommend a **multifaceted approach to manage and mitigate the effects of heat waves**. **Key recommendations include:**
 - **Early Warning and Communication**
 - **Public Education**
 - Establishing **heat shelters and cooling centers**, and ensuring the availability of **clean drinking water** to prevent dehydration.
 - **Healthcare Preparedness**
 - Implementing **long-term urban planning strategies** that include **tree planting, using heat-resistant building materials, and applying cool roofing technologies** to minimize the **urban heat island effect** and **reduce indoor temperatures**.

Heat Action Plans (HAPs) face several challenges that limit their effectiveness:

1. **Local Context Sensitivity:**
 - **Incorporating a wider definition of heatwaves** to include **humid heat** and **warmer nights** is **necessary**, along with a comprehensive heat index that considers multiple factors beyond temperature.
2. **Inconsistent Assessment Methods:**
 - While **vulnerability assessments** are part of most **HAPs**, the **methodologies used are inconsistent**. Transitioning to robust **climate risk assessments** that **evaluate the likelihood and impact of heat waves on diverse areas** is **crucial**.
 - **Geospatial data** should be utilized for **effective hotspot mapping** to prioritize and **tailor interventions**.
3. **Addressing Vulnerable Populations:**
 - **HAPs** recognize the need to **protect vulnerable groups** but often **lack targeted interventions** that consider the specific needs and socio-economic conditions of these populations.
 - **Strategies** should also account for the **informal sector**, which makes up over **90% of India's economy**, to ensure these workers are not exposed to heat without losing income.
4. **Resource Allocation and Collaboration:**
 - Dedicated **budgets** and **collaborative financial mechanisms** involving state bodies, civil society, and worker unions are needed to support compliance without income loss.
 - **Integrating HAPs with broader urban resilience and climate adaptation plans** could enhance resource pooling and overall effectiveness.
5. **Infrastructure and Nature-Based Solutions:**

- While **long-term infrastructure solutions** like **cool roofs** are mentioned, there is a need for a more focused approach to **incorporating green and blue spaces** and other **nature-based solutions** to **mitigate heat effectively**.

Source: [TH](#)

Day is not far when every person will need to monitor weather info': IMD general director

Sub: Geo

Sec :Climatology

Context:

- At a time when extreme weather events such as long heat waves and extreme rainfall events are regular occurrences, the role of the **India Meteorological Department (IMD)** is **becoming increasingly crucial**.

More on news:

- In its 150th year now, the **scientific agency is facing challenges** in the form of erratic weather events and has had to adapt not only to maintain its accuracy in forecasting but also be accessible and useful for the public.
- It's the first time in a decade the **IMD has forecast 'above normal' rainfall**.
- Usually, **IMD tends to be more conservative** in the first long-range forecast.

Does the IMD now have better tools?

- In 2021, **IMD adopted the multi-model ensemble forecasts** which also included forecasts on spatial distribution, instead of only categorizing monsoon rainfall as normal, above normal or below normal. In this model, monthly forecasts during the June-September monsoon period are provided.
- **In sum, IMD provides monsoon forecasts for the entire season.**
- The dynamic weather factors such as **El Nino, La Nina and their variations over the years**, the monsoon's relationship with the Indian Ocean Dipole, the snow cover in the northern hemisphere, the sea conditions in the Atlantic or Pacific have improved.
- On the basis of these **models and constantly improving efficiency**, we can say that **since 2021, 80% of what we predict on monsoon is correct**.
- Besides **monsoon forecasts**, **specific city-focussed forecasts** have augmented the facilities in major cities and towns.
- **'Har, Har Mausam, Har Ghar Mausam'**, which provides citizens weather information at pincode-level or cluster-level.

Is a long-range monsoon forecast still relevant since the accuracy to forecast in a shorter turnaround time has improved?

- Recent studies have **pointed out the impact of dry and moist heat stress, which is a risk to everyone**.
- IMD has been **using broad norms to declare heat waves**.
- Based on **terrains, such as hills, coasts and plains**, there are **different thresholds** which form the basis of declaring **heat waves**.
- For instance, in the plains, **if temperature crosses 40 degrees Celsius and above normal by 4-5 degrees for a sustained period, we declare a heat wave**.
- But there are limitations in this approach.
- IMD is **taking into account criteria** such as warm nights, humidity, winds as well as the **historical data of a weather station**.
- For instance, **when day temperatures are above 40 degrees Celsius and night temperatures are four-five degrees above normal, we declare it as a warm night and an alert is issued in our bulletins**.
- In the case of **humidity**, **one feels more dehydrated and the real-feel of hot weather is different in a humid place compared to a drier place**.
- IMD has also **introduced humidity forecasts**.
- At present, IMD is providing information on humidity for today and the next five days, in pictorial and text forms.
- Through these factors, IMD makes a composite heat index to indicate what would be the real-feel of the hot conditions.

What is the assessment on the extreme rainfall event in Dubai?

- **UAE and Oman experience western disturbances**, which develop over the Mediterranean Sea and travel eastwards.
- While moving eastwards, sometimes they move towards the **southern latitude**.
- It was an active western disturbance which moved across the **Middle East and is now moving across Iran, Afghanistan and now approaching Pakistan and India**.
- While the western disturbance was approaching and moving across UAE and Oman, there was an anticyclone and there was moisture incursion over the Arabian Sea.
- This helped in the formation of this kind of rainfall event.

- Rainfall above 20 cm in one day in an arid area like UAE creates problems of its own.
- This kind of phenomenon is not so frequent, it occurs when such weather systems interact with each other.
- The same western disturbance will also cause rains in J&K, Himachal Pradesh and the Indo-Gangetic plains from Thursday.

What is the status of urban flooding mapping?

- Initially, IMD developed it for **Chennai, through the initiative of the principal scientific advisor.**
- **Then it was developed for Mumbai and Kolkata.**
- Coastal cities were addressed first since the flooding is severe and involves **multi-hazard events such as rainfall, ingress of seawater, river flooding and waterlogging.**
- Now IMD is looking at 5 cities (**Varanasi, Pune, Ahmedabad, Bengaluru, Bhubaneswar and Pune**), which the Centre for Development of Advanced Computing (C-DAC) is executing in project mode with the Ministry of Earth Sciences.

Europe is 'warming faster than any other continent'

Subject: Geography

Sec: Climatology

Context:

- **Europe** is currently the **fastest-warming continent**, warming at about **twice the global average**, according to a report by the **World Meteorological Organisation** and the **EU's climate agency, Copernicus.**

Details:

- This **rapid increase in temperature**, now **2.3 degrees Celsius above pre-industrial levels**, poses significant threats to **human health, glacier stability, and economic activities.**
- Despite these challenges, **Europe** is advancing in its **transition to renewable energy**, achieving **43% electricity generation from renewables** in the previous year.
- The report also highlights the **severe impacts of climate extremes witnessed in Europe**, including **record temperatures, wildfires, heat waves, and significant glacier melt.**
- These events have not only caused over **150 direct deaths last year** but also led to **substantial economic losses** estimated at over **13.4 billion euros.**
- **Copernicus** notes a **critical need for targeted strategies to combat these effects** and **accelerate the shift to renewable resources like wind, solar, and hydroelectric power.**

Copernicus Climate Change Service (C3S):

- **C3S** is **one of six thematic information services** provided by the **Copernicus Earth Observation Programme** of the **European Union.**
- **Copernicus** is an **operational programme** building on existing research infrastructures and knowledge available in Europe and elsewhere. **C3S** relies on climate research carried out within the **World Climate Research Programme (WCRP)** and responds to user requirements defined by the **Global Climate Observing System (GCOS).**
- **C3S** provides an important resource to the **Global Framework for Climate Services (GFCS).**
- **C3S** is **implemented** by the **European Centre for Medium-Range Weather Forecasts (ECMWF)** on behalf of the **European Commission.**
- **C3S** supports society by providing authoritative information about the past, present and future climate in Europe and the rest of the World.
- **Mission:** To support adaptation and mitigation policies of the European Union by providing consistent and authoritative information about climate change.
 - They offer **free and open access to climate data and tools** based on the best available science.



Source: [TH](#)

Anticyclones, hanging even now over India, link warming to heat

Subject: Geography

Sec: Climatology

Context:

- The latest advisory from the **India Meteorological Department** has warned of severe heat wave conditions affecting extensive areas of eastern India and the Gangetic plain for the upcoming days.

More on news:

- The complexities of the ways in which global warming manifests in local weather continue to underscore the need to model globally but predict locally.
- The waning phase of the strong **El Niño of 2023 brings the expected warm temperatures across the globe — while cooler temperatures spread from Pakistan across India to West Bengal during March.**

What do the heat waves have to do with global warming?

- **Global warming also creates unique features** locally that modulate heat waves on top of cool background temperatures.
- **Heat waves over India have been of special concern this season** because of the general elections. Some persistent circulation patterns have been creating heat waves and this pattern should serve as another focal point for improving predictions.
- It was apparent in March that the **anticyclonic circulations over the North Indian Ocean were the drivers of unusual rainfall over Odisha.**
- An anticyclone has winds moving in a **clockwise direction, with air sinking down in the middle of it.**
- As this air hits the ground, it is compressed and warmed and can create a high pressure heat dome.
- An anticyclonic circulation could also explain the historic Dubai floods of April 17.

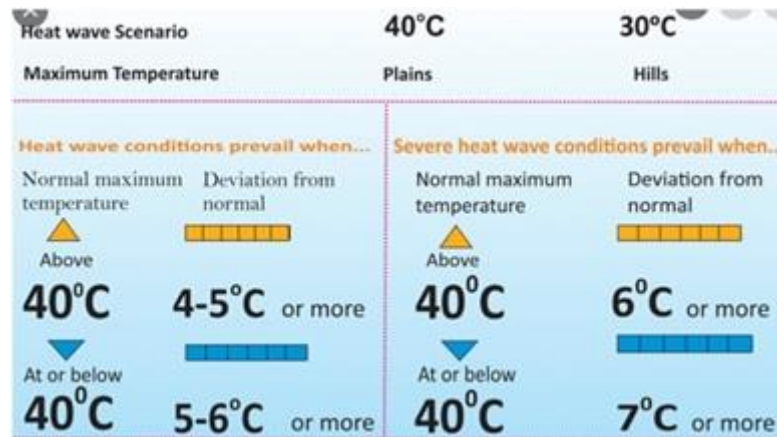
What links anticyclones to heat?

- The persistence of the anticyclones is not unusual in and of itself. During the pre-monsoon season, **the upper-level Indian Easterly Jet (IEJ) begins to take shape in the upper atmosphere, at around the 10 degrees N latitude, across the Arabian Sea, peninsular India, and the Bay of Bengal.**
- A **strong westerly jet exists** to the north around 30 degrees N, and the two together can generate an anticyclonic pattern over the Indian Ocean and the Indian subcontinent.
- An **easterly jet refers to strong winds coming from the east while westerly jets come from the west.**
- These are **natural seasonal features.**
- The westerly jet is pushed north during the monsoon season and the IEJ dominates the Indian subcontinent.
- During the pre-monsoon season, a strong anticyclone can bring dry and hot weather over many parts of India while a weak anticyclone produces milder weather.

About Heat Waves:

- The **Indian Meteorological Department (IMD)** has given the following criteria for Heat Waves :
- Heat Wave need not be considered till maximum temperature of a station reaches **atleast 40°C for Plains and atleast 30°C for Hilly regions**

- When **normal maximum temperature of a station is less than or equal to 40°C** Heat Wave Departure from normal is 5°C to 6°C Severe Heat Wave Departure from normal is 7°C or more
- When the normal **maximum temperature of a station is more than 40°C** Heat Wave Departure from normal is 4°C to 5°C Severe Heat Wave Departure from normal is 6°C or more.
- When actual **maximum temperature remains 45°C or more** irrespective of normal maximum temperature, heat waves should be declared.
- Higher **daily peak temperatures and longer, more intense heat waves are becoming increasingly frequent globally due to climate change.**
- India too is feeling the impact of climate change in terms of increased instances of heat waves which are more intense in nature with each passing year, and have a devastating impact on human health thereby increasing the number of heat wave casualties.



What are the stages of early warnings?

- Returning to the local manifestation of global warming; **accurate early-warning systems take a three-step approach called the 'ready-set-go' system, under the so-called 'Subseasonal-to-Seasonal Predictions' project of the World Climate Research Program under the World Meteorological Organisation.**
- India is part of this project, has invested heavily in S2S predictions, and has made impressive progress in improving the accuracy of predictions.
- Preparing the system and guiding the **National Disaster Management Agency (NDMA)** requires this three-step approach to function efficiently and effectively.
- The **'ready' step provides** a seasonal outlook — where the background state, or the external factors (such as global warming and the El Niño), are used to maximize the accuracy of longer-lead forecasts. The 'ready' step allows the NDMA, its local agencies, and all local governments to ready their disaster response systems.
- The **subseasonal predictions refer to the extended range of weeks two to four, which contribute to the 'set' step.**
- Resource allocations and identifying potential hotspots to move resources including personnel ensure disaster-preparedness is set to go.
- The **'go' step is based on short- (days 1-3) and medium- (days 3-10) range forecasts.**

Three new dedicated freight corridors on track

Subject: Geography

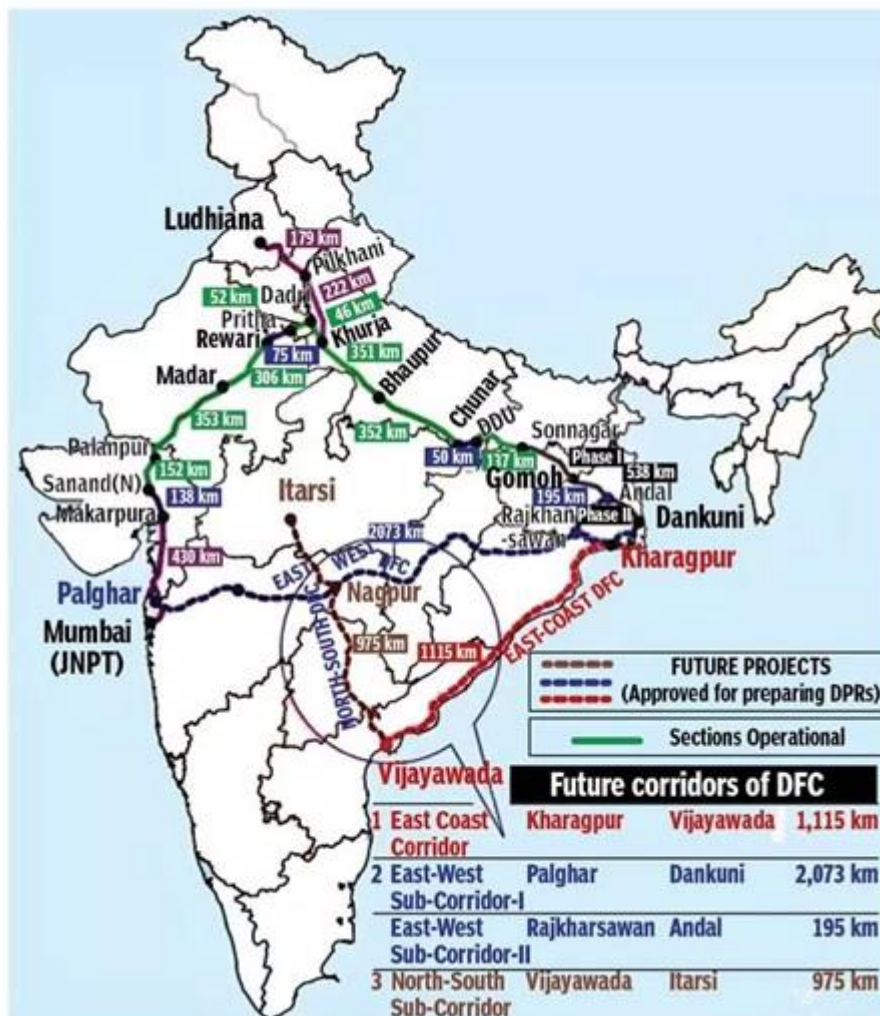
Section: Eco geography

Context:

- The **Indian Railways** plans to **introduce** at least **three more dedicated freight corridors**, including **commodity-specific routes**, to **enhance freight movement** and **allocate regular tracks more efficiently for passenger trains.**

Details:

- These **corridors** will span the **east coast, north-south, and east-west routes**, covering a total of **4,300 km**, with an estimated project cost of **₹2,00,000 crore.**
- The **Dedicated Freight Corridor Corporation of India Ltd** is preparing network alignment reports for all three corridors.
- This **initiative aims** primarily to **relieve congestion** on the **critical Delhi–Howrah and Delhi–Mumbai routes**, facilitating **faster freight movement** and **improving the availability of tracks for passenger trains.**



East Coast track:

- The first proposed dedicated freight corridor along the East Coast runs parallel to the coastal passenger rail line, stretching approximately 1,200 km from Kharagpur in West Bengal to Tenali in Andhra Pradesh.
- This route traverses the mineral-rich states of Bengal and Odisha, including connectivity to Vizag port, and focuses on transporting coal, fertiliser, iron ore, steel, and other commodities.
- Extending the corridor to Tenali enhances port connectivity with Chennai as well.

North-South corridor:

- The North-South Corridor, the second proposed route, spans approximately 1,000-1,200 km from Itarshi in Madhya Pradesh to Tenali, Andhra Pradesh.
- This corridor is planned to run through Itarsi, Nagpur, Vijayawada, and end at Tenali, passing through four states: Madhya Pradesh, Maharashtra, Telangana, and Andhra Pradesh.
- It is designed to facilitate the movement of coal, cement, fertilisers, petroleum, and oil lubricants, among other commodities.
- There's a long-term plan to extend the corridor from Dadri in Uttar Pradesh to Itarshi, which would link the operational Dedicated Freight Corridor with the upcoming one.

Proposal underway for a third:

- A third corridor proposal is in progress for the East-West route, connecting Andal in West Bengal to Palgarh in Maharashtra, covering about 2,100 km with an additional 300 km of spur lines.
- This corridor will traverse five states: West Bengal, Jharkhand, Odisha, Chhattisgarh, and Maharashtra.
- There has been some route redesign, and the Detailed Project Report (DPR) is expected to be finalized and submitted by the end of April.
- The corridor aims to facilitate the transport of major commodities like coal, iron-ore, bauxite, manganese, ferro alloys, steel, and access to major and minor ports, as well as supporting the movement of goods for the thermal

power plants, POL cement plants, Container Corporation (CONCOR), Inland Container Depots (ICDs), and Food Corporation of India (FCI) godowns among others.

India explores Congo for copper and cobalt access

Subject: Geography

Section: Economy geography

Context:

- **India** is set to finalize a **government-to-government (G2G) memorandum of understanding (MoU)** with the **Democratic Republic of Congo** for access to critical minerals, particularly **copper** and **cobalt**.
 - The **international mining conference** is going to be held in the **Democratic Republic of Congo**.

Details:

- This collaboration aims to **allow India to explore and potentially commercially extract these minerals**, essential for industries like **electric vehicles** and **renewable energy**.
- **Congo** is a **leading global supplier of cobalt** and a significant **copper producer**, enhancing the strategic importance of this partnership.
- Indian officials have also highlighted similar successful agreements, such as the **acquisition of lithium blocks in Argentina**, indicating a continued strategy to secure critical mineral resources through partnerships and investments.
- **Copper use:**
 - Copper, a base metal, is used in **power cables, wind turbines, electric vehicles, and solar panels**, and it is the key material for **energy transition**.
- **Cobalt use:**
 - **Cobalt** is a key **car battery-making metal** (used to make lithium-ion batteries).

Lithium in Chile:

- **India** is actively pursuing opportunities to secure **lithium resources** from **Chile**, known for being part of the **Lithium Triangle** along with **Argentina** and **Bolivia**, which holds the **majority of the world's lithium supply**.
- **Lithium** is **critical for manufacturing batteries** for **electric vehicles (EVs), mobile phones**, and other energy storage solutions.
- The Mines Ministry previously signed a **non-disclosure agreement** with **ENAMI**, a **Chilean state-owned company**, for information exchange and data-sharing.
- A significant delegation, including representatives from the **Mines and Coal ministries, CSIR Labs, Hindalco, Coal India, and private mining firms**, will visit Chile to attend a **mining conference** and engage in **government-to-government meetings**, with Coal India playing a central role in these discussions.

Copper:

- **Copper** is a **good conductor of electricity** and is **ductile** [able to be drawn out into a thin wire].
- It is an **important metal** used by the **automobile** and **defence industries**.
- Alloyed with **iron** and **nickel** to make **stainless steel**.
- Alloyed with **nickel** to make **'morel metal'**.
- Alloyed with **aluminium** to make **'duralumin'**.
- When alloyed with **zinc** it is known as **'brass'** and with **tin** as **'bronze'**.
 - Iron + Nickel + Copper + Chromite + == Stainless Steel.
 - Copper + Nickel == Morel Metal.
 - Copper + Aluminium == Duralumin.
 - Copper + Zinc == Brass.
 - Copper + Tin == Bronze.
- **Copper ore** is found in **ancient** as well as in **younger rock formations** and occurs as **veins** and as **bedded deposits**.
- Mining for copper is costly and tedious affair because **most of the copper ores contain a small percentage of the metal**.
- **India** has **low-grade copper ore** [less than **1%** metal content] [international average **2.5%**]
- The **major part of supply** comes from the **USA, Canada, Zimbabwe, Japan** and **Mexico**.
- **Copper Reserves in India**
- **46 million tonnes**.
 - Rajasthan (50%)

- Madhya Pradesh (24%)
- Jharkhand (19%)
- The rest 7 per cent in AP, Gujarat, Haryana, Karnataka etc.
- **Madhya Pradesh**
 - **1st in production** [59.85 %].
 - **Malanjkhand copper mines** of **Balaghat district** are the most important ones.
 - Reserves of moderate size are also found in the **Betul district**.
- **Rajasthan**
 - **2nd in production** [28%]
 - Found along the **Aravali range**.
 - **Ajmer, Alwar, Bhilwara, Chittaurgarh, Dungarpur, Jaipur, Jhunjhunu, Pali, Sikar, Sirohi and Udaipur districts**.
 - **Khetri-Singhana belt** in **Jhunjhunu district** is the most important copper-producing area.
- **Jharkhand**
 - **3rd in production** [11%].
 - **Singhbhum** is the most important copper-producing district.
 - Found in **Hazaribagh district, Santhal Parganas and Palamu districts**.

Cobalt Reserves in India:

- **Cobalt** is a **silvery-white metal** that is used in a **wide range of industrial applications**, including the **production of batteries, magnets, and alloys**. It is also used in some **catalysts and pigments**.
- **Cobalt** is often found in association with other metals, such as **copper and nickel**. It is **extracted as a by-product of mining and processing these metals**.
- **India** has **significant cobalt resources**, with the **majority** of them **located** in the **state of Odisha**. However, there is **currently no production of cobalt in India**.
- The **cobalt resources** in **India** are estimated to be around **44.91 million tonnes**.
- The majority of these resources are located in **Odisha** (Kendujhar, Jajpur), **Nagaland** (Tuensang), **Jharkhand** (Singhbhum), **Rajasthan** (Jhunjhunu), **Madhya Pradesh** (Jhabua, Hoshangabad).
- **Cobalt** is a **key component** of **lithium-ion batteries**, which are used in **electric vehicles** and other **renewable energy technologies**.

India's lithium reserves:

- According to the **Indian Mines Ministry**, the government agencies made the small discovery of lithium resources at a site in **Mandya, Karnataka**. It is the **country's first lithium reserve**.
- Now, Lithium inferred resources have been found in the **Reasi District of Jammu & Kashmir (UT)**.

Lithium Production in the World:

- According to the **US Geological Survey (USGS)**, global lithium production in **2019** stood at **77,000 tonnes**.
- **Australia, Chile, China and Argentina** are the world's **top four lithium-producing countries**.
- **Australia** is by far the world's **top producer of lithium**, with an output of **42,000 tonnes** in 2019.

Source: [TH BL](#)

Only 1500 litres of water used to produce 1 kg of rice: ICAR chief

Subject: Geography

Sec: Eco Geo

Context:

- **Himanshu Pathak, Director-General of ICAR**, highlighted that the **average water consumption to produce one kilogram of rice in India** is about **1,500 litres**, significantly **lower than the previously cited 4,000-5,000 litres**.
- This **average** includes **water used in both rain-fed (45%) and irrigated (55%) areas**, with **higher usage** noted in the **northern irrigated regions**.

Annual Rice Research Conference:

- During the two-day **All India Coordinated Research Project on Rice (AICRPR) conference** in **Delhi**, agricultural scientists discussed the **importance of not rushing into crop diversification** despite the **high water usage** in **rice cultivation**.

- They emphasized **India's heavy reliance on rice** and the **challenges in replacing it with imports if needed**.
- The conference served as a **platform for rice breeders across India** to review the outcomes of recently released **rice varieties** and to **strategize future research directions aimed at** creating a resilient and sustainable rice production system.
- **Herbicide Tolerance: Pusa Basmati 1979 and Pusa Basmati 1985** varieties of rice can **withstand herbicide application without harm**.

About Direct Seeded Rice (DSR) method:

- **DSR**, also called the **'broadcasting seed technique'**, is a **water-saving method** of sowing paddy.
- **Seeds are directly drilled** into the fields in this method.
- This **saves groundwater**, as opposed to the **traditional water-intensive method**, under which **rice seedlings are transplanted from a nursery to waterlogged fields**.
- With the **DSR technique**, farmers **must sow paddy only after pre-sowing (rauni) irrigation and not in dry fields**. Further, the field should be laser levelled.
- **Advantages:**
 - No significant reduction of yield under optimal conditions;
 - Savings on irrigation water by 12-35% under efficient water management practices;
 - Reduces labour and drudgery by eliminating seedling uprooting and transplanting;
 - Reduces cultivation time, energy, and cost;
 - No plant stress from transplanting;
 - Faster maturation of crops;
 - Lower GHG emissions;
 - Mechanized DSR provides employment opportunities;
 - Increases total income by reducing the cost of cultivation;
- **Current Constraints:**
 - Higher seed rates;
 - Seeds exposed to birds and pests;
 - Weed management;
 - Higher risk of lodging;
 - Risk of poor or non-uniform crop establishment;

Fertility levels drop below one in many Asian nations

Subject: Geography

Section: Human geography

Context:

- **East and Southeast Asian countries** are experiencing declining birth rates and record-low fertility rates, causing some hospitals in **China** to cease newborn delivery services.

Details:

- Between **1950 and 1970**, the **fertility rates** in these regions ranged from **3.5 to 7.5 children per woman**.
- Notably, **South Korea, Singapore, Hong Kong, and Taiwan** have **fertility rates lower than one child per woman**, indicating that **many women are having one child or none at all**.
- **Chart 1** details the **fertility rates over time in China, Japan, and four other countries**, showing a **significant decline** compared to other countries with **low fertility** like **Ukraine, Finland, Italy, and Spain**.
- **Policy Impact:**
 - The **sharp decline in China's fertility rate**, for instance, is **largely attributed to strict family planning policies**. Similar policies in **South Korea and Singapore** also **significantly influenced birth rates**.
- **Factors Contributing to Low Fertility:**
 - **Increased career opportunities for women, higher costs of child-rearing, and the economic impact of maternity on careers** have all contributed to **declining birth rates**.
- **Aging Population:**
 - In **Japan**, a **third of the population** was over **65** by **2023**. **South Korea and Hong Kong** are projected to reach **similar demographics** by the **early 2030s**, showing a **rapid ageing trend**.
- **Government Responses:**

- Governments have introduced costly programs to encourage childbirth.
- South Korea alone has spent \$211 billion since 2006, yet the fertility rates have not improved significantly.
- **Mass Social Initiatives:** In an attempt to address the falling birth rates, cities like Seongnam in South Korea have organized mass blind dates.

And then it was less than one

The data were sourced from national statistical organisations, World Population Prospects, and World Bank



Fertility crisis: A pedestrian crossing a street with a child in Tokyo. AP

Chart 1: The chart shows the total fertility rate in six countries over 50 years from 1950

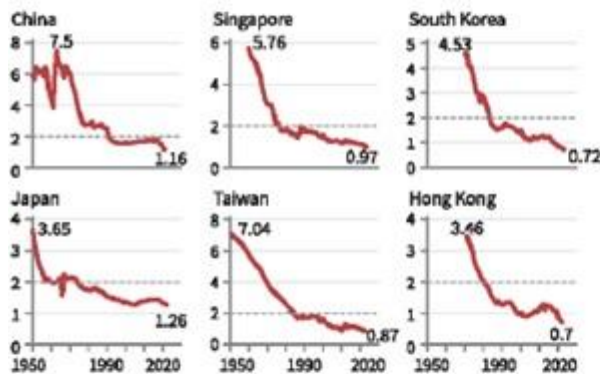


Chart 2: The chart compares the TFR of the six countries mentioned above and India with Ukraine, Finland, Italy and Spain (countries which also have among the lowest TFRs)

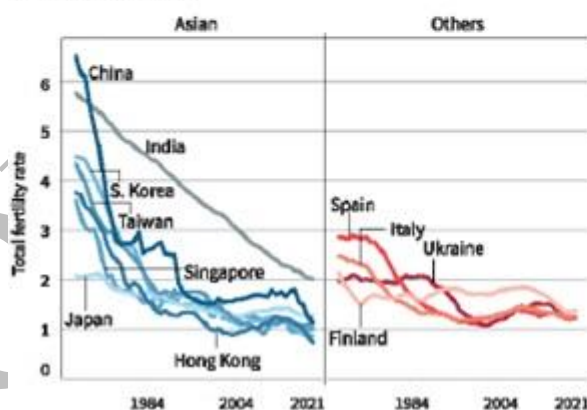


Chart 3: The year when about 5% (ii), 15% (iii) and 30% (iv) of a country's population had aged or will be ageing

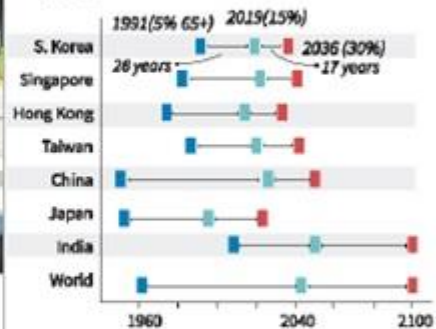


Chart 4: The chart lists the financial support and other programmes to incentivise childbirths

South Korea	
1 million won /month	For parents with a baby <1 year
500,000 won /month	For parents with children between 1 and 2
2 million won	Cash bonus for each child born
3 million won	Cash bonus for second child or more children
5 million won	For giving birth to twins
	Hourly child care services at daycare centers
Hong Kong	
HKD 20,000	For each baby born to a parent who is a permanent resident of Hong Kong
	Priority subsidised housing
	Increase in childcare centres and allowances
Singapore	
	Baby bonus cash gift
SGD 11,000	For first and second child
SGD 13,000	For third, fourth child and subsequent children
	Special savings account
	Govt. paid maternity & paternity leave
Japan	
15,000 yen	Per month allowance until the child is aged 2
10,000 yen	Per child from age 3 through high school age
30,000 yen	For the third child and subsequent children through high school age

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India's scenario:

Current TFR and Sex Ratio:

- **TFR Decline:** India's TFR has decreased from 2.2 in 2015-16 to 2.0 at the national level, with variations observed between urban (1.6) and rural areas (2.1).
- **Sex Ratio:** NFHS-5 reports a sex ratio of 1,020 women per 1,000 men, a notable deviation from previous surveys.
- **TFR Target:** Replacement level fertility, set at 2.1, ensures each generation replaces itself. An additional 0.1 child per woman accounts for infant mortality.

Implications of TFR in India:

- **Population Stability:** A TFR of 2.0 indicates stable long-term population trends, with two parents replaced by two children.
- **Future Growth:** India may not experience population decline for 30-40 years due to a substantial youth population.

Reasons for Fertility Decline:

- **Education:** Higher female education levels contribute to fertility decline.
- **Economic Factors:** Increased mobility, late marriages, and financial independence influence family planning decisions.
- **Family Planning Programs:** Enhanced access to family planning methods and higher contraceptive prevalence rates play a role.

Source: [TH](#)

Shompen cast their vote for the first time

Subject: Geography

Sec: Human geo

Context:

- For the **first time**, members of the **Shompen** took part in the **election process** by **casting their votes** in the **Andaman and Nicobar Lok Sabha constituency**.

About Shompen Tribe:

- The **Shompen** are **one of the most isolated tribes** on **Earth**.
- They reside in the **dense tropical rainforest** of the **Great Nicobar Island** of **Andaman and Nicobar group of Islands**.
- They are **one of the least studied Particularly Vulnerable Tribal Groups (PVTGs)** in India.
- Though according to the **Census (2011)**, the estimated **population of Shompen** is **229**, the exact population of Shompen is unknown till today.
- Most of them are **uncontacted, refusing all interactions with outsiders**.
- They live in **small groups**, whose territories are identified by the **rivers that criss-cross the rainforest**.
- They are **semi-nomadic hunter-gatherers**, and their **main sources of livelihood** are hunting, gathering, fishing, and **a little bit of horticultural activities** in a rudimentary form.
 - Primarily, they used to **hunt wild pig, python, monitor Lizard, crocodile, sea turtle etc.**
 - They collect a wide variety of **forest plants**, but their **staple food** is the **pandanus fruit**, which they call **larop**.
- **Shompen** speak their own language, which has many **dialects**. Members of one band do not understand the dialect of the other.
- They are of **short to medium stature**, have a **round or nearly broad head shape, narrow nose, a broad facial profile, and distinctly exhibit Mongoloid features** such as **light brown to yellow-brown skin and oblique eye features**.
- **Shompen** have **nuclear families** comprising **husband, wife, and their unmarried children**.
 - A **Shompen family** is controlled by the **eldest male member**, who controls all activities of the **women and kids**.
 - **Monogamy** is the **general rule**, although **polygamy** is allowed too.

Other tribes of Andaman and Nicobar:

Andamanese Strait island

Jarawas Middle and South Andaman

Nicobarese Great Nicobar

Onges Little Nicobar

Sentinelese Sentinel island

About Particularly Vulnerable Tribal Group (PVTG):

- In **India**, the **tribal population** makes up **8.6%** of the **total population**.
- **PVTGs** are **more vulnerable among the tribal groups**. Due to this factor, more developed and assertive tribal groups take a major chunk of the tribal development funds because of which **PVTGs need more funds directed for their development**.
- In **1973**, the **Dhebar Commission** created **Primitive Tribal Groups (PTGs)** as a separate category, which are **less developed among the tribal groups**. In **2006**, the **Government of India** renamed the **PTGs** as **PVTGs**.

- In this context, in **1975**, the **Government of India** initiated to **identify the most vulnerable tribal groups** as a **separate category** called **PVTGs** and declared **52** such groups, while in **1993** an **additional 23** groups were added to the category, making it a total of **75 PVTGs** out of **705 Scheduled Tribes**.
- Among the **75** listed PVTG, the **highest number** is found in **Odisha**.

Characteristics of PVTGs:

- **Population** – stagnant/declining
- **Technology** – pre-agricultural
- **Literacy Level** – extremely low
- **Economy** – Subsistence level

Centre mulling ST status for 11 Gorkha sub-tribes: Shah

Sub: Geo

Sec: Human geo

Context:

- **Union Home Minister** Amit Shah announced that the **government is considering classifying 11 Gorkha sub-tribes as Scheduled Tribes**.
- **Darjeeling** has a longstanding demand for the **creation of a separate state called Gorkhaland**, a key issue in the area's politics.

Gorkha National Liberation Front (GNLF):

- **GNLF** is a **political party** in the **Darjeeling District** of **West Bengal, India**.
- It was formed in **1980** by **Subhash Ghisingh** with the objective of demanding a **Gorkhaland** state within India.

Why is there a demand for separate statehood for Gorkhaland?

- **Gorkhaland** consists of **Nepali-speaking people** of **Darjeeling, Kalimpong, Kurseong** and **other hilly districts** of **West Bengal**. The people belonging to these areas have **ethnic, cultural and language differences** with the **Bengali community** of **West Bengal**.
- The **main reason** for the **separate Gorkhaland movement** is due to the **differences in ethnicity, culture and language**.
- In addition to an **identity crisis**, there is also an **issue of poverty, under-development and politicisation of the issue**.

DEMAND for STATEHOOD OF GORKHALAND



The current procedure and criteria for inclusion under Schedule Tribe (ST) list:

- According to the modalities, for **inclusion** first framed in 1999, the **proposal for inclusion must originate from the respective State or Union Territory government**.
 - Following this, the proposal is sent to the **Union Tribal Affairs Ministry**, which sends it to the **Office of the Registrar General of India (ORGI)**.
- If the **ORGI** approves the inclusion, the proposal is forwarded to the **National Commission for Scheduled Tribes**.

- the **ORGI** continues to follow the criteria set out by the **Lokur Committee** in **1965** to decide whether a community can be included in the **ST list**.
- These criteria include indications of primitive traits, distinctive culture, geographical isolation, shyness of contact with the community at large, and backwardness.
- Only after the **concurrence of these institutions**, will the proposal go forward to the **Cabinet** to bring in the **appropriate amendment to the Constitution (Scheduled Tribes) Order, 1950**.
- The **final decision** rests with the **President's office** issuing a notification specifying the changes under powers vested in it from **Articles 341 and 342**.

Benefits of Inclusion in ST List / Constitutional Safeguards:

- **Reservation in educational institutions** has been provided in **Article 15(4)** of the constitution while **reservation in posts and services** has been provided in **Article 16(4), 16(4A) and 16(4B)** of the Constitution.
- Specific safeguards have been provided in **Article 244** read with the provisions contained in the **Fifth and Sixth Schedules** to the Constitution.
- **Article 243D** provides **reservation of Seats for Scheduled Tribes in Panchayats**.
- **Article 330** provides **reservation of seats for Scheduled Tribes in the Lok Sabha**.

Source: [TH](#)

7.4 magnitude quake in Taiwan; Japan issues tsunami warning for Okinawa & other Ryukyu islands

Subject: Geography

Section: Geomorphology

In the news:

- A **7.4 magnitude earthquake** hit **Taiwan** on **April 3, 2023**, as reported by the **USGS**.

Details:

- The **epicentre** was **south-southwest of Hualien**, on **Taiwan's east coast** with effects felt in **Taipei**.
- **Japan** issued a **tsunami alert** for the **Ryukyu islands**, extending from **Taiwan** to **Kyushu**, including the **strategically significant island** of **Okinawa**.
- A **tsunami** of **at least 30 centimetres** was recorded reaching **Yonaguni Island**, close to **Taiwan**.
- **Tsunami arrival times** for **Iriomote** and **Ishigaki** were around **9:30 am**, and for **Miyakojima** and **Okinawa** around **10 am**, as reported by **NHK**.
- This earthquake is the **strongest to strike Taiwan since 1999**.
- **Taiwan** is located on the **Pacific Ring of Fire**, known for **frequent seismic activity**.
- The **Philippines** also issued a **tsunami warning** for its **Batanes island group**, indicating the broader regional impact of the earthquake.



Places in the news:

- **Ryukyu islands:**
 - The **Ryukyu Islands**, also known as the **Nansei Islands**, are a **chain of Japanese islands** that **stretch southwest from Kyushu to Taiwan**: the **Ōsumi, Tokara, Amami, Okinawa, and Sakishima Islands** (further divided into the **Miyako and Yaeyama Islands**), with **Yonaguni** the **westernmost**.
 - The larger are mostly volcanic islands and the smaller are mostly coral. The largest is **Okinawa Island**.



- **Batanes island group:**
 - **Batanes** is an **archipelagic province** in the **Philippines**, administratively part of the **Cagayan Valley region**.
 - The island group is located about 190 kilometres (120 miles) **south of Taiwan** (Pingtung County).

Source: [DTE](#)

Ring of fire and Taiwan earthquake

Subject: Geography

Section: Geomorphology

Context: 9 people were killed and more than 900 injured after Taiwan was hit by the biggest earthquake in at least 25 years on Wednesday morning.

What is the Ring of Fire?

The Ring of Fire is essentially a string of hundreds of **volcanoes** and **earthquake-sites** which runs along the Pacific Ocean. It is a semicircle or horse shoe in shape and stretches nearly 40,250 kilometres. The Ring of Fire traces the meeting points of numerous tectonic plates, including the **Eurasian, North American, Juan de Fuca, Cocos, Caribbean, Nazca, Antarctic, Indian, Australian, Philippine, and other smaller plates**, which all encircle the large Pacific Plate, according to a report by National Geographic.

Why is the Ring of Fire vulnerable to earthquakes?

The Ring of Fire witnesses so many earthquakes due to constant sliding past, colliding into, or moving above or below each other of the tectonic plates. As the edges of these plates are quite rough, they get stuck with one another while the rest of the plate keeps moving.

An earthquake occurs when the plate has moved far enough and the edges unstuck on one of the faults.

Taiwan experiences earthquakes due to the interactions of two tectonic plates — the **Philippine Sea Plate and the Eurasian Plate**.

Why are there so many volcanoes in the Ring of Fire?

The existence of volcanoes in the Ring of Fire is also due to the movement of tectonic plates. Many of the volcanoes have been formed through a process known as subduction. It takes place when two plates collide with each other and the heavier plate is shoved under another, creating a deep trench.

“Basically, when a ‘down going’ oceanic plate [like the Pacific Plate] is shoved into a hotter mantle plate, it heats up, volatile elements mix, and this produces the magma. The magma then rises up through the overlying plate and spurts out at the surface,” which leads to the formation of volcanoes.

Most of the subduction zones on the planet are located in the Ring of Fire and that’s why it hosts a large number of volcanoes.

2 women Navy officers return after historic transoceanic expedition

Subject: Geography

Sec: Geomorphology

Context:

- **INSV Tarini**, crewed by **two women officers** of the **Indian Navy**, returned to **Goa** on **April 21** after a **nearly two-month transoceanic journey**, marking a **historic first for India**.

Details:

- The expedition was **led by Lieutenant Commander Dilna K. and Lieutenant Commander Roopa A.**, flagged off by **retired Commander Abhilash Tomy** in **Goa** on **February 28**.
- After sailing through challenging conditions, **INSV Tarini** reached **Port Louis, Mauritius**, on **March 21**. The stop included interactions with the **Mauritius Coast Guard** and the **Indian High Commission** and a training sortie that enhanced bilateral ties.
- Preparations are underway for a **global circumnavigation** scheduled for **September** this year as part of the **Sagar Parikrama-IV expedition**.
- The vessel was welcomed back on **April 30** by the **Commanding Officer of INS Mandovi and Naval Station Commander North Goa**, celebrated by naval personnel and their families.

INS Tarini:

- **INSV Tarini** is the **second sailboat** of the **Indian Navy**.
- Named after the **Tara Tarini temple (Odisha)**.
- She was constructed at **Aquarius Shipyard** located in **Goa**.
- After undergoing extensive sea trials, she was commissioned to **Indian Navy** service on **18 February 2017**.

Navika Sagar Parikrama:

- The **Navika Sagar Parikrama** was a **global circumnavigation** by an **all-woman team of six Indian Navy officers** on **INSV Tarini**, marking their **first global voyage**.
- The journey spanned **254 days** from **September 10, 2017, to May 21, 2018**, covering **21,600 nautical miles** and included **port calls** in **Fremantle (Australia), Lyttelton (New Zealand), Port Stanley (Falkland Islands), and Cape Town (South Africa)**, with a technical stop in **Port Louis, Mauritius**.
- The crew **crossed the equator twice** and **navigated through three oceans**, managing the **entire operation themselves**.
- The journey was documented in "**Tarini**," a film produced by **National Geographic** and the **Indian Navy**, which premiered on **International Women's Day** at **Lady Shri Ram College**.
- The voyage inspired **National Geographic** to launch the "**Girls Who Sailed**" campaign, celebrating stories of determination and resilience.

Source: [TH](#)

Yamuna River

Subject: Geography

Sec: Indian geography

Source and Early Course:

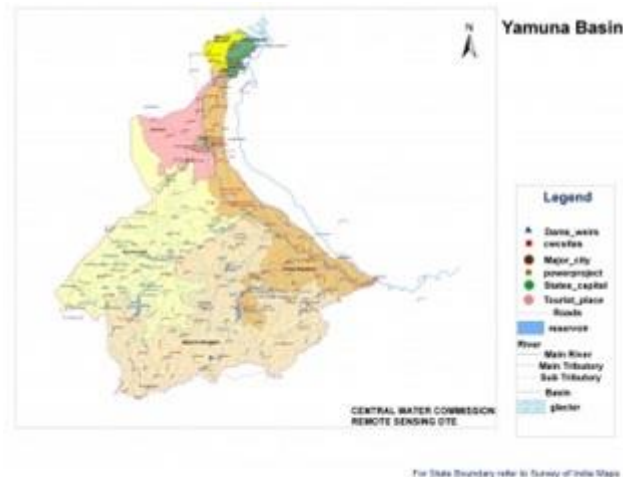
- The Yamuna River **originates** from the **Yamunotri Glacier** in the **Mussourie range** of the **lower Himalayas**, at an elevation of about **6,387 meters**.
- It flows from **north** of **Haridwar**, and its initial **170 km** stretch is marked by tributaries like **Rishi Ganga Kunta, Hanuman Ganga, Tons, and Giri**.
- The **Tons River**, the **largest tributary of the Yamuna**, features notable **biodiversity** and **conservation areas** such as the **Har-ki-Dun Valley** and **Gobind Pashu Vihar Sanctuary**.
- The **Yamunotri temple**, associated with the **river's source**, was originally built in the late **19th century** and has undergone several reconstructions.

Geographical Journey:

- The **river** travels through valleys for about **200 km** in the **lower Himalayas** before entering the **Indo-Gangetic plains**.
- It is **tapped** at **Dak Pathar** in **Uttarakhand** for **power generation**, after which it flows through significant locations like **Poanta Sahib** and **Hathnikund**.

Segments of the River:

- **Himalayan Segment:** From **origin** to **Tajewala Barrage** (**172 km**)
- **Upper Segment:** **Tajewala Barrage** to **Wazirabad Barrage** (**224 km**)
- **Delhi Segment:** **Wazirabad Barrage** to **Okhla Barrage** (**22 km**)
- **Eutrophicated Segment:** **Okhla Barrage** to **Chambal Confluence** (**490 km**)
- **Diluted Segment:** **Chambal Confluence** to **Ganga Confluence** (**468 km**)



Environmental Challenges:

- Beyond the **Wazirabad Barrage**, the **river** sustains itself mainly on **untreated or partially treated domestic and industrial wastewater**.
- **Water flow management** is **tightly controlled**, especially in **dry seasons**, as per Supreme Court orders, affecting the natural flow and ecological conditions of the river.

Ecological Significance:

- The **river** hosts **diverse ecosystems** and is crucial for the **biodiversity of the region**, including being a frontier for the **Indian elephant** in the **Western Himalayas**.
- Efforts to **conserve and manage** its **catchment areas** cover multiple states including **Uttar Pradesh, Uttarakhand, Himachal Pradesh, Haryana, Rajasthan, Madhya Pradesh, and Delhi**.
- The **Yamuna**, a **major tributary of the Ganges**, demonstrates significant **cultural, ecological, and environmental importance**, but also faces substantial challenges due to human impact and seasonal variability in water flow.

Tributaries of River Yamuna

- **Tons River:** The **longest tributary** of the **Yamuna**, originating at 3,900 meters above sea level near the Bander Punch Glacier.
 - It flows through the **Garhwal region** of **Uttarakhand** and joins the **Yamuna** near **Kalsi, Dehradun**.
- **Giri River:** Originates near **Jubbal town, Shimla**, and flows through the southeastern part of **Himachal Pradesh**.
 - Divides the **Sirmaur district** into **Cis-Giri** and **Trans-Giri regions**, joining the **Yamuna** upstream of **Paonta**.
- **Hindon River:** Flows between the **Ganga** and **Yamuna rivers**, originating from the **upper Shiwalik**.
 - It is a **rain-fed river** covering a catchment area of **7,083 sq. km** and stretching approximately 400 km.
- **Betwa River:** Rises in **Bhopal, Madhya Pradesh**, and flows 590 km to join the Yamuna near Hamirpur, Uttar Pradesh.
 - Its basin is primarily in **Madhya Pradesh (68.64%)** and **Uttar Pradesh (31.36%)**.
- **Dhasan River:** A **right bank tributary** of the **Betwa**, originating in **Raisen district, Madhya Pradesh**.
 - It forms the **southeastern boundary** of **Lalitpur, Uttar Pradesh**, covering a total length of 365 km.
- **Ken River:** Flows through **Madhya Pradesh** and **Uttar Pradesh**, originating near **Jabalpur**.
 - Joins the **Yamuna** near **Chilla village, Uttar Pradesh**, with a total length of 427 km.
- **Sind River:** One of the **second largest right bank tributaries** of the **Yamuna**, originating in **Vidisha, Madhya Pradesh**.
 - Flows northeast for 415 km before joining the Yamuna upstream of **Auraiya**.
- **Chambal River:** The **largest tributary of the Yamuna**, originating near **Mhow, Madhya Pradesh**.
 - Flows through **Rajasthan** and forms part of the boundary with **Uttar Pradesh** before joining the **Yamuna**.
 - Known for its historical name, **Charmanvati**, and a significant drainage area that includes parts of **Madhya Pradesh, Rajasthan, and Uttar Pradesh**.
- **Tributaries of Chambal River:**
 - **Kali Sindh:** Originates in the **Vindhya Hills** and joins **Chambal** near **Nonera, Rajasthan**.
 - **Parwan River:** Flows from the **Malwa Plateau** to join **Kali Sindh** near **Ramgarh, Rajasthan**.
 - **Parwati River:** Begins in the **Vindhyan hills**, forms a boundary between **Madhya Pradesh** and **Rajasthan**, and joins the **Chambal** near **Pali**.
 - **Banas River:** Originates in the **Aravali range**, flows through **Rajasthan**, and joins the **Chambal** near **Rameshwar**.

Source: [Indiawris](#)

NASA Mars sample return program is expensive and will take too long

Subject: Geography

Sec: Indian geography

Context:

- In response to budget cuts and escalating costs, **Nasa is reevaluating** its ambitious Mars sample return mission aiming to develop a **more feasible and cost-effective approach**.

More on news:

- **NASA's Perseverance Rover, nicknamed Percy, in 2023** created the **first sample depot on another world by putting down ten rock sample tubes that are slated to be returned to Earth as part of the Mars Sample Return Campaign**.
- One problem is that the plan is too expensive and will only be executed by the year 2040.
- **The space agency** is working with internal offices to develop a new plan based on **innovative and proven technology**.
- It is also soliciting architectural proposals from the industry to return samples in the 2030s along with lowering cost, risk and mission complexity.
- An independent review of the return program conducted last year referred to it as a highly constrained and challenging campaign that had unrealistic budget and schedule expectations from the beginning.



About Mars Sample Return (MSR):

- **Mars Sample Return (MSR) would be NASA's and ESA's (European Space Agency) ambitious, multi-mission campaign** to bring carefully selected samples to Earth.
- MSR would fulfill one of the **highest priority solar system exploration goals** from the science community.
- Returned samples would revolutionize our understanding of Mars, our solar system and prepare for human explorers to the **Red Planet**.

Other plans of NASA and ESA:

- According to the current plan, both **NASA and the European Space Agency** are meant to work together on the first effort to bring something back from Mars.
- **ESA's fetch rover** is supposed to take the samples collected by Perseverance and take them to a NASA-provided Mars ascent vehicle which will then launch into Mars's orbit.
- An **Earth Return Orbiter** will take these samples from the ascent vehicle and bring them back to our planet.

Reservoirs in Andhra Pradesh and Telangana face major shortage

Subject: Geography

Section: Indian physical

Context: The water levels in the reservoirs in the southern states of Andhra Pradesh and Telangana have witnessed a significant drop over the past few months

Reservoirs in Andhra Pradesh and Telangana

Srisailem Reservoir (Andhra Pradesh and Telangana)

The total percentage of water storage, as of January 4, in Srisailem Reservoir, is 21%. The percentage of the water level in the corresponding period last year was 43%

Nagarjuna Sagar Reservoir (Andhra Pradesh and Telangana)

It is one of the most impacted water reservoirs. The current year's water storage percentage stands at 13% which is way low in comparison to last year's 82%.

Somasila Reservoir (Andhra Pradesh)

This year's total water storage in Somasila Reservoir has shown a significant drop. As per the CWC data, the reservoir has recorded at 36%. Last year, the storage percentage was 91%.

Yeleru Reservoir (Andhra Pradesh)

The Yeleru Reservoir has seen a significant drop in water level. The percentage for the current year is 34%. Whereas, the authorities recorded 74% water during this time in 2023.

Kandaleru Reservoir (Andhra Pradesh)

The water storage level stands at 13% in comparison to last year's 78% in 2023.

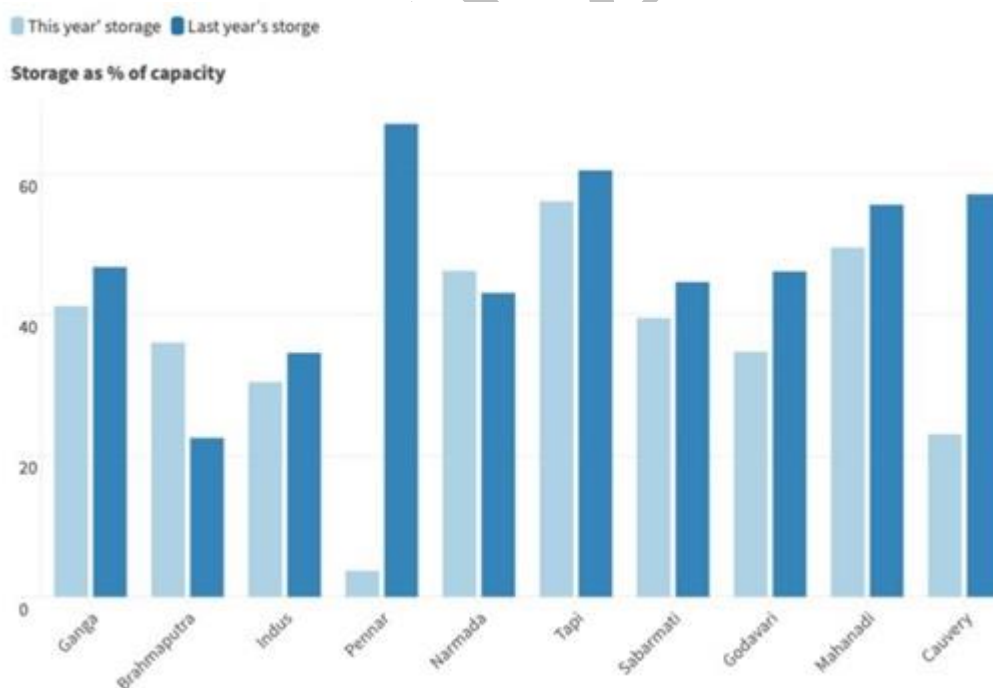
India's parched rivers: At least 13 without water, much lower than same period last year

Subject: Geography

Sec: Indian Phy Geo

Context:

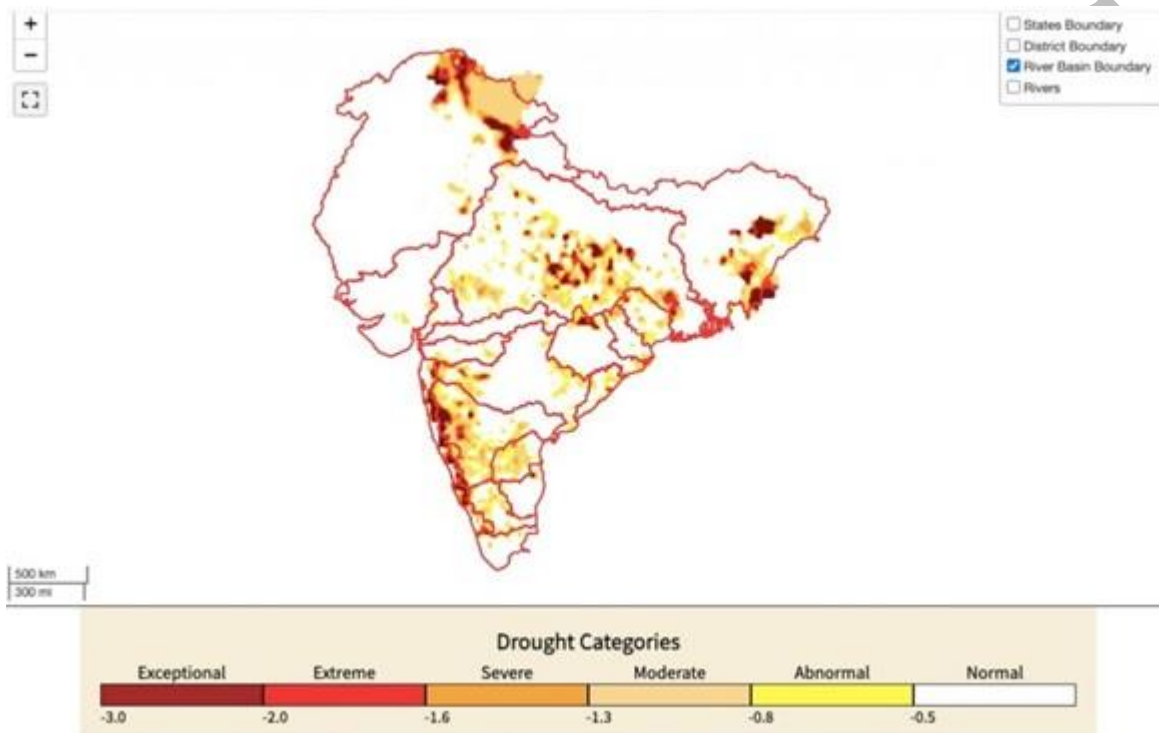
- At least **13 rivers** between **Mahanadi** and **Pennar** currently have **no water**, as per the **Central Water Commission (CWC)**.
- They include **Rushikulya, Bahuda, Vamsadhara, Nagavali, Sarada, Varaha, Tandava, Eluru, Gundlakamma, Tammileru, Musi, Paleru** and **Munneru**.



Details:

- These **rivers** span **Andhra Pradesh, Telangana, and Odisha** across **86,643 sq km**, draining into the **Bay of Bengal**. Approximately **60%** of this **basin area** is **agricultural land**.
- **Key urban areas** within the basin include **Visakhapatnam, Vizianagaram, East Godavari, West Godavari, Srikakulam** and **Kakinada**.
- Data shows a **continuous decrease in basin storage**, reaching **zero** by **March 21**, compared to last year's **32.28% capacity** around the same time.
- **Andhra Pradesh and Telangana** experienced '**large deficits**' since **March 1**, with **65 and 67 per cent** respectively.

- The water shortage in river basins adversely affects **socio-economic conditions, livelihoods, and agriculture in the region.**
- While **Cauvery, Pennar,** and other rivers also **face water storage deficiencies,** Ganga basin storage is below half its capacity, affecting **millions in agricultural regions.**
- **Narmada, Tapi, Godavari, Mahanadi,** and **Sabarmati** basins have **varying levels of storage capacity,** with some considered '**normal**' or '**better than normal.**'
- **Significant portions of India** are experiencing '**abnormal**' to '**exceptional**' drought levels, worsening compared to the previous year.
- **India's major reservoirs** are at **36% capacity,** with **six completely dry** and **86 below 40% capacity,** predominantly in the **southern states, Maharashtra, and Gujarat.**



River	Origin	Destination	Features/Major tributaries
Mahanadi	Sihawa, Chhattishgarh	Bay of Bengal	Seonath, Jonk, Hasdeo, Mand, Ib, Ong, and Tel
Rushikulya	Rushimala Hills (Odisha), part of the Daringbadi hills of the Eastern Ghats range.	Bay of Bengal at Puruna Bandha in Ganjam	Baghua, the Dhanei, the Badanadi
Bahuda	Khondalit terrain of the Eastern Ghats at Andanda, Ganjum, Odisha	Bay of Bengal	
Vamsadhara	Originates on the border of Thuamul Rampur in the Kalahandi district and Kalyansinghpur in the Rayagada district of Odisha.	Joins the Bay of Bengal at Kalingapatnam, Andhra Pradesh.	Mahendratanya River,
Nagavali	Originates from a hill near Lakhbahal village in Thuamul Rampur block of Kalahandi District, Odisha.	merged in the Bay of Bengal near Kallepalli village near Srikakulam, Andhra Pradesh.	Jhanjavati, Barha, Baldiya, Satnala, Sitagurha, Srikona, Gumudgedda, Vottigedda, Suvarnamukhi, Vonigedda, Relligedda and Vegavati.
Sarada	Eastern Ghats, Visakhapatnam district of Andhra Pradesh.	Bay of Bengal	Visakhapatnam is the major city in the basin. Yelamanchili and Anakapalli are important towns in the basin.
Varaha	Narsipatnam Hills in Visakhapatnam District, Andhra Pradesh	Bay of Bengal	Flows through the town of Periyakulam in Theni district of the state of Tamil Nadu

Tandava	Originates in the Eastern Ghats, Andhra Pradesh .	Bay of Bengal	Tuni town is on the right bank of this river and Payakaraopet town is on the left bank.
Eluru	East Godavari, Andhra Pradesh, India	Bay of Bengal	
Gundlakamma	Nallamala Hills, Andhra Pradesh	Bay of Bengal	Largest of all the rivers that originate from the Nallamalla Hills. Tributaries: Chamavagu, Rallavagu, Pogullavagu, Duvvaleru, Jampaleru, Tigaluru, Koneru and Chilakaluru
Musi	Ananthagiri Hills, near Vikarabad, Telangana.	flows into Himayat Sagar and Osman Sagar	A major tributary of the Krishna River . Hyderabad city is located on this river.
Paleru	Velikonda range hills, Andhra Pradesh	Mukteswarapuram, Andhra Pradesh	A tributary of the Krishna river
Munneru	Warangal District of Telangana		A left tributary of the Krishna River. Named after Rishi Maudgalya
Pennar	Nandi hills, Karnataka	Bay of Bengal	Kunderu, Sagileru, Jayamangali, Chitravathi, Papagni, Cheyyeru.

Source: [DTE](#)

Ladakh's protest, a hunger for justice

Subject: Geography

Section: Indian Phy geo

Climate Change threat to Ladakh region:

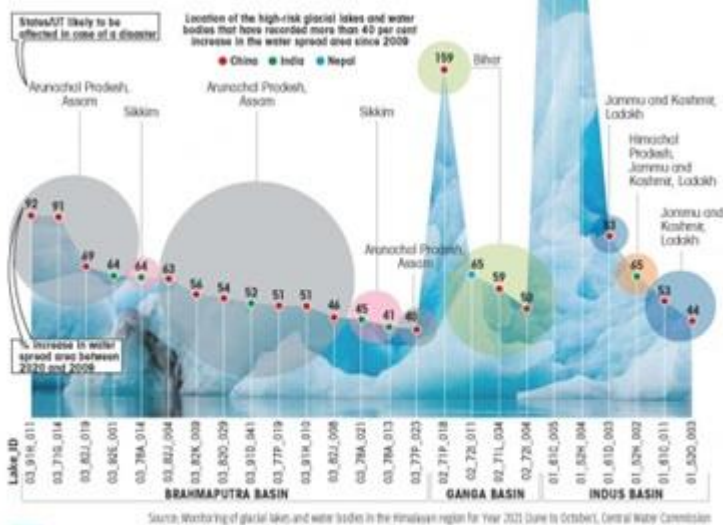
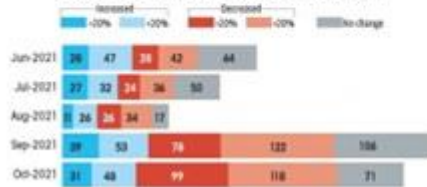
- **Climate change** poses several threats to **Ladakh**, significantly impacting its **environment** and **communities** over the last two decades. The region has experienced numerous **catastrophic events**, such as **floods, landslides, and extreme rainfall**.
- Notable incidents include the **deadly flash floods in Leh in August 2010**, resulting in 255 deaths, and **glacial lake outburst floods (GLOFs) in August 2014 and August 2021**, which caused substantial damage to infrastructure.
- Research indicates an **increase in the number and size of glacial lakes** in the **Himalayas** due to **global warming**, leading to **glacier shrinkage** and **heightened GLOF risks in Ladakh**.
- This situation is exacerbated by **permafrost degradation**, triggering **mudflows**, and an **observed slight increase** in the **region's minimum temperature over recent years**, indicating a **warming trend**.
- The challenges posed by **climate change** are further compounded by **human activities**. The burgeoning interest in **mining** and **renewable energy development**, along with a **rise in tourism**, introduces additional **environmental pressures**.
- **Increased vehicular pollution** accelerates **snow and ice melting**, while **mining activities** risk enhancing **slope instability** and **making areas more prone to landslides**.
- Furthermore, **dust from mining activities settling on glaciers** is likely to **hasten their melting**, presenting a **multifaceted threat** to the **region's ecological balance** and the **well-being of its inhabitants**.

STATE OF CLIMATE

MELTING GLACIERS

There are 25 glacial lakes and water bodies in India, China, and Nepal that have seen a 40% increase in water spread area since 2009. They pose a great threat to seven Indian states and Union Territories and need to be monitored closely.

In October 2021, 31 glacial lakes and water bodies showed an increase in area by 20%



342 State of India's Environment 2022: In Figures

Glacial lake outburst floods (GLOFs)

- A glacial lake outburst flood is a type of **catastrophic flood** that occurs when the dam containing a glacial lake fails, releasing a large volume of water.
- This type of flood is typically caused by the **rapid melting of glaciers** or the **buildup of water in the lake** due to heavy precipitation or the **inflow of meltwater**.
- In February 2021, Chamoli district in Uttarakhand witnessed flash floods which are suspected to have been caused by GLOFs.
- **Causes:**
 - These floods can be triggered by a number of factors, including changes in the volume of the glacier, changes in the water level of the lake, and earthquakes.
 - According to NDMA (National Disaster Management Authority), glacial retreat due to climate change occurring in most parts of the Hindu Kush Himalayas has given rise to the formation of numerous new glacial lakes, which are the major cause of GLOFs.

Some important glaciers in the Ladakh region:

Glaciers	Description
Parkachik Glacier	<ul style="list-style-type: none"> • It is a mountain glacier in Kargil, Ladakh, India. • Located at Parkachik, it is a mass of ice moving slowly down the Nun-Kun slopes. This ice mass falls finally into the Suru River, providing views of the huge ice fall.
Siachen Glacier	<ul style="list-style-type: none"> • Located in the eastern Karakoram range in the Himalayas, it is near the northeast endpoint of the Line of Control between India and Pakistan.

Machoi Glacier

- At 76 km (47 mi) long, it's the **longest glacier** in the **Karakoram** and the **second-longest** in the **non-polar areas of the world**.
- Its altitude ranges from 5,753 m (18,875 ft) at **Indira Col** on the **India–China border** down to 3,620 m (11,875 ft) at its terminus.
- Since **1984**, the **entire Siachen Glacier**, including **all major passes**, has been **under India's administration**, within the **union territory of Ladakh**, despite Pakistan's territorial claim over it.
- The **glacier** is positioned **south of the drainage divide** between the **Eurasian Plate** and the **Indian subcontinent**, in a region often referred to as the "**Third Pole**" due to its **extensive glaciation**.
- It **lies** between the **Saltoro Ridge** to the **west** and the **main Karakoram range** to the **east**.
- It is a 9-kilometer-long glacier in the **Himalayan Range** in **Jammu and Kashmir and Ladakh, India**.
- It is situated 30 kilometres **west** of **Drass, Ladakh, India** and **8 kilometers east** from **Sonamarg** on the **southern side** of NH 1D at **Zojila**.
- The glacier is the **source** of the **Sind River** which flows **westwards**, and the **Dras River** which flows **eastwards**.

Shafat Glacier

- **The Shafat Glacier — Parkachik Glacier** is a 14-kilometre (9 mi) long glacier in the **Himalayan Range in Ladakh, India**.
- The melt waters add to the flow of the **Suru River** which is a tributary of the **Indus River**.
- The **Shafat Glacier/Parkachik Glacier** is a **broken, ice-falling glacier** melting at an alarming rate due to **Global warming**.
- It is located in the **Siachen region**.

Chumik Glacier

- Located on the **west** of **Saltoro ridge**, it is a 4-mile-long offshoot of the **Bilafond Glacier**.
 - **Bilafond Glacier** is located in the **Siachen region** across the **Karakoram Range** in **Pakistan**. It is a **main source** of the **Saltoro River**. It is under **Pakistani control**.

Source: [TH](#)

India's trade reliance on China and EU rising: UN trade body

Subject: Geography

Section: Indian Phy geo

Context:

- According to report by the **United Nations Conference on Trade and Development (UNCTAD)**,
- India's trade reliance on **China and the European Union** is rising as global trade is witnessing a marked shift along geopolitical lines.

More on news:

- The **UNCTAD estimates**, based on national statistics, showed that **India's dependence on China and the European Union (EU) grew by 1.2 per cent** while its reliance on **Saudi Arabia slid by 0.6 per cent**.
- This comes in the **backdrop of major supply chain** reset following the pandemic and the **Russia-Ukraine war** that had sent food and fuel prices to record highs.
- This came despite India's efforts to cut reliance on **China by implementing its flagship Production-Linked Incentive (PLI) scheme** and **Quality Control Orders (QCOs)** largely to limit entry of cheap Chinese products.
- **UNCTAD's estimates** showed a major shift in trade due to the ongoing **Russia-Ukraine war**.
- While **Russia's trade dependence on China** surged by a **record 7.1 per cent**, its **reliance on the EU slid by 5.3 per cent**.
- The **US** managed to cut reliance on **China by 1.2 per cent in 2023** and increase its trade dependence on the **EU and Mexico**.

Trends seen in trade:

- During the last two years, **the geographical proximity of international trade** has remained relatively constant, showing minimal nearshoring or far-shoring trends.
- The report showed that global trade declined in most sectors, **except for pharmaceuticals, transportation equipment, and road vehicles, particularly, electric cars**.
- Among the sectors where the value of trade declined by more than **10 per cent during 2023** are **apparel, chemicals, energy metals, office equipment, and textiles**.

Dependance of an economy:

- The dependence of an economy on another is calculated as the ratio of their bilateral trade over the total trade of the dependent economy.
- Change is computed as a four quarter average of this ratio relative to the same period in the previous year.

What is Kallakkadal, which has flooded houses in Kerala's coastal areas?

Subject: Geography

Section: Indian Physical Geo

Context:

- Hundreds of houses have been **flooded in several coastal areas of Kerala** due to high sea waves, also known as swell waves, since Sunday.

More on news:

- The worst affected regions include **Alappuzha, Kollam, and Thiruvananthapuram districts**.
- Such flooding events are called **swell surge or Kallakkadal in Malayalam**.

What is Kallakkadal?

- **Kallakkadal is essentially coastal flooding** during the pre-monsoon (April-May) season by swell waves on the southwest coast of India.
- **Kallakadal/Swell surge are flash flood events** that take place without any noticeable advance change in local winds or any other apparent signature in the coastal environment.
- The term Kallakkadal, used by local fishermen, is a combination of two Malayalam words, including **Kallan and Kadal**.
- **“Kallan means thief and Kadal means sea.**
- In spoken language, these words were combined and pronounced as **Kallakkadal, meaning ocean that arrives as a thief**.
- **In 2012, the term was formally approved by the United Nations Educational, Scientific and Cultural Organization (UNESCO).**

Characteristics of kallakadal:

- This phenomenon occurs mostly during **pre-monsoon season** and sometimes during post monsoon.
- **It continues for a few days and** inundates the **low lying coasts**.
- During high tide the run-up, water level can reach as much as **3–4 m above Maximum Water Level (MWL)**.

What causes Kallakkadal?

- Kallakkadal is caused by **waves that are formed by an ocean swell**, hence the name swell surge.
- Kallakkadal events are caused by swells propagating from the **Southern Indian Ocean of 30°S**, from the **region between Africa and Australia**.
- Ocean swells occur not due to the local winds, but rather due to distant storms like hurricanes, or even long periods of fierce gale winds.
- During such storms, **huge energy transfer takes place from the air into the water**, leading to the formation of **very high waves**.
- Such waves can **travel thousands of kilometers from the storm center until they strike shore**.
- Usually, **Kallakkadal is a consequence of the strong winds** in the **southern part of the Indian Ocean**, where an ocean swell is generated, and the waves then travel north to reach the coast in two or three days.
- Kallakkadal occurs without precursors or any **kind of local wind activity** and as a result, it has been very difficult for the coastal population to get an advance warning.
- However, **early warning systems like the Swell Surge Forecast System —launched by the Indian National Centre for Ocean Information Services (INCOIS) in 2020 —** give forewarning seven days in advance.

Why is Kallakkadal different from tsunami?

- Kallakkadal came under the spotlight after the 2004 tsunami that killed more than 10,000 people.
- **Kallakkadal is often mistaken to be a tsunami**, which is a **series of enormous waves created by an underwater disturbance usually associated with earthquakes occurring below or near the ocean**.
- **Tsunamis are caused by landslides or earthquakes in the ocean bottom**, whereas **Kallakkadal are caused by meteorological conditions in the Southern Ocean, 30° South**.

Bengaluru and Cape Town: A tale of two cities hit by water scarcity

Subject: Geography

Section: Indian physical geography

Context:

- With Bengaluru facing **severe water shortage**, many have compared the city's predicament to **Cape Town's in 2015-18**.

The Cape Town water crisis:

- **Cape Town faced a serious water shortage between 2015 and 2018**, which peaked around 2017.
- It was characterized by critically low levels of **water in the city's reservoirs**.
- The scarcity was such that the prospect of "**Day Zero**"- **the day when municipal authorities** would effectively cut water supply due to empty reserves, and residents would have to queue up for a daily ration of water — **defined life in the city**.
- This would have made Cape Town the first major city in the **world to "run out" of water**.
- The crisis was caused by a prolonged period of below-average rainfall, **resulting in a drought across the Western Cape**.
- This resulted in the water levels in **Cape Town's reservoirs dropping significantly**.

Bengaluru water crisis- Low rainfall a key reason:

- The crisis in Bengaluru is caused by **scanty rainfall in the Cauvery basin** — **which accounts for 60% of the city's water supply** — **and the depletion of its groundwater reserves**.
- Like in Cape Town, Bengaluru's water reservoirs have fallen to critically low levels due to this.
- At the peak of the crisis, **Cape Town's Theewaterskloof Dam**, the single largest source of water in the city, was filled to only 11.3% of its capacity.
- Areas like **Varthur, Marathahalli, Bellandur, Byrathi, Hoodi, Whitefield, and Kadugodi** are completely dependent on water tankers to meet daily water needs.

Urbanization also to blame

- Beyond **low rainfall, rapid, unplanned urbanization** has played a significant role in the crisis in both Cape Town and Bengaluru.
- In Cape Town, **as the city expanded, existing water infrastructure** (reservoirs, pipelines and treatment plants) struggled to keep up with demand.
- Bengaluru too has seen something similar.
- In the 1800s, the city had 1,452 water bodies, **with roughly 80% of its area covered in greenery**. **Now, only 193 water bodies remain, and green cover is below 4%**.

Drastic impact on daily lives:

- **Water scarcity has drastically impacted** the daily lives of citizens in Bengaluru, like it did in Cape Town.
- Restrictions have been imposed on water usage.
- At the peak of **Cape Town's water crisis**, citizens were allowed to use no more than 50 liters of water daily.
- Like in **Cape Town, Bengaluru's poor** are the worst hit in the crisis, with increased health risks arising due to the lack of water for sanitation and hygiene purposes.

Risk from glacial lake floods

Subject: Geography

Section: Physical geography

Context:

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

More on news:

- Glacial lakes are prone to **Glacial Lake Outburst Floods (GLOFs)**, the kind of events that have resulted in several disasters in the **Himalayan states** in recent years.
- The National Disaster Management Authority (NDMA)**, which operates under the **Union Ministry of Home Affairs**, has identified **188 glacial lakes** in the Himalayan states that can potentially be breached because of heavy rainfall.

What are GLOFs?

- GLOFs are disaster** events caused by the abrupt discharge of water from glacial lakes — **large bodies of water that sit in front of, on top of, or beneath a melting glacier.**
- As a glacier withdraws, it leaves behind a depression that gets filled with meltwater, thereby forming a lake.
- The more the glacier recedes, the bigger and more dangerous the lake becomes.
- Such lakes are mostly dammed by **unstable ice or sediment composed of loose rock and debris.**
- In case the boundary around them breaks, huge amounts of water rush down the side of the mountains, which could cause flooding in the downstream areas, which is referred to as a GLOF event.



Reasons for GLOFs:

- GLOFs can be triggered by various reasons, including **glacial calving**, where sizable ice chunks detach from the glacier into the lake, inducing sudden water displacement.
- Incidents such as **avalanches or landslides** can also impact the stability of the boundary around a glacial lake, leading to its failure, and the rapid discharge of water.
- GLOFs can **unleash large volumes of water, sediment, and debris downstream with formidable force and velocity.**
- Rising surface temperatures across the globe, including India, have increased the risk of GLOFs.
- The floodwaters can **submerge valleys, obliterate infrastructure such as roads, bridges, and buildings, and result in significant loss of life and livelihoods.**

Why are GLOFs under the spotlight?

- In recent years, there has been a rise in **GLOF events in the Himalayan region** as **soaring global temperatures have increased glacier melting.**
- Rapid infrastructure development** in vulnerable areas has also contributed to the spike in such incidents.

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

What is the situation in Uttarakhand?

- Uttarakhand has witnessed **two major GLOF events in the past few years**.
- The first took place in June 2013, which affected large parts of the state — **Kedarnath valley was the worst hit**, where thousands of people died.
- The second occurred in **February 2021, when Chamoli district was hit by flash floods due to the bursting of a glacier lake**.

Classification of lakes:

- As mentioned earlier, **Uttarakhand has 13 glacial lakes which are prone to GLOF**.
- Based on the analysis of available data and research from various technical institutions, these lakes have been categorized into **three risk levels: ‘A’, ‘B’, and ‘C’**.
- **Five highly sensitive glacial lakes fall into the ‘A’ category**.
- These include **Vasudhara Tal in the Dhauliganga basin in Chamoli district**, and **four lakes in Pithoragarh district — Maban Lake in Lassar Yangti Valley, Pyungru Lake in the Darma basin, an unclassified lake in the Darma basin, and another unclassified lake in Kuthi Yangti Valley**.

Sicilian volcano is blowing smoke rings in the sky. What are volcanic vortex rings?

Subject: Geography

Section: Physical geography

Context:

- Since last week, Mount Etna, the largest volcano in Europe, and among the world's most active and iconic volcanoes, has been sending up almost perfect rings of smoke into the air.

More on news:

- The rings are a rare phenomenon that scientists refer to as **volcanic vortex rings, which are produced roughly in the same way as the smoke rings that some cigarette smokers are able to blow out of their mouths.**
- **Etna is in almost constant activity, and has seen, since the year 1600,** at least 60 flank eruptions and many more summit eruptions.
- In recent years, summit eruptions have occurred in 2006, 2007-08, on two occasions in 2012, in 2018, and 2021; flank eruptions have taken place in 2001, 2002-03, 2004-05, and 2008-09.

About Mount Etna:

- **Mount Etna, which is sometimes referred to simply as Etna,** is an active volcano on the east coast of Sicily, the largest island in the Mediterranean Sea, lying just off the toe of the Italian "boot".
- **Etna's peak is the highest in Italy south of the Alps, and it is Europe's largest and one of the most active volcanoes.**
- Etna's summit has five craters, which are **responsible for most of the volcano's eruptions.**
- There are also **"flank" eruptions that occur out of 300-odd vents** of varying sizes along the slopes of the mountain.
- Etna has been a **World Heritage Site since 2013.**
- According to UNESCO, the volcano's eruptive history can be traced back 500,000 years. At least 2,700 years of this activity has been documented.



What are volcanic vortex rings?

- **Vortex rings are generated when gas, predominantly water vapor, is released rapidly through a vent in the crater.**
- The rings are produced by the explosion of gas bubbles within a narrow conduit, which shoots the gas at high speed toward the surface.
- **The vent that has opened up in Etna's crater is almost perfectly circular,** so the rings that have been seen above the mountain since April 2 are also circular.
- The phenomenon was **first observed at Etna and Vesuvius in Italy in 1724, and has been documented in an engraved plate from 1755.**
- In more recent times, **volcanic vortex rings have been observed at volcanoes such as Redoubt in Alaska, Tungurahua in Ecuador, Pacaya in Guatemala, Eyjafjallajökull and Hekla in Iceland, Stromboli in Italy, Aso and Sakurajima in Japan, Yasur in Vanuatu, Whakaari in New Zealand, and Momotombo in Nicaragua.**



- The volcanic smoke rings were produced in the same way as dolphins blow bubble rings.
- They compress the water in their mouths, and using their tongue they push it out of their mouths and create such a pressure that it forms a ring.
- The rings can remain in the air for up to 10 minutes, but tend to disintegrate quickly if conditions are windy and turbulent.

Nine years after the green panel's directions, the Yamuna floodplain is yet to be demarcated

Subject: Geography

Sec: Physical geo

Context:

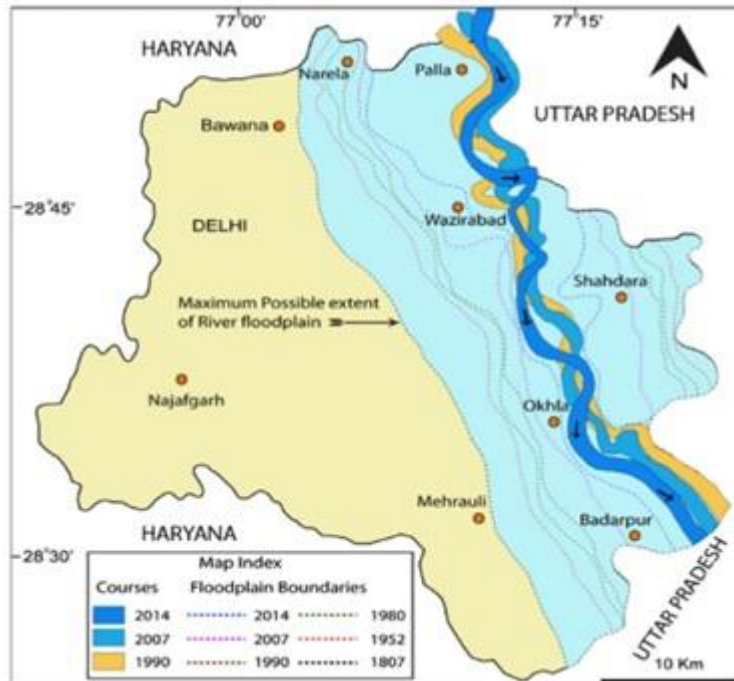
- The **physical demarcation** of the **Yamuna River's floodplain in Delhi**, which is essential for **identifying** and **protecting** this **sensitive ecosystem**, remains **incomplete despite explicit court orders**.

Details:

- **Illegal constructions** on the floodplain have **increased** since the **NGT's 2015 ruling**.
- The **encroachment on the Yamuna River's floodplain** has been **escalating** since the **1990s**, with **illegal colonies** and **various developmental projects** like the **Commonwealth Games Village, Yamuna Bank Metro Station, and Delhi Secretariat** being built on the floodplain.

Yamuna floodplain:

- The **Yamuna floodplain** was designated as a **protected area** free from construction in the **Delhi Masterplan of 1962**.
- The **Central Ground Water Authority** in **2000** also notified the **floodplains** as '**protected**' for **groundwater management**.
- The **South Asia Network on Dams, Rivers and People (SANDRP)** in **2020** found large parts of the **Yamuna floodplains** and **riverbed** were "**grossly abused**" due to **lax implementation**: **23 bridges** including rail, road, metro and barrages have been built; there was a bridge at every 800m.



'Maili se Nirmal Yamuna (From Dirty to Clean Yamuna) Revitalisation Plan, 2017:

- Launched by the **National Green Tribunal (NGT)** in response to a **2015 judgement**.
- **Aimed at restoring the floodplain by March 31, 2017.**
- Despite this **initiative** and the **NGT's stern warning** about **potential severe environmental disasters**, the **Delhi Development Authority (DDA)** failed to meet the **deadline** for **physically demarcating the entire floodplain** and **banned any construction** in the demarcated areas, indicating continued **non-compliance** with environmental protections.

Delhi floods:

- After the **severe floods of 2023**, the **National Green Tribunal (NGT)** initiated action by forming a **committee** led by the **Chief Secretary** to address the **issues of floodplain encroachment and demarcation in Delhi**.
- This action was similar to **directives issued eight years prior**.
- The **committee** failed to meet this timeline citing difficulties such as **inadequate maps and poor coordination between the Delhi Development Authority (DDA) and the Revenue Department**.
- The **NGT mandated a new flood risk measure for demarcation**, instructing that the **floodplain should be mapped considering a 100-year flood risk instead of the previous 25-year standard**. This adjustment means a significantly larger area will now need to be designated as floodplain, complicating the demarcation process further.

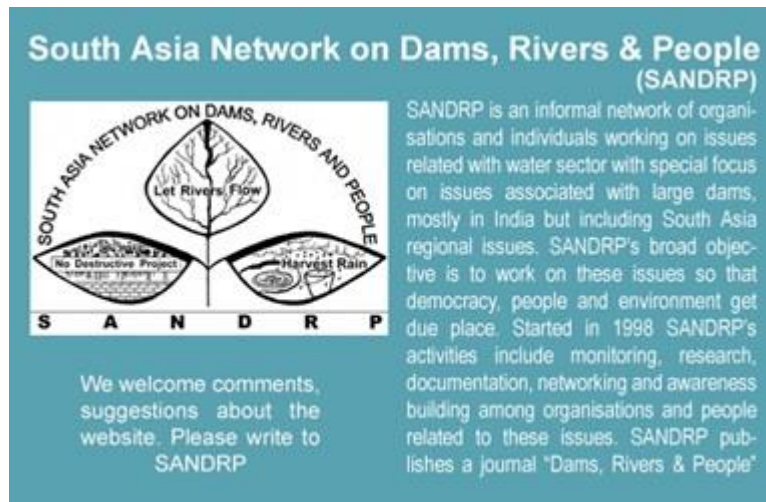
Yamuna River:

- **Yamuna River** (also known as **Jumna**), is the **major tributary** of the **Ganges River**.
- **Origin:** It rises in the **high Himalaya**, in the **Yamunotri Glacier**.
- **Course:**
 - The **1,376 km long Yamuna** flows solely through India, crossing **three states: Uttarakhand, Uttar Pradesh and Haryana**.
 - After rising in the high Himalayas, it flows in a southerly direction swiftly through the **Himalayan foothills** and, exiting **Uttarakhand**, onto the **Indo-Gangetic Plain**, along the border between **Uttar Pradesh and Haryana** state to the west. The **Eastern and Western Yamuna canals** are fed from the river at that point.
 - The **Yamuna** then passes **Delhi**, where it feeds the **Agra Canal**.
 - South of Delhi, and now wholly within **Uttar Pradesh**, it turns southeastward.
 - Near **Prayagraj (Allahabad)**, after a course of about 855 miles (1,376 km), the **Yamuna joins the Ganges (Ganga) River**. The confluence of the two rivers is an especially sacred place to Hindus and is the site of annual festivals as well as the **Kumbh Mela**, which is held every **12 years**.
- **Tributaries:**
 - Near **Dehradun**, the capital city of **Uttarakhand**, the Yamuna is joined by its biggest tributary, the **Tons River**.
 - The **Chambal River** is Yamuna's biggest tributary on the right.

- Other important tributaries of the Yamuna include the **Hindon, Sarda** and **Giri** rivers on the **right** and **Betwa** and **Sindh** on the **left**.

South Asia Network on Dams, Rivers and People (SANDRP)

- Started in **1998**
- **SANDRP** is an **informal network** working on issues related to **rivers, communities and large-scale water infrastructure** like **dams: their environmental and social impacts, their performance and issues related to the governance of rivers and dams.**
- **SANDRP** work focuses on outreach, awareness generation, dissemination and advocacy. To take this work forward, your comments and suggestions are welcome.



Source: [TH](#)

Remote Indonesia volcano Mount Ruang erupts again

Subject: Geography

Sec: Physical geo

Context:

- **Mount Ruang** in **North Sulawesi** in **Indonesia's remote outer region** erupted again on April 19, leading to significant volcanic activity including the emission of smoke and lava.
- The neighbouring **island of Tagulandang**.
- b frequent seismic and volcanic events are largely due to its location along the **Pacific "Ring of Fire."**

Mount Ruang:

- **Ruang** is the **southernmost stratovolcano** in the **Sangihe Islands arc, North Sulawesi, Indonesia.**
- It comprises an island 4 by 5 kilometres (2.5 mi × 3.1 mi) wide.
- The summit contains a **partial lava dome** and reaches some 725 metres (2,379 ft) in altitude. From its summit, **Klabat's peak** in the **south**, that of **Siau** to the **north**, and **Ternate** to the **east** can all be seen.



Pyroclastic flow:

- Also known as a **pyroclastic density current** or a **pyroclastic cloud**.

- It is a **fast-moving current** of **hot gas** and **volcanic matter** (collectively known as **tephra**) that flows along the ground away from a **volcano** at average speeds of 100 km/h (30 m/s; 60 mph) but is capable of **reaching speeds up to 700 km/h** (190 m/s; 430 mph).
- The **gases** and **tephra** can reach **temperatures** of about **1,000 °C (1,800 °F)**.
- **Pyroclastic flows** are the **most deadly of all volcanic hazards** and are produced as a result of **certain explosive eruptions**; they normally touch the ground and **hurtle downhill or spread laterally under gravity**. Their speed depends upon the density of the current, the volcanic output rate, and the gradient of the slope.

NOAA, ICRI confirm fourth global mass coral bleaching event in 2023-2024

Subject: Geography

Sec: Oceanography

Context:

- The **National Oceanic and Atmospheric Administration's Coral Reef Watch (CRW)** and the **International Coral Reef Initiative (ICRI)** have confirmed the **fourth global mass coral bleaching** event occurring between **February 2023** and **April 2024**, **impacting corals in 53 countries across five ocean basins**.

Details:

- This event marks the **second mass coral bleaching** in the **last decade**, following a similar event from **2014 to 2017**, and **coincides with record ocean heat** observed in **2023 and 2024**.
- About **25%** of **all marine species** rely on **coral reefs** at some point in their life cycle. The **death of corals from bleaching** affects these species and can lead to **altered ecosystem dynamics** as **other organisms like algae take over**.

What are Coral reefs?

- **Corals** are **marine invertebrates** or **animals not possess a spine**.
- Each coral is called a **polyp** and **thousands of such polyps live together to form a colony**, which grows when **polyps** multiply to make copies of themselves.
- **Corals** share a **symbiotic relationship** with **single-celled algae** called **zooxanthellae**.
- The **algae** provide the **coral** with **food and nutrients**, which they make through **photosynthesis**, using the **sun's light**.
- In turn, the **corals** give the **algae** a **home and key nutrients**. The **zooxanthellae** also **give corals their bright colour**.
- **Australia's Great Barrier Reef** is the **world's largest reef system** stretching across **2,300 km**.
- It hosts **400 different types of coral** and gives shelter to **1,500 species of fish** and **4,000 types of molluscs**.

Coral Bleaching:

- **Coral Bleaching** happens when **hard corals** experience **stress** in their **environment** due to **changes in temperature**, **pollution** or **high levels of ocean acidity**.
- Under stressed conditions, the **zooxanthellae** or **food-producing algae** living inside coral polyps start producing **reactive oxygen species**, which are **not beneficial to the corals**.
- So, the **corals expel the colour-giving zooxanthellae** from their polyps, which exposes their **pale white exoskeleton**, giving the corals a bleached appearance.
- This also **ends the symbiotic relationship** that helps the corals to survive and grow.
- **Factors contributing** to the **threat to coral reefs** include **increased sea surface temperatures**, **marine heatwaves**, **ocean acidification**, and **pollution**.

Impact of rising sea-surface temperature:

- The **World Meteorological Organization (WMO)** reported that **2023** was the **hottest year on record** for both the **atmosphere and oceans**. **Marine heatwaves** affected **nearly one-third** of the **global ocean daily** in **2023**.
- **El Nino conditions**, which began in **July 2023**, **exacerbate sea warming** and have historically been linked to **periods of mass coral bleaching**.
 - **El Nino** is the **warmer-than-normal** phase of the **El Nino Southern Oscillation (ENSO)** phenomenon in the **equatorial Pacific Ocean**.
 - It is generally responsible for **higher-than-normal temperatures** on the **surface of seas** in most of the global ocean basins.
 - During **La Nina**, which is the **colder-than-normal** phase of the **ENSO**, the exact opposite happens.
- **Localised coral bleaching events** have also been **witnessed** in recent **La Nina** years, showing the **growing impact of general oceanic warming**. This happened in the **Great Barrier Reef**, the **largest coral reef off the coast of Australia**, in **2020 and 2022**, both **La Nina** years.

- **Coral bleaching events** are **predicted to increase in frequency and severity**, potentially becoming an **annual occurrence** by **2040-2050** according to recent climate models.
- The **importance of long-term data on coral reef conditions** was emphasized by experts, highlighting the need for continued monitoring and potentially innovative interventions to aid recovery and conservation efforts.

About the International Coral Reef Initiative (ICRI):

- Launched in **1994** by **Australia, France, Japan, Jamaica, the Philippines, Sweden, Britain and the United States**.
- Its members now include **45 countries** that represent **three-quarters of the world's coral reefs**.
- **India** is also a **member country** of this initiative.
- It is a **global partnership** between **Nations** and organizations which strives to preserve coral reefs and related ecosystems around the world.
- Its decisions are **not binding on its members**.
- The work of **ICRI** is regularly acknowledged in **United Nations documents**, highlighting the **Initiative's important cooperation, collaboration and advocacy role** within the international arena.
- **Objectives**
 - Encourage the adoption of **best practices** in the **sustainable management of coral reefs and associated ecosystems**
 - **Build capacity**
 - **Raise awareness at all levels** on the plight of coral reefs around the world.

Source: [DTE](#)

Ocean floor holds vital clues on weather patterns, says study by INCOIS scientists

Subject: Geography

Sec: Oceanography

Context:

- Scientists from the **Indian National Centre for Ocean Information Services (INCOIS)** have conducted a **study** emphasizing the **impact** of the **Andaman and Nicobar Islands** and the **Maldives** on the **currents of the Indian Ocean**.

Details:

- The research uncovered **deep-swirling patterns** in the **ocean's depths** that **move contrary to the surface currents**, and these patterns can **change direction and speed dramatically**.
- The study was led by scientists Raheema Rahman and Hasibur Rahaman, focusing on the **Indian Ocean's bathymetry**. It demonstrated **improvements in understanding the salinity, temperature, and currents of the upper ocean**, particularly near coastal areas.
- **Accurate forecasts of oceanographic parameters** such as **currents, temperature, and salinity** are **vital for predicting weather and climate** and are also significant for the **maritime industry**.
- The findings underline the importance of **bathymetric data** in improving our comprehension of **ocean dynamics**, which in turn **enhances the accuracy of ocean state, weather, and climate forecasts** for **countries** around the **Indian rim** and the **broader subcontinent**.
- The study, titled '**Impact of bathymetry on Indian Ocean circulation in a nested regional ocean model**,' was published in the journal Scientific Reports.

Ocean currents:

- **Ocean currents** are the **continuous, predictable, directional movement of seawater**, similar to **river flows but in oceans**.
- These massive movements of ocean water are **influenced by various forces**.
- **Ocean water movements** occur in two directions: **horizontally**, known as **currents**, and **vertically**, referred to as **upwellings or downwellings**.
- **Ocean currents** have a significant impact on humanity and the biosphere by influencing the climate.

Classification of Ocean Currents

- **Based on Depth:**
- **Surface Currents:** Comprise about 10% of all ocean water, existing in the upper 400 meters of the ocean.
- **Deep Water Currents:** Make up the remaining 90% of ocean water, circulating around ocean basins due to variations in density and gravity.
 - Density differences arise from variations in temperature and salinity.

- These currents typically originate in high latitudes, where colder temperatures increase water density, causing the water to sink into deep ocean basins.

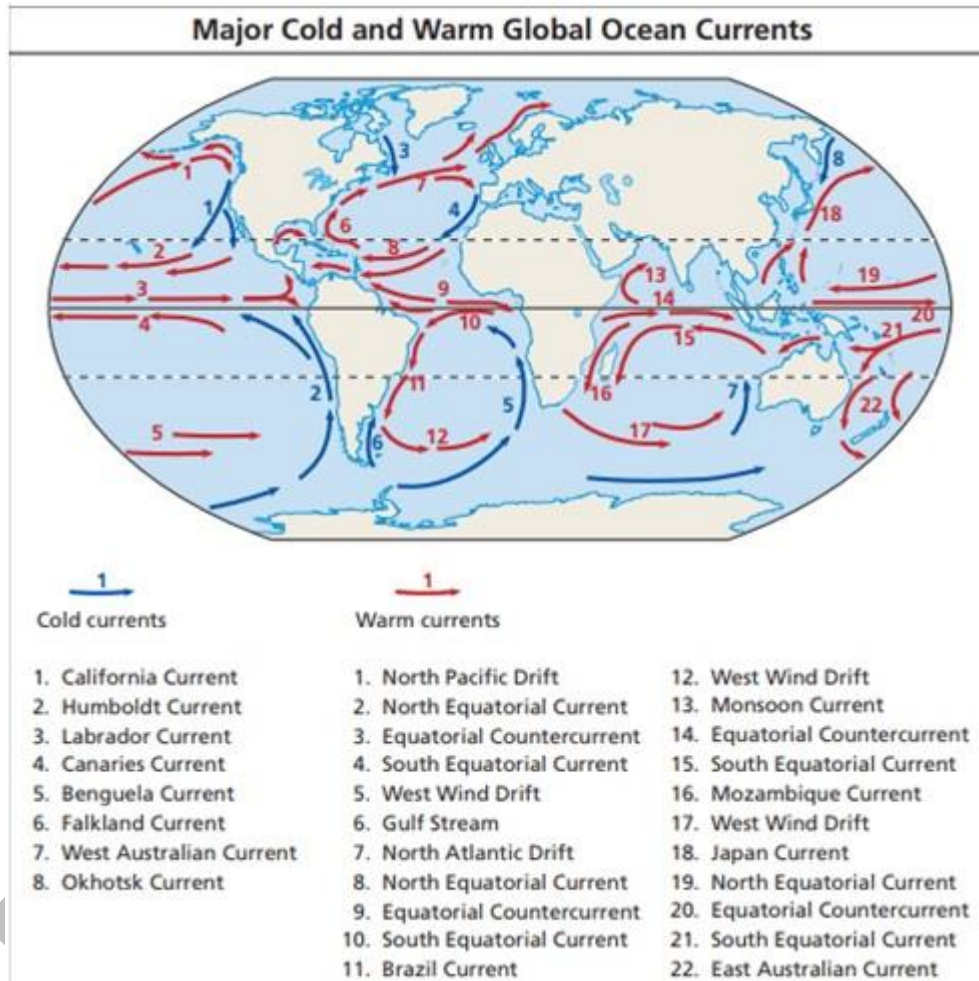
- **Based on Temperature:**

- **Cold Currents:**

- Transport cold water from high latitudes to low latitudes.
- Commonly found on the west coasts of continents in the low and middle latitudes, moving clockwise in the northern hemisphere and counterclockwise in the southern hemisphere.
- On the east coasts of continents in high latitudes in the Northern Hemisphere.

- **Warm Currents:**

- Move warm water from low to high latitudes.
- Generally observed on the east coasts of continents in the low and middle latitudes in both hemispheres.
- In the Northern Hemisphere, they are also found on the west coasts of continents in high latitudes.



Causes of ocean currents:

- Planetary Winds
- Variation in seawater temperatures
- Variation in water salinity
- Rotation of Earth
- Configuration of the coastline

Corals bred in a zoo have joined Europe's largest reef

Subject: Geography

Sec: Oceanography

Context:

- On Monday, divers with gloved hands gently nestled the self-bred corals from the World Coral Conservatory project among their cousins in Europe's largest coral reef at the Burgers' Zoo in the Netherlands.

More on news:


- This is the **first project where we started to keep these corals with a known origin.**
- It's among several projects worldwide seeking to address the **decline of coral reef populations, which are suffering from bleaching caused by rising sea temperatures.**
- Along with two zoos in France and the originator of the project—the Monaco Scientific Center—the zoo in the east of the Netherlands took in more than a dozen coral fragments from off the coast of Seychelles in east Africa.
- The World Coral Conservatory hopes to create a bank of corals in aquariums across Europe that could be used to repopulate wild coral reefs if they succumb to the stress of climate change or pollution.



About Corals:

- Vibrant and healthy reefs form when a **coral and an algae — zooxanthellae — start a symbiotic relationship.**
- The coral provides protection and compounds **zooxanthellae's need for photosynthesis.**
- The algae produces carbohydrates and helps remove the coral's waste.
- Corals are **central to marine ecosystems, and while these projects won't stem the tide of damage from human-caused climate change, they are seen as part of broader solutions.**
- Corals are **keystone marine species.**

Types of coral reefs

- **Fringing reef**- directly attached to a shore or borders it with an intervening shallow channel or lagoon
Eg: **Greater Caribbean region** 
- **Barrier reef**- separated from a mainland or island shores by deep channel or lagoon Eg: **Great Barrier Reef** 
- **Atoll reef**- more or less circular or continuous barrier reefs extends all the way around a lagoon without a central island Eg: **The Pacific Ocean** 

Coral Bleaching:

- **Bleaching occurs when coral under stress expels the algae** that gives them their vibrant colors.
- The algae is also a coral's food source, and if the bleaching lasts for too long or is too severe, the coral could die.
- In the **world's largest coral reef ecosystem, Australia's Great Barrier Reef**, bleaching affected 90% of the coral assessed in 2022.
- The **Florida Coral Reef, the third-largest, experienced significant bleaching last year.**

Places in news:

- **Burgers ocean: Arnhem, Netherlands.**
- **Burgers' Ocean is a tropical coral reef aquarium that holds eight million litres of water.**

- It is the largest living coral reef in Europe.

India got Wadge Bank in exchange for Katchatheevu: Tamil Nadu Congress

Subject: Geography

Sec: Mapping

Context:

- The **India-Sri Lanka international maritime boundary line (IMBL)** was delineated by a **1974 agreement** demarcating it in the **Palk Strait** and another **1976 agreement** demarcating it in the **Gulf of Mannar and Bay of Bengal**.



India got more out of the Palk Bay than Sri Lanka did:

- The **1974 agreement** between **India** and **Sri Lanka** allocated the **Palk Bay area**, which comprises **2,100 square nautical miles**, in a ratio favouring **India (1.02:1)**, giving **India** a slightly larger share than an equal division.
- Despite conceding **Katchatheevu Island** to **Sri Lanka**, **India** secured significant benefits from the **1974 agreement**, as outlined in a **2018 India Quarterly** article by **N Manoharan** and **Madhumati Deshpande**.
- **Two clauses in the 1974 Agreement** aimed to protect **Indian fishermen's interests**:
 - **Article 5** allowed the use of **Katchatheevu** for **drying nets and fish** and for **pilgrimage**, while
 - **Article 6** ensured the **free movement of vessels** in **Palk Bay**.
- The allowance for **fishing by Indian fishermen** in **Sri Lankan waters** was not specified in the **1974 Agreement**, leading to issues for the **Tamil Nadu fishing community** regarding **Katchatheevu**.
- It was the subsequent **1976 Agreement** that explicitly **prohibited Indian fishermen** from **fishing in Sri Lankan waters**, further complicating the situation.

Wadge bank:

- The **Wadge Bank** is a **resource-rich area south of Kanyakumari**, noted for **deep-sea fishing grounds** and **other resources**. Its size is estimated at **3,000 to 4,000 square miles**, contrasting significantly with the **285-acre Katchatheevu Island**.
- Historically, the **Wadge Bank** was a **major tropical trawl fishery site**, with **commercial fishing activities** by **Sri Lankan fishermen** dating back to at least the **1920s**. Between **May and October**, it is considered a **rich fishing ground** with **favourable weather conditions for fishing** compared to **European waters**.



India got ownership over Wadge Bank:

- The **1976 India-Sri Lanka maritime boundary agreement** acknowledges **India's sovereignty** over the **Wadge Bank**, located near **Cape Comorin** within **India's exclusive economic zone (EEZ)**, granting **India sovereign rights** over its resources.
- As a result of the agreement, **Sri Lankan fishermen and vessels** are currently **barred from fishing in the Wadge Bank**, with the pact also **securing India's rights to explore for petroleum and other minerals in the area**.
- **Initiatives** by the **Ministry of Petroleum and Natural Gas** to **explore oil in the Wadge Bank** have met with resistance from **Kanyakumari residents**.
- The **agreement allowed Sri Lankan fishermen access to the Wadge Bank** for fishing for a **limited three-year period**, **licensing only six Sri Lankan vessels to catch 2,000 tonnes of fish annually**.
- This was followed by a **five-year grace period** during which **India would sell 2,000 tonnes of fish annually to Sri Lanka at a mutually agreed price**.
- **Former High Commissioner of India to Sri Lanka, Ashok K Kantha**, highlighted the significance of the **1974 and 1976 agreements** as **foundational for subsequent maritime boundary clarifications and agreements with Sri Lanka and the Maldives**, emphasizing their role in building relations.

Section 144 imposed in Leh ahead of Sonam Wangchuk's 'Pashmina March'

Subject: Geography

Section: Mapping

Context: The Ladakh administration on Friday imposed prohibitory orders in Leh, banning public rallies just two days ahead of a proposed 'Pashmina March' by climate activist Sonam Wangchuk to the **Changthang region** to highlight shrinking grazing lands in the Union Territory and threats from China.

- The Changpa are a **semi-nomadic people**: they usually stay in one place for a few months in a row, near pastures where their sheep, yaks and Pashmina goats can graze
- They are mainly **found in the Changtang, a high plateau** that stretches across the **cold desert of Ladakh**.
- The process of migration from plain areas to pastures on mountains during summers and again from mountain pastures to plain areas during winters is known as **transhumance**.
- The **Pashmina goat** is a breed of goat inhabiting the plateaus in Tibet, Nepal, parts of Burma and neighbouring areas of Ladakh in Jammu and Kashmir, India.
- It is also known as '**Changthangi**', '**Changra**'.
- They are raised for **ultra-fine cashmere wool, also known as pashmina once woven**.
- Bureau of Indian Standards (BIS) has **published an Indian Standard for identification, marking and labelling of Pashmina products to certify its purity**.
- The certification will **help curb the adulteration of Pashmina** and also protect the interests of local artisans and nomads who are the producers of Pashmina raw material. It will also assure the purity of Pashmina for customers.



Additional information:

- **Chiru goat** also known as the Tibetan antelope is a ‘near threatened’ species whose underfur is used for making the famous **Shahtoosh shawls**.

Pin code MH-1718: In Antarctica, a post office with Indian address

Subject: Geography

Section: Mapping

Context:

- Almost four decades later, letters meant for Antarctica will now have a **new PIN code, MH-1718**, with the **Department of Posts** opening a second branch of the post office on **Bharati research station in Antarctica**.

More on news:

- India’s two research bases on **Antarctica i.e. Maitri and Bharati are located 3,000 km apart**.
- Both branches are part of the **Goa postal division**.
- In 1984, **shortly after India’s first foray to Antarctica**, its first post office on the icy continent was set up at **Dakshi Gangotri — the nation’s first scientific base there**.
- **Dakshin Gangotri submerged in ice in 1988-89** and was subsequently decommissioned.
- On January 26, 1990, a post office branch was set up at **India’s Maitri research station on Antarctica**.
- The impression, ‘**Maitri North Goa**’, from the Antarctic research base is a famed “collector’s item”.

PINCODE MH-1718:

- Almost four decades later, letters meant for **Antarctica will now have a new PIN code, MH-1718**, with the **Department of Posts** opening a second branch of the post office on Bharati research station in Antarctica.
- The letters meant for the post office in Antarctica are sent to the **National Centre for Polar and Ocean Research (NCPOR), the nodal agency for India’s polar expeditions, in Goa**.
- An Indian post office can only be in the **jurisdiction of Indian land**.
- **Antarctica** gives a unique opportunity to have an **Indian post office in a land** which is foreign and does not belong to us.
- So, it serves a strategic purpose in terms of asserting presence on the continent.

What is Cancellation:

- When a scientific expedition to the continent leaves from the **NCPOR, a researcher is usually tasked with carrying the consignment of letters**.
- At the research base, the letters are ‘**canceled**’, **brought back, and returned via post**.
- **Cancellation** is a marking on a **postage stamp or stationery done to deface the stamp and prevent reuse**.
- Typically, ‘**canceled**’ letters include the date and post office location where the stamps were mailed.

Research stations in Antarctic:

Dakshin Gangotri

- Dakshin Gangotri was the **first Indian scientific research base station** established in Antarctica, as a part of the Indian Antarctic Program.
- It has **weakened and become just a supply base**.

Maitri

- Maitri is **India's second permanent research station in Antarctica.**
- It was built and finished in Maitri and is situated on the rocky mountainous region called Schirmacher Oasis.
- India also built a freshwater lake around Maitri known as **Lake Priyadarshini.**

Bharti

- **Bharti, India's latest research station** operation since 2012.
- It has been constructed to help researchers work in safety despite the harsh weather.
- It is India's **first committed research facility** and is located about 3000 km east of Maitri.

About Indian Antarctic Program:

- The **Indian Antarctic Programme is a multi-disciplinary, multi-institutional programme** under the control of the **National Centre for Polar and Ocean Research, Ministry of Earth Sciences, Government of India.**
- It was initiated in **1981 with the first Indian expedition to Antarctica.**
- The programme gained global acceptance with **India's signing of the Antarctic Treaty** and subsequent construction of the Dakshin Gangotri Antarctic research base in 1983, superseded by the Maitri base from 1989.
- The newest base commissioned in **2012 is Bharati.**
- The **Indian Antarctic Programme is bound by the rules of the Antarctic Treaty System, which India signed in 1983.**
- The expedition will duly follow all protocols **for the deployment of men and material as per Council of Managers of National Antarctic Programs (COMNAP).**

About COMNAP

- It is an **international association, formed in 1988**, which brings together our Members - the governmental **National Antarctic Programs.**
- Countries engaging in Antarctic research that are also signatories to the Antarctic Treaty and the Environmental Protocol may participate in COMNAP.
- **COMNAP** is one of only three permanent Observer organizations to the annual **Antarctic Treaty Consultative Meetings (ATCMs).**

The all-weather road gives a strategic fillip to Ladakh

Subject: Geography

Section: Mapping

Context:

- **Border Road Organisation's (BRO)** recent accomplishment in **Ladakh** involves **connecting Himachal Pradesh and Leh** through the **Nimmu-Padam-Darcha road**, enhancing **strategic depth and security logistics.**



Nimmu-Padam-Darcha road:

- The development facilitates a safer location for an ordnance depot in the **Zaskar Valley**, away from **China and Pakistan's observation.**
- **Nimmu** village is in Indus Valley, **Padam** village is in **Zaskar Valley**, Kargil district of Ladakh, and **Darcha** village is in **Lahul-Spiti Valley** of Himachal Pradesh.
- The road includes the **world's highest tunnel at Shinku La Pass** (16,580 feet), promoting surface movement from **Leh to Lahaul-Spiti**, and is under construction with expected completion by 2025.


- This initiative marks the **first all-weather road connection** between **Ladakh** and the **rest of India**, addressing logistics challenges during Ladakh's harsh winters.
- The **Nimmu-Padam-Darcha road** is the **shortest of three axes to Ladakh**, significantly reducing distance compared to existing routes, thereby enhancing troop mobilization speed and safety.
- However, the project has sparked concerns among locals about potential **cultural and environmental impacts**, including **landscape changes** in **Zaskar** and **unnecessary construction** in the **Kargil-Zaskar** section.
- **Mountain passes along the road:**
 - Rohtang Pass
 - Baralacha la
 - Nakee la
 - Lachulung la
 - Tanglang la
 - Fotu la
 - Namika la
 - Zoji la
 - Pensi la
 - Shinku la/Shingo la

Source: [TH](#)

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Russia-Kazakhstan floods: Is climate change warming the Ural Mountains and western Siberia?

Subject: Geography

Section: Mapping

Context:

- The recent **catastrophic flooding** along the **continental borders** of **Asia** and **Europe** in the **Ural mountains** has sparked widespread **concern** and debate over whether it is a **consequence of climate change**.

details:

- Evidence indicates that both the **Ural region**, which spans from the **Arctic Ocean** to the **Caspian Sea**, and **Kazakhstan** are **experiencing significant warming**.
- Research, including a **2020 study** from the **Ural Federal Agrarian Research Center of the Russian Academy of Sciences**, confirms that **global warming** has notably **impacted the climate of the Ural region**, with recorded **increases in air temperature across various cities** and **changes in precipitation patterns**.
- The study found that the **most pronounced warming occurred in winter**, while **spring saw the least warming**. There was also an **observed increase in annual precipitation in several locations**.
- Furthermore, a study by **Copernicus**, the **European Union's Earth observation program**, highlighted an **acceleration in the rate of warming towards the end of the 20th century**.
- **Kazakhstan**, a country with a history of **environmental challenges**, has seen a **1.37°C increase in air temperature over the last century**, with **predictions of a further 4°C rise by 2050**, exacerbating desertification risks.
- The flooding in the **Urals** and **western Siberia**, described as the **worst in 70 years**, has led to the **evacuation of over 100,000 people** due to the **overflowing of the Ural, Tobol, and Irtysh rivers**.

Ural river:

- The **Ural** is a **river** flowing through **Russia** and **Kazakhstan** on the **continental border between Europe and Asia**.
- It **originates** in the **southern Ural Mountains** and discharges into the **Caspian Sea**.
- At 2,428 kilometres (1,509 mi), it is the **third-longest river in Europe** after the **Volga** and the **Danube**, and the **18th-longest river in Asia**.
- The **Ural rises** near **Mount Kruglaya** in the **Ural Mountains**, flows south parallel and west of the north-flowing **Tobol**, through **Magnitogorsk**, and around the southern end of the **Urals**, through **Orsk** where it turns west for about 300 kilometres (190 mi), to **Orenburg**, where the **river Sakmara joins**.
- From **Orenburg** it continues **west**, passing into **Kazakhstan**, then turning south again at **Oral**, and meandering through a broad flat plain until it reaches the **Caspian** a few miles below **Atyrau**, where it forms a fine **'digitate' (tree-like) delta**.

Tobol river:

- The **Tobol** is a river in **Western Siberia** (in **Kazakhstan** and **Russia**) and the main (left) tributary of the **Irtysh**.
- Its length is 1,591 km (989 mi), and the area of its drainage basin is 426,000 km² (164,000 sq mi).

Irtysh river:

- The **Irtysh** is a river in **Russia**, **China**, and **Kazakhstan**. It is the **chief tributary** of the **Ob** and is also the **longest tributary river in the world**.
- The river's source lies in the **Mongolian Altai** in **Dzungaria** (the northern part of Xinjiang, China) close to the border with **Mongolia**.
- The **Irtysh's main tributaries** include the **Tobol**, **Demyanka** and the **Ishim**.
- The **Ob-Irtysh system** forms a **major drainage basin in Asia**, encompassing most of **Western Siberia** and the **Altai Mountains**.

About Ural mountains:

- The **Ural Mountains** are a mountain range in **Eurasia** that runs **north-south mostly through Russia**, from the **coast of the Arctic Ocean** to the **river Ural** and **northwestern Kazakhstan**.
- The mountain range **forms part of the conventional boundary** between the **continents of Europe and Asia**.
- **Vaygach Island** and the islands of **Novaya Zemlya** form a **further continuation of the chain to the north into the Arctic Ocean**.
- The **average altitudes** of the **Urals** are around **1,000–1,300 metres** (3,300–4,300 ft), the **highest point** being **Mount Narodnaya**.
- The mountains **lie within the Ural geographical region** and significantly **overlap with the Ural Federal District** and the **Ural economic region**.
- Their **resources** include **metal ores, coal, and precious and semi-precious stones**.

- Since the **18th century**, the mountains have contributed significantly to the **mineral sector of the Russian economy**. The region is **one of the largest centres of metallurgy and heavy industry production in Russia**.
 - **Eastern regions are rich in chalcopyrite, nickel oxide, gold, platinum, chromite and magnetite ores**, as well as in **coal** (Chelyabinsk Oblast), **bauxite, talc, fireclay and abrasives**.
 - The **Western Urals** contain deposits of **coal, oil, natural gas** (Ishimbay and Krasnokamsk areas) and **potassium salts**.
 - **Both slopes are rich in bituminous coal and lignite**, and the **largest deposit of bituminous coal** is in the **north** (Pechora field).
- The Urals are among the **world's oldest extant mountain ranges**.

Source: [DTE](#)

Strategic military infra upgrade in the works for Andaman & Nicobar Islands

Subject: Geography

Section: Mapping

Context:

- The **Andaman and Nicobar Islands** are undergoing **significant military infrastructure enhancements**, which include **revamped airfields, jetties, additional logistics, storage facilities, habitats for troops, and a sophisticated surveillance infrastructure**.

Details:

- These upgrades **aim to support the deployment of more military forces**, including **warships, aircraft, missile batteries, and troops**, amid **growing Chinese activities** in the region, notably the **construction of a military facility in Myanmar's Coco Islands, 55 km north of the Andaman and Nicobar Islands**.

Advancement of Andaman and Nicobar Islands as a military base:

- The **Andaman and Nicobar Command (ANC)**, established in **2001** as the **first and only tri-service command in the islands**, is spearheading these upgrades.
- Plans include **improving surveillance infrastructure** on one of the **northern islands**, extending an **airstrip at a crucial naval air station** to accommodate **larger aircraft and fighter jets**, and **expanding a jetty for bigger ships**.
- **Infrastructure enhancements** also involve upgrading an **IAF station to host fighter squadrons**, extending a **runway**, and **building facilities for asset maintenance**.
- Additionally, efforts are being made to construct a **container transshipment terminal** and associated infrastructure to support operations.
- Recent inaugurations by military officials include a **modern hangar and dispersal system**, a **Precision Approach Radar (PAR) for safe aircraft landings in low visibility**, and an **Integrated Underwater Harbour Defence and Surveillance System**. **Communication and operational capabilities** have also been **boosted** with the inauguration of **Naval Communication Network (NCN) Centres** at **INS Kohassa, INS Baaz and INS Kardi**.
- **Enhanced responsibilities of the National Remote Sensing Centre (NRSC):**
 - The **Centre** has requested the **NRSC** to expand its manpower for **analyzing satellite imagery and enhancing surveillance of inhabited islands** in the **Andaman and Nicobar and Lakshadweep**.
 - The **NRSC's responsibilities** encompass **satellite data acquisition and processing, aerial remote sensing, and disaster management support**.
- A recent **Multi-Agency Maritime Security Group (MAMSG)-Policy meeting** discussed **surveillance strategies for uninhabited islands**, underscoring the comprehensive approach to bolstering security and surveillance in these strategic regions.

The strategic importance of the island chain:

- There are **836 Islands** in **A&N**, of which **only 38 are inhabited**.
- The **Andaman and Nicobar Islands** are of **great strategic importance** since they **straddle one of the busiest sea lanes in the world** and give **India** the reach to **monitor the flow of traffic from the South China Sea (Pacific Ocean) to the Andaman Sea (Indian Ocean) via the Strait of Malacca** that's **key to trade and oil shipments in the Indo-Pacific**.

Source: [IE](#)

Kodaikanal | The hills are (barely) alive

Subject: Geography

Section: Mapping

Context:

- **Kodaikanal**, a hill station, is facing severe tourist footfall, leading to the problem of waste management, overcrowding, illegal construction and pollution of all forms.

Kodaikanal- Dindigul district in the state of Tamil Nadu.

- Situated in the **Palani hills** of **Western Ghats**.
- Also known as "**Princess of Hill stations**"
- The earliest references to **Kodaikanal** and the **Palani hills** are found in **Tamil Sangam literature**.
- It has an **irregular basin** as its **heartland**, the center of which is now **Kodaikanal Lake**. The **lake** is a **man-made lake** of circumference 5 kilometres (3.1 mi), formed by **blocking three water streams** in **1863**.
- **Guna caves**- A **tourism spot** in **Kodaikanal hills**.

Carrying Capacity:

- Excessive tourism is a pan-India problem.
- '**Carrying capacity**' is a broad term that covers many aspects and features of a region, indicating the **maximum number of visitors to a destination at a given time, with least damage to the environment and cultural landscape**.
- The **Madras High Court** has now **recommended similar carrying capacity studies** for the **hill stations of Udthagamandalam and Kodaikanal in South India**, with the aim of regulating tourist entries.
- In 2023, the **Ministry of Environment, Forest and Climate Change** asked the **Supreme Court** to **direct 13 Himalayan States** to **conduct surveys** to assess the '**carrying capacities**' of towns in these fragile ecosystems.
 - It recommended a detailed study by a panel of experts in the fields of **hydrology, environment and climate studies**, as per the guidelines of the **GB Pant National Institute of Himalayan Environment**.
- Earlier, in **2018**, the **National Green Tribunal** had **directed the Union Ministry of Urban Development and Union Environment Ministry** to undertake **similar studies in all States and Union Territories**.

Too many homestays:

- The **2022 guidelines** introduced by **Tamil Nadu Tourism for homestays and B&Bs** have led to a **significant increase in such establishments in the Nilgiris**. While some view this trend as **sustainable- leveraging existing properties to avoid building new hotels which could strain local resources**- environmental concerns have also been raised.
- Many homestays are operating **illegally in ecologically sensitive areas**, potentially with **official complicity**. This has **prompted legal action** and a **halt in issuing new homestay licenses**, with significant involvement from **local tourism associations** recognizing the **environmental and regulatory challenges**.

Sky Island under threat:

- The **shola forests** in the **Western Ghats**, recognized as part of a "**sky-island**" system due to their **unique highland isolation**, are facing severe threats.
- Over the past four decades, the **Palani Hills region**, spanning **Tamil Nadu and Kerala**, has seen a **drastic reduction** in its **grasslands and shola forests**, with about **80% loss attributed initially to invasive species** and more recently to **agriculture and tourism pressures**.
- While the **forest lands are relatively protected**, the **buffer zones where forest meets agricultural and commercial land** are **poorly defined**, leading to widespread encroachments.
- Efforts to **restore the ecosystem** have been **primarily led by forest guards** in the **Kodaikanal Wildlife Sanctuary**.

Source: [TH](#)

Caught in Maharashtra, Telangana border row, 14 villages grapple with 'privilege' of voting twice

Subject: Geography

Section: Mapping

Context:

- About 4,000 voters from 14 villages along the border between Maharashtra and Telangana could be the only ones in India to have the "**privilege**" to **vote twice in the 2024 Lok Sabha elections** — **in Maharashtra for the Chandrapur constituency in the first phase on April 19**, and then in Telangana for the Adilabad constituency in the fourth phase on May 13.

More on news:

- With their villages under two panchayats in both **Maharashtra's Chandrapur and Telangana's Adilabad**, each resident has **two voter IDs, Aadhaar cards etc**.

Boundary Dispute:

- The territorial dispute over the 14 villages (**called Sade Bara Gaon in Maharashtra**) that fall in the **Kerameri tehsil of Adilabad in Telangana and Jivati tehsil of Chandrapur in Maharashtra**, dates back to 1956, when the state of Andhra Pradesh was formed.
- The 14 villages come under two gram panchayats — **Parandoli and Antapur** — which are over 30 km apart.
- The villagers have two voter ID cards each with their names listed in the constituencies of both the states.
- Each of the villagers also have two ration cards, **Aadhaar cards, MNREGA cards, caste certificates and other documents** — one each from Maharashtra and Telangana, based on their respective classifications — which enable them to avail benefits of social welfare schemes from both states.
- As the villagers, **who mostly belong to the Scheduled Castes (SCs) and Scheduled Tribes (STs) communities, have ration cards from both states, they can also avail ration benefits as well as other schemes being implemented by both states.**

The strategic importance of Andaman and Nicobar Islands

Subject: Geography

Section: Mapping

Context:

- The neglect of **Andaman and Nicobar strategic island groups** betrays a lack of strategic maritime vision in the decades since Independence.

More on news:

- The transformation of **India's Look East policy into a robust Act East policy**, a realization of the critical importance of ocean power, and the rapid enhancement in the capabilities of the **Chinese People Liberation Army (PLA) Navy**, have brought a degree of seriousness to the imperative of developing Indian island territories in general, and the **Andaman and Nicobar group in particular.**

What is the strategic importance of the Andaman and Nicobar Islands?

- The islands are located **700 nautical miles (1,300 km) southeast of the Indian mainland.**
- The **Malacca Strait**, the main waterway that connects the Indian Ocean to the Pacific, is less than a day's steaming from **Port Blair.**
- **Sabang in Indonesia is 90 nautical miles southeast of Indira Point** (on **Great Nicobar island**), and **Coco Island (Myanmar)** is barely 18 nautical miles from the northernmost tip of the Andamans.
- **Thailand built the Kra Canal connecting the Gulf of Thailand** with the Andaman Sea, its mouth would be about 350 nautical miles east of **Port Blair.**
- The islands share four of **India's international maritime zone delimitations with Myanmar, Thailand, Indonesia, and Bangladesh.**
- They also give India substantial ocean space under the **United Nations Conference on the Laws of the Sea (UNCLOS)** in terms of exclusive economic zone and continental shelf.
- In the foreseeable future, a serious challenge could emanate from a **build-up of Chinese maritime forces** at the eastern choke points of the Indo-Pacific, namely the **Malacca (between Sumatra and the Malay peninsula), Sunda (between Java and Sumatra), Lombok (between Bali and Lombok), and Ombai-Wetar (off East Timor) straits.**
- The A&N Islands should be the first line of offense against any attempt from the East to undermine India's maritime security.
- While some effort was made to leverage this locational advantage with the Andaman and Nicobar Command (ANC) being constituted as a tri-services command in 2001, subsequent efforts have been grossly inadequate.

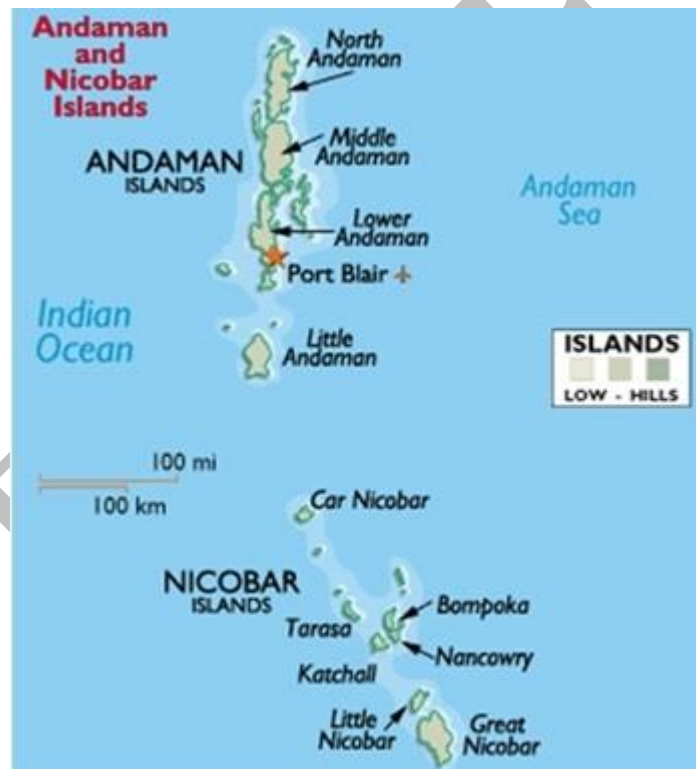


What kind of infrastructure should be prioritized on the islands?

- Ports and fuel storages must be built in both the northern and southern groups of the islands for ships' operational turnaround without the need to return to Port Blair.
- Work on the **Galathea Bay (Great Nicobar Island) transshipment port must be expedited.**
- India could also explore the possibility of leveraging international arrangements in the Indo-Pacific such as the **Quad and the Indo-Pacific Oceans Initiative (IPOI)** to catalyze development efforts on the islands.

About Andaman and Nicobar Islands:

- The Andaman Islands are the extension of the submerged **ArakanYoma Tertiary Mountain range of Myanmar and the Nicobars are the continuation of the Mentawai Islands to the south and southeast of Sumatra.**
- These **two island groups situated in the Bay of Bengal span 6°45' N to 13°41' N (740 km) and 92°12' E to 93°57' E (190 km).**
- These islands are separated from one another by **very narrow straits.**
- **Andamans are separated from Nicobar by a 10-degree channel (10-degree latitude).**
- **South Andaman and Little Andaman are separated by Duncan Passage.**
- The **Grand Channel is between the Great Nicobar islands and the Sumatra islands of Indonesia.**
- The **Coco Strait is between the North Andaman islands and the Coco Islands of Myanmar.**
- **Port Blair, located in South Andaman is the administrative capital of the Andaman and Nicobar Islands.**
- The southernmost point of India is **The Indira Point**, (formerly known as Pygmalion Point and Parsons Point) which is the southern point of the Great Nicobar Islands.
- The **highest peak of the Andaman and Nicobar Islands is Saddle Peak, located in the North Andaman.**



Silent Chernobyl: Dry Aral Sea has made Central Asia dustier, with impacts on global climate, says study

Subject: Geography

Section: Mapping

Context:

- The **Aral Sea**, once the **world's fourth-largest lake**, has **dramatically shrunk** since the **1960s** due to **Soviet irrigation projects**, leading to **severe environmental impacts.**

Study findings on the Aral Sea:

- A recent study by the **Leibniz Institute for Tropospheric Research and Freie Universität Berlin** reveals that the **desertification** of the Aral Sea has **increased dust emissions in Central Asia by 7%** over the **last three decades.**

- The findings were released at the **Second Central Asian Dust Conference (CADUC-2)**, held in **Nukus, Uzbekistan**, on the site of the **former Aral Sea**.
- From **1985 to 2015**, **annual dust emissions nearly doubled**, rising from **14 million to 27 million tonnes**.
- This **increase in dust is not only more hazardous than typical dust** but also likely **influences global climate**, though further research is needed to confirm these effects.
- The **study** also highlighted that much of this **dust activity is missed by traditional satellite observations** due to its **occurrence under cloudy conditions**.
- This **rising dust level** poses **health risks to local populations** and contributes to **air quality degradation** in the **capitals of Tajikistan and Turkmenistan**.
- Moreover, the **dust can accelerate glacier melt**, worsening the **water crisis** in the region.

A Soviet legacy:

- The **Aral Sea**, once replenished by the **Amu Darya and Syr Darya rivers** from the mountain ranges of **High Asia**, suffered a **drastic reduction in water input** due to **extensive irrigation practices for agriculture implemented during the Soviet era**.
- This led to the **drying up of large areas of the lake**, reducing it to a fraction of its original size and transforming the majority of it into what is now known as the **Aralkum Desert**.
- Covering an area of **60,000 square kilometres**, the **Aralkum**, though smaller than its neighbouring natural deserts, the **Karakum and Kyzylkum**, has become **one of the most significant human-made dust sources in the world**.
- The **dust from the Aralkum** is particularly **hazardous** as it **contains residues of fertilizers and pesticides from its past agricultural use**.

Climate impact:

- Researchers from **TROPOS and FU Berlin** have studied the **climatic impacts of dust from the Aralkum Desert** using the **COSMO-MUSCAT atmospheric dust model**. This model helps **simulate dust emissions, atmospheric concentrations, and the radiative effects of dust particles**.
- They found that **dust from the Aralkum** affects **agricultural areas** along the **Syr Darya** and reaches cities over **800 kilometres** away, including **Ashgabat and Dushanbe**.
- The **dust influences the local climate** by **cooling the surface during the day by dimming sunlight** and **warming it at night by re-emitting ground heat radiation**. This **dual effect—cooling or warming—depends on various factors** such as **dust amount, time of day, season, surface albedo, and dust's mineralogical and optical properties**.
- The recent **increase in dust emissions from the Aral Sea/Aralkum region** has affected **radiative cooling and heating**, generally **leading to slight overall cooling at about -0.05 ± 0.51 watts per square meter annually**. Moreover, this dust is thought to **alter weather patterns by increasing ground-level air pressure, intensifying the Siberian high during winter and weakening the Central Asian warm low during summer**.
- The **shrinking of other lakes like Urmia in Iran and Hamoun on the Iran-Afghanistan border**, also turning into **significant dust sources**, highlights the broader regional and possibly global implications of such environmental changes.

Aral Sea:

- The **Aral Sea** was an **endorheic lake** lying between **Kazakhstan to its north and Uzbekistan to its south** which **began shrinking in the 1960s and largely dried up by the 2010s**.
- It was in the **Aktobe and Kyzylorda regions of Kazakhstan and the Karakalpakstan autonomous region of Uzbekistan**.
- The name roughly translates from **Mongolic and Turkic languages** to "**Sea of Islands**", a reference to the **large number of islands** (over 1,100) that once dotted its waters.
- The **Aral Sea drainage basin** encompasses **Uzbekistan and parts of Afghanistan, Iran, Kazakhstan, Kyrgyzstan, Tajikistan, and Turkmenistan**.

Source: [DTE](#)

Anti-Maoist operations status report

Subject: Geography

Sec: Mapping

Context:

- At least 29 alleged Maoists were killed in a gunfight with security forces in the **forests of southern Chhattisgarh's Kanker district on Tuesday**.

More on news:

- The operation is the **largest (in terms of Maoists' bodies recovered)** since the creation of Chhattisgarh in 2000, and **among the biggest successes for security forces in their decades-long fight against left-wing extremism (LWE).**

Place of operation:

- The operation saw security forces push deep into the **Maoist stronghold of Abujhmad (literally, “the unknown hills”)** — a 4,000 sq km swathe of forest land in southern Chhattisgarh’s Bastar region, mainly covering the districts of Narayanpur, Bijapur, and Dantewada, just south of Kanker.
- Only a small part of the forest falls in **Kanker**.
- The difficult **terrain, absence of roads, and presence of LWE has meant that 90% of Abujhmad**, bigger in terms of area than Goa, remains unsurveyed by the government.
- These jungles are, thus, **used both as safe havens and transit corridors by Maoists to travel between Maharashtra (to the west), Andhra Pradesh (to the south), Telangana (to the southwest), and Odisha (to the east) via Chhattisgarh’s Sukma district.**

MOST MAOISTS KILLED IN CHHATTISGARH ENCOUNTERS

Date of encounter	Location, District	Bodies of Maoists recovered
April 16, 2024	Abujhmad hills, Kanker	29
April 2, 2024	Lendra forests, Bijapur	13
February 18, 2008	Tadkel forests, Bijapur	10
March 2, 2018	Pujari Kanker hill, Bijapur	10
February 6, 2019	Bodga forests, Bijapur	10
November 23, 2010	Near Kunder, Ashrampara villages, Sukma	9
April 16, 2013	Near Khammam, Jagargunda, Sukma	9
March 1, 2016	Near Pesalpad forests, Sukma	8
April 27, 2018	Aipenta, Marimalla hills, Bijapur	8
July 18, 2018	Timenar forests, Dantewada	8



LWE in Chhattisgarh

- Chhattisgarh** is the only state in which Maoists continue to have a **significant presence, and retain the capability to mount big attacks.**
- According to the **Ministry of Home Affairs (MHA) website, there are 70 LWE-affected districts in the country.**
- Chhattisgarh** accounted for over a third of these incidents, and more worryingly, for 70-90% of deaths.

About LEFT WING EXTREMISM DIVISION:

- This Division was created w.e.f. **October 19, 2006 in the Ministry**, to effectively address the Left Wing Extremist insurgency in a holistic manner.
- The **LWE Division** implements security related schemes aimed at capacity building in the LWE affected States.
- The Division also monitors the **LWE situation and counter-measures** being taken by the affected States. The LWE Division coordinates the implementation of various development schemes of the **Ministries/Departments of Govt. of India in LWE affected States.**
- The States of Chhattisgarh, Jharkhand, Odisha, Bihar, West Bengal, Andhra Pradesh, Telangana, Maharashtra, Madhya Pradesh and Kerala are considered LWE affected, although in varying degrees.

When a dead stream springs back to life after 30 years

Subject: Geography

Sec: Mapping

Context:

- In the **Marayur sandal division of Idukki**, a stream that had been dormant for **30 years** in a **tribal area** has been revived thanks to an **eco-restoration project** led by the **Forest Department** from **2021 to 2024.**

Details:

- The area, historically grasslands with flowing streams, had suffered an **ecological decline** after **black wattle (Acacia mearnsii) trees** were introduced in **1980**, followed by an **invasive spread of West Indian Lantana.**
- The restoration efforts, supported by the **United Nations Development Programme** and **NABARD** under **CAMPA**, involved **removing exotic species across 98 hectares** to **restore natural grasslands.**

- This initiative allowed the **stream, Kammalamkudy Thodu**, to flow again, now delivering 6.5 litres of water per minute, even during intense heat.
- Additionally, a **brushwood check dam** has been built to aid **wildlife hydration** and the **rejuvenated grasslands** have attracted **diverse fauna**, highlighting the significant impact of **grasslands** on **water management** and **ecosystem health**.

What is ecological restoration?

- **Ecosystem restoration** involves **aiding the recovery of ecosystems** that have been **degraded or destroyed**, while also **preserving intact ecosystems**.
- This process not only enhances biodiversity but also offers numerous benefits such as **improved soil fertility, increased timber and fish yields, and greater storage of greenhouse gases**.
- **Restoration methods** can vary, from **active re-planting** to simply **reducing human pressures** to allow natural recovery.
- It's not always feasible or desirable to **return ecosystems to their original state due to modern needs** like **farmland and infrastructure**.
- Additionally, **ecosystems** need to adjust to a changing climate. From now until **2030, restoring 350 million hectares of degraded ecosystems** could yield about **US\$9 trillion** in **ecosystem services** and remove **13 to 26 gigatons** of **greenhouse gases** from the atmosphere.
- The **financial gains** from these efforts are significantly higher than the costs, making **restoration** far **more economical** compared to the **costs of inaction**.

Source: [TH](#)

History

Rakhigarhi findings in NCERT books added; Narmada Dam references dropped

Subject: History

Section: Ancient India

Context:

- The **National Council for Education Research and Training**, the Centre's advisor on changes to school education recently introduced certain revisions to the history syllabus of Class 12 students.

More on news:

- **NCERT has stated that study of ancient DNA from archaeological sources in Rakhigarhi, Haryana** suggests that the genetic roots of the Harappans go back to 10,000 BCE.

Key Changes:

- Additions about findings from the **DNA analysis of skeletal remains found at the archaeological site of Rakhigarhi in Haryana**.
- Dropping of references to how **the Narmada Dam project** adversely affected tribals and drew them to displacement leading to greater destitution.
- NCERT has said that in the **chapter-Eighteenth Century Political Formations, the word 'Shivaji' has been changed to Chhatrapati Shivaji Maharaj** as **"Chhatrapati and Maharaj are important honorifics of Shivaji**.
- The title **'When People Rebel'**, the word **'Rebel' changed to 'Revolt'**.
- The word **Revolt is more appropriate** as it reflects the overall uprising of India against colonial oppression.
- The word **Rebellion to be changed to Uprising**.
- The word **Uprising is more comprehensive opposed to the word 'Rebellion'**.

Linkage of Rakhigarhi and Harappans:

- The **DNA of the Harappans** has continued till today and a majority of the **south Asian population appears to be their descendants**.
- Due to **trade and cultural contacts of the Harappans** with distant regions there is a mixture of genes in small quantities.
- The continuity without any break in genetic history as well as cultural history rules out large-scale immigration of the so-called Aryans.
- At no stage, **the genetic history of the Indians** was either discontinued or broken.
- As the Harappans started moving towards Iran and Central Asia, their genes also gradually spread in those regions.
- The analysis of the **data revealed that the Harappans** are the indigenous people of this region.
- **NCERT has stated that the reconstructed facial features of the Harappans, male and female, show remarkable similarity with the modern population of Haryana** and that the study has indicated unbroken continuity for 5000 years in this region.

About Rakhigarhi:

- **Rakhigarhi in Hisar** is also said to be the largest archaeological site from the pre-Harappan period.
- It was part of the **mature phase of the Indus Valley Civilisation, dating to 2600-1900 BCE.**
- It could change the commonly held view about the **Indus Valley civilization, as Rakhigarhi is situated on the bank of the now dry Saraswati river.**
- There is also the **Haryana Rural Antique Museum 60 km away**, which is maintained by **CCS HAU in its Gandhi Bhawan**, exhibits evolution of agriculture and vanishing antiques.



Parts deleted:

- Projects such as the **Sardar Sarovar dam on the river Narmada in western India** and the **Polavaram dam on the river Godavari in Andhra Pradesh** displace hundreds of thousands of adivasis, driving them to greater destitution,' will be changed to, 'Projects such as the **Sardar Sarovar dam on the river Narmada in Western India** and the **Polavaram dam on the river Godavari in Andhra Pradesh** displaced hundreds of thousands of adivasis from their original habitats,' with deletion of the part — 'driving them to greater destitution.'

Over 60 products from across India earn GI tags

Subject: History

Section: Art and culture

Introduction

A landmark achievement has been recorded as **over 60 products from across India**, including the renowned **Banaras Thandai**, have **received the Geographical Indication (GI) tags**. This unprecedented move marks a significant recognition of India's diverse and rich heritage of traditional and historic products.

Key Highlights

- **Broad Spectrum of GI Tags:** This recent batch of GI tags encompasses a wide range of products, from **traditional crafts in Assam like Asharikandi terracotta and Sarthebari metal craft to the famous Banarasi Thandai.**

- **Significant Increase in Applications:** It is the **first instance of such a large number of products being awarded GI tags simultaneously**, highlighting an increasing trend of states applying for GI tags to recognize their unique products.

Assam's Rich Heritage:

- **Six traditional crafts received GI tags:** These include **Asharikandi terracotta craft, Pani Meteka craft, Sarthebari metal craft, Jaapi** (bamboo headgear of rural Assam), **Mishing handloom products**, and the **Bihu dhol**.
- **Thirteen other products from Assam:** **Bodo Dokhona**, the traditional attire of Bodo women; and **Bodo Eri silk**, referred to as the fabric of peace or ahimsa (non-violence), which comes from the silkworm **Samia ricini** that feeds mostly on the leaves of the castor plant (*Ricinus communis*), and cassava.
 - **Bodo Jwmgra** (a traditional scarf), **Bodo Gamsa** (traditional dress of Bodo men), **Bodo Thorkha** (a musical instrument), and **Bodo Sifung** (a long flute) are also, on the list.

Asharikandi terracotta craft

In India, the single largest cluster where both Terracotta and Pottery crafts are found and practiced in traditional way is **Asharikandi (Madaikhali)** craft village. Due to the factors of production, the product-quality of one place varies from that of another. Weather is a key factor and plays a major role in Terracotta-production. The main raw material for pottery and terracotta craft is Hiramati, a special type of soil. The quality of Hiramati varies from place to place. The quality of Hiramati and artistic skill determine the quality of Terracotta and Pottery products.

Banaras' Unique Offerings:

- **Culinary and Craft Recognition:** Banaras, known for its spiritual and historical significance, has seen several of its products like **Banaras Thandai, Banaras Tabla, Banaras Shehnaï, Banaras Lal Bharwamirch and Banaras Lal Peda**.

Banaras Thandai

- It is a drink made by blending milk with a nutritious mix of nuts, seeds and spices
- Traditional Banarasi Thandai shops in areas such as **Gaudaulia Chowk, Lahurabir**, and the old lane of **Pakka Mahal** attract large crowds.
- The drink was first introduced many centuries ago as an offering to the Shri Kashi Vishwanath deity on the occasion of **Mahashivaratri, Rangbhari Ekadasi**, and **Holi**.

Recognition for Tripura and Meghalaya:

- **Tripura:** It has secured GI tags for **Pachra-Rignai**, a traditional dress, and **Matabari Peda**, a sweet delicacy, marking the state's presence on the cultural map of India.
- **Meghalaya:** Its **Meghalaya Garo Textile, Lyrnai Pottery**, and **Chubitchi**, integral to the state's socio-cultural and religious fabric, have also received GI tags.
- It is an insignia on products having a unique geographical origin and evolution over centuries with regard to its special quality or reputed attributes.
- It is a mark of authenticity and ensures that registered authorized users or at least those residing inside the geographic territory are allowed to use the popular product names.
- GI tag in India is governed by Geographical Indications of Goods (Registration & Protection) Act, 1999. It is issued by the Geographical Indications Registry (Chennai).
- A GI tag can be filed in international fora only when one has GI laws in their country.
- GI is a tag on products that have a specific geographical origin and possess certain qualities due to that origin and are safeguarded by legalities such as by the World Intellectual Property Organisation.

Qudsia Bagh: This morning walkers' paradise was once a symbol of a queen's ambition, a casualty to 1857 aftermath

Subject: History

Section: Art and Culture

About Qudsia Bagh:

- **Qudsia Bagh is an 18th-century garden complex** and palace located in Old Delhi, India.
- The complex was constructed in **1748 for Qudsia Begum**, the mother of **Mughal emperor Ahmad Shah Bahadur**.
- The garden is situated in **North Delhi, a short walk from the Kashmere Gate Metro Station**.
- It is situated north of the **old city**.
- Formerly a splendid palace, it belonged to the heir apparent before falling into disrepair.
- Large parts of it were destroyed during the **Indian Rebellion of 1857**.

- The buildings in this garden were severely damaged during the **summer of 1857** when they fell in the line of fire that was exchanged between the Indian troops who were holding the city.

About Qudsia Begum:

- **Qudsia Begum, born Udham Bai** was a wife of Mughal emperor Muhammad Shah and mother of emperor **Ahmad Shah Bahadur**.
- She was early born an **administrator and served as de facto regent from 1748 to 1754**
- She was introduced to **Muhammad Shah's harem** in the beginning of his reign
- A Hindu by origin, **Udham Bai had been formerly a public dancing girl..**
- She considered herself the **Noor Jehan (wife of Emperor Jahangir)** of her times and fashioned herself into a **Queen Mother**.
- She remote-controlled the empire since **Ahmed Shah was considered a weak king**.
- She sought a legacy and, like **Noor Jehan**, wanted to build monuments that would give people something to remember her by.
- **Qudsia Begum** commissioned various public and private works in Delhi.
- The **Sunehri Masjid** near the **Red Fort** was constructed between 1747 and 1751 for Nawab Bahadur Javid Khan.



Srinagar vies for global craft city tag as World Craft Council International team tours craft clusters

Subject: History

Sec: Art and culture

Context:

- The **World Crafts Council International (WCCI)**, a **Kuwait-based organization working on recognition and preservation of traditional crafts across the globe**, has picked Srinagar for mapping its craft clusters before its final nomination as the **World Craft City (WCC)** from India this year.

More on news:

- A three-member team of the **WCCI, which is headed by Saad Al-Qaddumi**, is in Srinagar to inspect craft clusters, processes involved, and the status of artisans.
- The annual ceremony to grant **WCC status to cities across the globe is aimed at promoting, preserving and evolving handicrafts** and “building new market linkages.
- The **Indian National Trust for Art and Cultural Heritage-Kashmir (INTACH-K)** is collaborating with the J&K Handicrafts department to map the craft sector ahead of the final nomination.

Why is Srinagar chosen?

- According to official data, **Srinagar, spread over 416 square kilometers**, has a registered artisan base of 20,822 craftsmen, who are involved in multiple disciplines of **papier mache, walnut wood carving, hand-knotted carpet, Kani shawl, Khatamband, pashmina, Sozni craft etc.**
- The total craft related workforce in **Srinagar stands at 1.76% approximately.**
- **Kashmir** is home to centuries-old practices of handicrafts in most disciplines like **shawls, carpet, papier mache etc**

About WCCI:

- The **World Crafts Council (WCC AISBL)** is a **non-profit, non-governmental organization that was founded in 1964.**
- The WCCI aims at **fostering economic development through income generating craft related activities, exchange programs, workshops, conferences, seminars, and exhibitions across the globe.**

Fossils of massive prehistoric snake found in lignite mine in Gujarat

Subject: History

Sec: Art and Culture

Context:

- Researchers at the **Indian Institute of Technology (IIT) Roorkee** have reported the discovery of fossils of one of the **largest snakes that ever existed and likely lived 47 million years ago during a period called the Middle Eocene.**

More on news:

- The fossils were found in **Kutch, Gujarat, and the reptile, named Vasuki Indicus**, could have been anywhere between 10 meters and 15 meters long, or as big as a modern-day school bus.
- It belonged to the **now-extinct Madtsoiidae snake family** but represents a unique lineage from India, the authors note.
- Researchers at the Indian Institute of Technology (IIT) Roorkee have reported the discovery of fossils of one of the **largest snakes that ever existed and likely lived 47 million years ago** during a period called the Middle Eocene.



The vertebrae of Vasuki Indicus found in Kutch.

About the Vasuki Indicus:

- **Vasuki Indicus** likely had a broad and cylindrical body, hinting at a **robust and powerful build and was as big as Titanoboa**, a massive snake that once roamed the earth and is reportedly the longest ever known.
- **Vasuki is an extinct genus of madtsoiid snake from the Middle Eocene Naredi Formation of India.**
- The genus contains a single species, **V. indicus, known from several vertebrae.**
- Much like present-day pythons and anaconda, Vasuki Indicus killed its prey by suffocation.
- Vasuki refers to the mythical snake often depicted around the neck of the **Hindu god Shiva.**
- The fossils were found in **Kutch, Gujarat, and the reptile, named Vasuki Indicus**, could have been anywhere between 10 meters and 15 meters long, or as big as a modern-day school bus.
- **Vasuki Indicus likely had a broad and cylindrical body**, hinting at a robust and powerful build and was as big as Titanoboa, a massive snake that once roamed the earth and is reportedly the longest ever known.
- The reptile existed at a time when the earth looked quite different from today, and **Africa, India and South America were one, conjoined landmass.**

Places in news:

- **The Panandhro Lignite Mine in Gujarat** where the fossils were found. Red arrow indicates the level at which the remains were discovered.

Revived from neglect, this tomb of Mughal-era poet, army commander now lights up the night sky

Sub: History

Sec: Arts and culture

Why in news:

- In the 1920s, the **Archaeological Survey of India (ASI) provided masonry support** to overhanging sandstone blocks on the facade, preventing it from total collapse.

- As one drives across the **Barapullah flyover** towards Sarai Kale Khan from JLN stadium, a striking structure on the left catches the eye.
- **Built of red sandstone, it is a spitting image of the Humayun's Tomb** — albeit much smaller in size — situated nearby.
- The tomb was very **beautifully constructed and decorated with floral designs, but it's marble and stones have been mercilessly pulled out.**
- Even the headstone of the grave was not spared and today it resembles a skeleton of mortar and brick

About the tomb:

- This is the tomb of **Abdul Rahim Khan-I-Khanan, or simply Rahim, the commander-in-chief of Mughal emperor Akbar's army**, one of his Navratnas, and a renowned poet.
- Rahim had built **the tomb in memory of his wife Mah Banu**, some 40 years before Emperor Shah Jahan built Agra's Taj Mahal.
- **Rahim Khane Khanam Tomb is located in Nizamuddin East, New Delhi.**
- This Tomb belongs to **Abdul Rahim Khan-i-Khanan**, one of the important ministers who served during the rule of **Mughal emperors Akbar and Jahangir.**
- After he **died in 1627, Rahim was also buried beside his wife**, just like Shah Jahan was in the Taj decades later.
- Son of a celebrated commander of the **Mughal Army, Bairam Khan, Rahim is now mostly remembered for his couplets (dohe)**, which cover a range of issues — from the importance of humility to the frailty of human relationships.
- Situated in Nizamuddin East on Mathura Road, the tomb, however, was reduced to ruins over the years — partly due to neglect and partly due to the monument being used as a quarry, its stones plundered to construct other structures, the most prominent being Safdarjung Tomb.
- **Asar-ul-Sanadid, published in 1847** by educationist and reformer **Sir Sayyid Ahmed Khan**, perfectly illustrates the shoddy state of the tomb in the late 19th Century.
- In the 1920s, the **Archaeological Survey of India (ASI) provided masonry support to overhanging sandstone blocks on the facade, preventing it from total collapse.**
- A salient aspect of the monument is the finish on its dome — it is only partly covered with marble, with the rest of the surface left as is. This was done on the advice of ASI, which was wary of “retouching history”

About Abdul Rahim Khan-i-Khanan:

- **Khanzada Mirza Khan Abdul Rahim (17 December 1556 – 1 October 1627)**, popularly known as simply **Rahim and titled Khan-i-Khanan**, was a poet who lived in India during the rule of Mughal emperor Akbar.
- **Abdul Rahim was born in Delhi and was the son of Bairam Khan.**
- He was one of the nine important ministers (dewan) in **Akbar's court, known as the Navaratnas.** Rahim was known for his **Hindustani dohe and his books on astrology.**
- **Rahim translated Babar's memoirs, Baburnama, from the Chagatai language to the Persian language, which was completed in 1589–90.**
- He had an excellent command of the Sanskrit language.

Statue of Valour watches over battle for Ahom pride in Assam's tea capital, Jorhat

Subject: History

Section: Medieval India

Context:

- PM Modi inaugurated the '**Statue of Valour**' in Jorhat, Assam in honor of General Lachit Barphukan.

More on news:

- The 125-foot statue **depicts Lachit Borphukan, the iconic Ahom general** revered for leading the Battle of Saraighat in 1671 to prevent the Mughal army from occupying Assam.
- The park encompasses the maidam, or earthen pyramid, where he was buried after the battle.

About Lachit Barphukan:

- **Lachit Borphukan (24 November 1622 – 25 April 1672) son of Momai Tamuli Borbarua** was an Ahom Borphukan.
- He was primarily known for commanding the **Ahom Army and the victory in the Battle of Saraighat (1671)** that thwarted an invasion by the vastly superior Mughal Forces under the command of Ramsingh I.
- He died about a year later in **April 1672.**



Ahom Dynasty:

- Dedicated to **Swargadeo (or emperor) Sukapha, who came from China's Yunnan** to establish the Ahom dynasty that ruled Assam for 600 years until the British takeover in the 1800s, this represents Ahom pride as much as the **Lachit statue park**.
- The **Ahom community, to which the Gogois belong**, make up the majority of voters in the Jorhat constituency.
- Catering to the **aspirations of the Ahoms**, one of six communities demanding Scheduled Tribe status, is crucial for political parties, especially as the Sivasagar and Charaideo districts form half the constituency.
- These districts comprised the core of the erstwhile **Ahom kingdom**.

About Majuli islands:

- **Majuli or Majuli (mazuli) is a large river island located in Assam, India.**
- It is formed by the **Brahmaputra River to the south and east, the Subansiri River to the west and an anabranch of the Brahmaputra River called Kherkutia Xuti to the North.**
- The island is inhabited by members of the **Mising, Deori and Sonowal Kachri tribes and is a hub of Assamese neo-Vaishnavite culture.**
- The caste Assamese and the **Mising tribe, who dominate this island which is often referred to as Assam's spiritual capital.**

Other Areas in Assam in news:

- **Meleng**
- **Hoollongapar: The Hollongapar Gibbon Sanctuary, formerly known as the Gibbon Wildlife Sanctuary or Hollongapar Reserved Forest** is an isolated protected area of evergreen forest located in Assam, India.

Remembering Vaikom satyagraha, a 100 years later

Subject: History

Section: Modern India

Context:

- **Vaikom satyagraha**, the epic movement, enters its 100th year.

Early 20th century Travancore:

- The princely state of Travancore had a feudal, militaristic, and ruthless system of custom-ridden government.
- The idea of caste pollution worked not only on the basis of touch but also sight.
- The **second half of the 19th century saw several social and political developments ushering in unprecedented social change.**
- **Christian missionaries converted large sections of lower castes** seeking to escape the clutches of caste oppression.
- The reign of **Maharaja Ayilyam Thirunal Rama Varma (1860-80)** saw many progressive reforms, such as universal free primary education — including for the lower castes.

- By the dawn of the 20th century, there had begun to emerge among **caste Hindus, Christians and even avarna Hindus, especially Ezhavas, a significant educated elite.**

About Vaikom Satyagraha:

- **Vaikom is a temple town in the princely state of Travancore,** saw the start of a non-violent agitation on March 30, 1924- the first among temple entry movements that would soon sweep across the country.
- Early morning on March 30, 1924, **a Nair, an Ezhava and a Pulayu,** dressed in Khaddar uniforms and garlanded, and followed by a crowd of thousands, attempted to use the roads.
- Leaders such as **Periyar, who was arrested multiple times, and C Rajagopalachari** came to Vaikom to offer support and lead the protesters.
- The campaign, led by Congress leaders **T. K. Madhavan, K. Kelappan K. P. Kesava Menon, George Joseph, E. V. Ramasamy "Periyar"**.
- In August, 1924, **the Maharaja of Travancore died,** following which, the young Maharani Regent, Queen Sethulakshmi Bai, released all prisoners.
- In **March 1925, Gandhi** was finally able to iron out a compromise: three out of the four roads surrounding the temples were opened up for everyone, but the fourth (eastern) road was kept reserved for brahmins.
- In November 1925, the government completed diversionary roads that could be used by the low castes "without polluting the temple".
- **The last satyagrahi was recalled from Vaikom on November 23, 1925.**
- The **Vaikom satyagraha** was a remarkable movement, which sustained itself for over 600 days, amidst hostile social forces, police crackdowns, and one of the worst floods in the town's history in 1924.
- **In November 1936, the Maharaja of Travancore signed the historic Temple Entry Proclamation which removed the age-old ban on the entry of marginalized castes into the temples of the state.**
- This, along with the demonstration of Gandhian methods of civil disobedience as effective tools of protest, was the great success of the Vaikom satyagraha.

How did agitation started?

- The issue of temple entry was first raised by **Ezhava leader T K Madhavan in a 1917 editorial in his paper Deshabhimani.**
- Inspired by the success of **Gandhi's Non-Cooperation Movement, by 1920,** he began to advocate for more direct methods.
- Entry of the **Indian National Congress** into the picture that changed the dynamics.
- **Madhavan met Gandhi in 1921,** and secured the Mahatma's support for a mass agitation to enter temples.
- In the **1923 session of the INC in Kakinada,** a resolution was passed by the Kerala Provincial Congress Committee to take up anti-untouchability as a key issue.
- This was followed by a massive public messaging campaign and a movement to open Hindu temples and all public roads to avarnas.
- **Vaikom, with its revered Shiva temple,** was chosen as the location for the very first satyagraha.

About Ezhavas:

- The **Ezhavas are a community** with origins in the region of India presently known as **Kerala,** where in the 2010s they constituted about 23% of the population and were reported to be the **largest Hindu community.**
- The **Malabar Ezhava group** have claimed a higher ranking in the Hindu caste system than do the others.

Nehru, Bose, or... Maulana Barkatullah? Who was India's 'first prime minister'?

Subject: History

Section: Modern India

Context:

- In a recent interview, actress-turned-politician Kangana Ranaut claimed that **Subhas Chandra Bose, not Jawaharlal Nehru,** was India's first prime minister.

More on news:

- After being criticized, **Kangana doubled down, citing the provisional government setup by Bose in 1943 as evidence of her claim.**

The Azad Hind government

- **Subhas Chandra Bose proclaimed the formation of the Provisional Government of Azad Hind ("Free India")** in Singapore on October 21, 1943.

- The **Azad Hind government** claimed authority over all Indian civilian and military personnel in Britain's Southeast Asian colonies (**primarily Burma, Singapore, and Malaya**) which had fallen into Japanese hands during **World War II**.
- To give legitimacy to his government, much like **Charles de Gaulle** had declared sovereignty over some islands in the **Atlantic for the Free French, Bose chose the Andamans**.
- The **Azad Hind government obtained de jure control** over a piece of Indian territory when the Japanese handed over the **Andaman and Nicobar islands in late December 1943**, though **de facto military control was not relinquished by the Japanese admiralty**.
- The government also handed out citizenship to Indians living in **Southeast Asia, and 30,000 expatriates pledged allegiance to it in Malaya alone**.

Bose in Port Blair Bose, looking at the Cellular Jail in Port Blair, Andaman.

- Diplomatically, Bose's government was recognised by the Axis powers and their satellites: **Germany, Japan, and Italy, as well as Nazi and Japanese puppet states in Croatia, China, Thailand, Burma, Manchuria, and the Philippines. Immediately after its formation, the Azad Hind government declared war on Britain and the United States.**

Not the first provisional government

- Notably, 28 years before the Azad Hind government came into existence, the Provisional Government of India was formed in Kabul by a group known as the **Indian Independence Committee (IIC)**.
- **The IIC, with the help of the Ottoman Caliph and the Germans**, tried to foment insurrection in India, mainly among Muslim tribes in Kashmir and the British India's northwestern frontier.
- The IIC established a government-in-exile in Kabul under the presidency of **Raja Mahendra Pratap, and prime ministership of Maulana Barkatullah**, revolutionary freedom fighters who spent decades outside India trying to gather international support for Indian independence.
- **Barkatullah was also one of the founders of the Ghadar movement, which began in California in 1913, and aimed to overthrow British rule in India.**
- **Lala Har Dayal, one of the movement's leaders put forth the following plan of action for the Ghadarites.**
- While the movement was crushed in India by the end of the War, the Ghadarite left a strong and lasting impression on Indians and the British.
- The **Kabul provisional government** was one of many moves orchestrated by **Ghadarite revolutionaries**.

About Barkatullah:

- Mohamed Barakatullah Bhopali, known with his honorific as Maulana Barkatullah (7 July 1854 – 20 September 1927), was an Indian revolutionary from Bhopal.
- While in England he came in close contact with **Lala Hardayal and Raja Mahendra Pratap, son of the Raja of Hathras**.
- He became a friend of Afghan Emir and the editor of the **Kabul newspaper Siraj-ul-Akbar**.
- He was one of the founders of the Ghadar Party in **1913 at San Francisco**.
- Later he became the first prime minister of the Provisional Government of India established on **1 December 1915 in Kabul with Raja Mahendra Pratap as its president**.

Acts of defiance & political necessity, not actual governments:

- Setting up provisional governments, and governments-in-exile, has long been a way for resistance movements to **gain political legitimacy**.
- For example, the **Central Tibetan Administration (CTA) in Dharamshala**.
- The very purpose of this government-in-exile is to challenge the legitimacy of the **Chinese occupation of Tibet**.
- By running a parallel government which claims to represent the will of the **Tibetan people, the CTA keeps the flame of resistance burning, even when brutal repression and government-sponsored Han migration in Tibet has made things difficult**.
- Similarly, both the 1915 and 1943 provisional governments were, more than anything else, symbolic acts of defiance against British rule in India, made with certain political considerations in mind.
- Bose proclaimed the **Azad Hind government** in order to legitimize his armed struggle against the British.
- By proclaiming a provisional government, he gave his army legitimacy in the eyes of international law — they were not just mutineers or revolutionaries, but soldiers of a duly constituted government.
- Crucially, citizenship oaths taken by Azad Hind Fauj officers were produced during the 1945-46 Red Fort trials as evidence of legality of their actions.
- The Kabul provisional government was, on the other hand, proclaimed to establish the seriousness of IIC's intentions, which it hoped would help gain the support of the **Afghan Emir, who remained neutral** but faced unrelenting pressure from the British to crack down on anti-colonial revolutionaries.

- In 1917, it even reached out to the Soviets, and as a government-in-exile right on India's borders, posed a looming threat to the British.

That being said, neither of the two can, in any seriousness, be called the Government of India. This is for two main reasons:

- First, both these **governments failed to gain widespread international recognition.**
- While some countries did recognise and support them, they did so for their own motives.
- After the **World Wars (in which the British emerged victorious), this support swiftly vanished.**
- Second, both these governments **never controlled Indian territory.**
- While Bose did officially hold the **Andamans, effectively, the islands were still under Japanese occupation.**
- So was all the territory in the **Northeast captured (briefly) by the combined Indian and Japanese armies.**
- The **Kabul government never set foot on Indian soil**, and in all seriousness, was a government only on paper until its dissolution in 1919.

History of Sulthan Bathery, which Kerala BJP chief wants renamed as Ganapathyvattam

Subject: History

Section: Modern India

Context:

- **Sulthan Bathery, a municipal town in Wayanad, the Lok Sabha constituency of Rahul Gandhi**, is home to a temple that was partly destroyed by Tipu Sultan and used as a store for arms.

More on news:

- The name **Sulthan Bathery emerged as part of [Tipu Sultan's] invasion.**

Where does the name Ganapathyvattam come from?

- **Sulthan Bathery, one of the three municipal towns in Wayanad** (the other two are Mananthavady and Kalpetta), has a stone temple that was once known as Ganapathyvattam.
- The temple, built in the **prevalent architectural style of the Vijayanagar dynasty**, was constructed by Jains who migrated to Wayanad from areas in present-day Tamil Nadu and Karnataka in the 13th century.
- The temple was partly destroyed during the invasions of **Tipu Sultan, the ruler of Mysore in the second half of the 18th century.**
- Between **1750 and 1790, today's northern Kerala was invaded several times by the rulers of Mysore, Hyder Ali and his son Tipu.**
- It remained abandoned for nearly 150 years.
- Later, it was taken over by the **Archaeological Survey of India, which declared it as a monument of national importance.**

Geography of Sultan Bathery:

- Sultan Bathery is a town in the mountainous **Wayanad region of Kerala, South India.**
- It takes its name from the ancient **Bathery Jain Temple** on the edge of town, which was used as an ammunition battery by **Tipu Sultan's army in the 1700s.**
- In the **Ambukuthi Hills to the southwest, Neolithic carvings are preserved on the walls of Edakkal Caves.**

What is the history of "Sultan Bathery"?

- The armies of Tipu destroyed temples and churches, and forced many in the path of the invasion to flee in order to escape forced religious conversion.
- Tipu Sultan used the Maha Ganapathy temple in Sulthan Bathery as a battery or store for weapons for his army in the Malabar region (today's North Kerala, including Wayanad).
- This led to the British recording **Ganapathi Vattam as "[Tipu] Sultan's Battery"**, and the name survived as Sulthan Bathery.

UK's India Gate to commemorate role of Indian soldiers from World Wars

Subject: History

Section: world history

Context:

- Brighton approved an annual event at India Gate to honor Indian soldiers in World Wars, unveiled in 1921 at Royal Pavilion.

More on news:

- A local council in the seaside resort of Brighton in south-east England has approved plans for an annual multi-faith event to commemorate the role of Indian soldiers in the two World Wars at the town's **India Gate memorial from this October**.
- The **India Gate** was presented to the people of Brighton by the princes and people of India as a gesture of thanks for the care provided by the town's hospitals and is dedicated to the use of the inhabitants of Brighton.
- The **local council's Culture, Heritage, Sport, Tourism & Economic Development Committee** feels an annual memorial event at the India Gate in October would be a suitable addition to the current remembrance services and would additionally recognise the commitment of Muslim and Buddhist soldiers of undivided India.

About the monument:

- It was unveiled by the **Maharaja of Patiala, Bhupinder Singh, on October 26, 1921**.
- It stands at the southern entrance of the Royal Pavilion - one of three buildings in Brighton serving as a base hospital which treated these soldiers from undivided India wounded on the Western front.
- These included soldiers from the **modern-day countries of India, Pakistan, Bangladesh, Nepal, Myanmar and Bhutan**.
- The India Gate, designed by **Thomas Tyrwhitt**, replaced a much lower gate that was erected by Brighton Corporation following its purchase of the Pavilion in 1850 and is described as a dome resting on four pillars in a style derived from Gujarat.
- According to historical records, in **World War I (1914-1918) more than 1.5 million** soldiers from pre-Partition India served in the British Indian Army of the colonial era, participating in major battles such as the **Battle of Neuve Chapelle, Battle of Gallipoli, and the Battle of the Somme**.
- In **World War II (1939-1945), over 2.5 million** soldiers from undivided India volunteered to serve in the British Indian Army, the largest volunteer army in history.
- The **Royal Pavilion Indian hospital in Brighton** that cared for the wounded from these battles is also marked by the Chattri memorial, which stands on the spot where Hindus and Sikhs were cremated.
- It is **accompanied by a memorial maintained by the Commonwealth War Graves Commission** and an annual remembrance ceremony is organized by the Chattri Memorial Group there every June.
- The details of the event will be determined and delivered by a committee of community leaders, in partnership with the **Brighton & Hove Museums, and supported by Brighton & Hove City Council**.

About India Gate in India:

- The **India Gate** formerly known as **All India War Memorial** is a war memorial located near the Kartavya path on the eastern edge of the "**ceremonial axis**" of **New Delhi**, formerly called Rajpath.
- It stands as a memorial to **74,187 soldiers of the Indian Army who died between 1914 and 1921** in the First World War, in **France, Flanders, Mesopotamia, Persia, East Africa, Gallipoli and elsewhere in the Near and the Far East, and the Third Anglo-Afghan War**.
- Designed by **Sir Edwin Lutyens**, the gate evokes the architectural style of the ancient Roman triumphal arches such as the Arch of Constantine in Rome, and later memorial arches; **it is often compared to the Arc de Triomphe in Paris, and the Gateway of India in Mumbai**.

IR

U.S., Britain, Australia weigh expanding AUKUS security pact to deter China

Subject: IR

Section: Int Grouping

Context:

- The **U.S., Britain, and Australia** plan to start discussions on **including new members** into their **AUKUS security pact**, with an emphasis on **Japan** joining as a countermeasure against **China**.

Details:

- The Defense Ministers of these countries will focus on expanding "**Pillar Two**" of AUKUS, which **involves joint development in areas like quantum computing, undersea technologies, hypersonics, artificial intelligence, and cyber technology**.
- There is **no intention to extend the first pillar of AUKUS**, which centres on **providing nuclear-powered submarines to Australia**.

About the AUKUS security pact:

- The **AUKUS alliance**, established in **2021**, aims to counteract **China's rising influence in the Indo-Pacific**. China has criticized **AUKUS**, suggesting it could trigger a **regional arms race**.
- **Present members: Australia, the United Kingdom (UK), and the United States.**
- The **trilateral partnership**, which builds on their decades-long security cooperation, has **two pillars**.
 - **Pillar I** revolves around the acquisition and development of conventionally armed **nuclear-powered submarines** for the **Royal Australian Navy**;
 - **Pillar II** calls for collaboration on advanced capabilities that will involve **technology and information sharing**;
- **U.S. President Joe Biden** is intensifying alliances with **Asian allies**, such as **Japan** and **the Philippines**, in response to **China's military expansion and territorial ambitions**.

EU adopts sweeping overhaul of asylum and migration rules

Subject: IR

Section: Int grouping

Context:

- The **European Parliament** has passed a significant overhaul of the **EU's asylum and migration rules**, a reform that has been nearly **ten years** in the making.

Details:

- This pact encompasses **regulations and policies aimed at addressing responsibility for migrants and asylum seekers** upon their arrival and the **obligation of EU countries to assist**.
- Critics argue that the pact **fails to solve the issues it aims to address** and **undermines the individual's right to seek asylum in Europe**.

The EU Migration and Asylum Pact:

- It first came in **2015**.
- **The main issue to be resolved through this pact** is how to **manage the entry of thousands of people without authorisation**, as it hardens border procedures and forces **all the bloc's 27 nations to share responsibility**.
 - The pact will **speed up the asylum process** and **return of irregular migrants to their home countries**.
- Under the pact, the **27 EU member states** are expected to take in thousands of migrants from **"frontline" countries** like **Italy, Spain and Greece**.
- If they fail to do that **they are obligated to help their EU partners** by offering to house people **eligible for asylum** or, failing that, to **pay the costs of lodging them elsewhere**.
- **The new rules include controversial measures: facial images and fingerprints** could be taken from **children aged six and people may be detained during screening**.
- **Fast-track deportation** could be used on those **not permitted to stay**. Another contentious measure is **sending asylum seekers to countries outside the EU** that are **deemed "safe"** if a person has some ties to that country.
- The reforms also propose **faster processing** at the borders with **new procedures to establish status swiftly on arrival**. Migrants would find out **within five days** whether they could stay in **Europe** or have to leave with the help of a **"screening" procedure** on entry. This includes **identity, security and health checks and fingerprinting**.
- The new rules **aim to deal with asylum requests within 12 weeks** and in case of **rejection, asylum seekers would have to be returned forcibly to their home country within the same period**

8% growth projection for India, not ours: IMF

Subject: IR

Section: Int org

Context:

- The **IMF** clarified that the **8% growth projection for India**, suggested by **executive director Krishnamurthy Subramanian**, was his personal view and not an official stance of the **IMF**.

Details:

- Subramanian had stated that **India** could achieve this growth rate till **2047** by **accelerating existing policies and reforms**.
- The **IMF's official growth projection for India remains at 6.5% for the medium term**, which was a slight increase from previous estimates.

International Monetary Fund (IMF):

- The **IMF** is a global organization that **works to achieve sustainable growth and prosperity for all of its 190 member countries**.

- It does so by **supporting economic policies** that **promote financial stability** and **monetary cooperation**, which are **essential to increase productivity, job creation, and economic well-being**.
- The **IMF** is governed by and accountable to its member countries.
- **Countries were not eligible for membership** in the **International Bank for Reconstruction and Development (IBRD)** unless they were members of the **IMF**.
- **Key facts:**
 - The **IMF** was **established in 1944** in the **aftermath** of the **Great Depression of the 1930s**. Conceived at a **UN conference in Bretton Woods, New Hampshire, United States, in July 1944**.
 - The **IMF** was **founded by 44 member countries** that sought to **build a framework for economic cooperation**.
 - The IMF is governed by and accountable to 190 countries that make up its near-global membership.
 - The **IMF** is able to lend about **\$1 trillion** to its member countries.
- **How is it organised?**
 - At the **top** of its organizational structure is the **Board of Governors**, consisting of **one governor** (usually the minister of finance or the governor of the central bank) and **one alternate governor** from **each member country**.
 - **All powers of the IMF** are vested in the **Board of Governors**.
 - The **day-to-day work of the IMF** is overseen by its **24-member Executive Board**, which represents the **entire membership and is supported by IMF staff**.
 - The **Managing Director** is the **head of the IMF staff and Chair of the Executive Board** and is assisted by **four Deputy Managing Directors**.
 - The **IMF** has **18 departments** that carry out its **country, policy, analytical, and technical work**.
- **Who funds the IMF?**
 - **IMF funds** come from **three sources**:
 - **Member quotas: The primary source of IMF funding**. A member country's quota reflects its **size and position in the world economy**. It is based upon:
 - It is a **weighted average of GDP** (weight of 50 %)
 - Openness (30 %),
 - Economic variability (15 %),
 - International reserves (5 %).
 - The GDP of a member country is measured through a blend of **GDP—based on market exchange rates** (weight of 60 %) and on **PPP exchange rates (40 %)**.
 - **The USA (16.50)** has the maximum quote and thus maximum voting power, followed by **Japan (6.14%)** and **China (6.08%)**. **India** has a **2.63% Quota share**.
 - **Multilateral borrowing agreements: New Arrangements to Borrow (NAB)** between the **IMF** and a **group of members and institutions** are the main backstop for quotas. In **January 2020**, the **IMF Executive Board** agreed to **double the size of the NAB to SDR 365 billion, or \$504 billion**.
 - **Bilateral borrowing agreements:** Member countries also have committed resources through **bilateral borrowing agreements (BBAs)**. In **2020**, the **IMF Executive Board** approved a new round of BBAs, totalling **SDR 138 billion, or \$190 billion**.
- **Special Drawing Rights (SDRs)** are the **IMF's unit of account and not a currency**.
 - The **currency value** of the **SDR** is determined by **summing** the values in **U.S. dollars**, based on **market exchange rates**, of an **SDR basket of currencies**.
 - **SDR basket of currencies** includes the **U.S. dollar, Euro, Japanese yen, pound sterling** and the **Chinese renminbi (included in 2016)**.
 - The **SDR currency value** is **calculated daily** (except on IMF holidays or whenever the IMF is closed for business) and the valuation basket is reviewed and **adjusted every five years**.
 - **Quotas** are **denominated (expressed) in SDRs**.
 - **SDRs** represent a **claim to currency held by IMF member countries** for which they may be exchanged.
- **Gold tranche (or Reserve tranche):**
 - A **reserve tranche** is a **portion of the required quota of currency** each member country must provide (in the form of **gold or foreign currency**) to the **International Monetary Fund (IMF)** that can be utilized for its own purposes—**without a service fee or economic reform conditions**. It is a **credit system** granted by the **IMF** to its **members**.

India's Push for Permanent Solution at WTO

Subject: IR

Sec: Int Org

- **Background:**
 - India seeks to revive discussions at the WTO regarding the **longstanding issue of a permanent solution for public stockholding subsidies.**
 - The recent Ministerial Conference in Abu Dhabi failed to produce results, prompting India to renew its efforts.
- **Revisiting Joint Proposal:**
 - India urged WTO members to reconsider the joint proposal made by **G33-African Group-ACP Group on public stockholding.**
 - The proposal **outlines an acceptable permanent solution, emphasizing the need for separate negotiations** without linking them to discussions on domestic support.
- **Disappointment Over MC13 Outcome:**
 - India urged members to fulfill the mandate dating back to the 2013 Bali Ministerial Decision.
- **Bali Interim Solution:**
 - The interim solution from the Bali Ministerial Decision offers a **peace clause allowing developing nations to exceed WTO-prescribed subsidy limits without facing legal action.**
 - India invoked the **peace clause for the fifth time last month** due to breaching the subsidy limit on rice in 2022-23.
- **Call for Permanent Solution:**
 - India and other developing nations advocate for a permanent solution due to importance of food security, highlighting the **success of its public stockholding programs in feeding its large population** and supporting poor farmers.
- **Brazil's Proposal and Reaction:**
 - Brazil proposed deferring the permanent solution until MC14 in 2026, suggesting a timeline and review process.
 - This proposal faced opposition from various members, including the African Group, G33 developing members, and countries from the African, Pacific, and Caribbean regions.
- **EU's Position:**
 - While open to Brazil's suggestion, the **EU emphasized giving priority to issues such as trade-distorting domestic support and the unresolved matter of public stockholding.**
- **Caution from the US:**
 - The US urged all members to engage and compromise to break the stalemate.
 - India reiterated its stance that **a permanent solution for public stockholding should be achieved before addressing other agriculture pillars like domestic support and market access.**

Public Stockholding at WTO:

The proposal aims to **reform public stockholding by advocating for fair calculations of subsidies based on current external reference prices** instead of outdated ones.

- **Concept of Public Stockholding:**
 - Public stockholding programs are **utilized by governments to procure, stockpile, and distribute food to those in need.**
 - While food security is a valid policy objective, some programs are **viewed as distorting trade when governments purchase from farmers at fixed prices.**
- **Interim and Permanent Solutions:**
 - At the 2013 Bali Ministerial Conference, ministers agreed on an interim basis to not legally challenge public stockholding programs in developing countries, even if they breached agreed-upon subsidy limits.
 - Negotiations for a permanent solution were also mandated at this conference and reaffirmed at the 2015 Nairobi Ministerial Conference.
- **Issue with Current Rules:**
 - Under the Agreement on Agriculture (AoA), **subsidies given to farmers are calculated based on the excess of Minimum Support Price (MSP) over the international price,** known as External Reference Price (ERP).
- **Amber Box Subsidy:**
 - The WTO's AoA classifies domestic support into different categories, including the Aggregate Measurement of Support (AMS) or "**amber box.**"
 - AMS includes **both product-specific and non-product specific subsidies** provided to agricultural producers.

- **De Minimis Level of Support:**
- Developing countries can provide **AMS up to 10% of their agricultural GDP, while the limit is 5% for developed economies.**
- This threshold is known as the de minimis level of support.
- **Peace Clause:**
- Agreed upon at the WTO's Bali Ministerial meeting in 2013, the **peace clause allows developing countries to exceed subsidy limits on food crops under certain conditions** related to notifications on public stockholding programs and food security.

G33 –

The Africa Group and the G33 alliance, **representing developing nations like India, stress the urgency of addressing food security concerns amidst the backdrop of the Covid-19 pandemic.**

The G33, often referred to as the Friends of Special Products, is a **coalition comprising 48 member nations, including India, China, and Indonesia.**

Established before the 2003 Cancun ministerial conference, the group aims to safeguard the interests of developing countries, particularly in agriculture negotiations.

India, Chinese Taipei ask WTO body to delay ruling on ICT import duties dispute till July 26

Subject: IR

Sec: Int Org

Context:

- India and Chinese Taipei have asked the **WTO's dispute settlement body** not to adopt any ruling against New Delhi's import duties on certain information and technology products till July 26 as both sides are engaged in resolving the matter.

More on news:

- The issue came up during a meeting of the **dispute settlement body (DSB) in Geneva on April 26.**
- **DSB had agreed to three previous requests from India and Chinese Taipei to delay consideration of the reports.**
- As per rules of the **WTO, the panel's ruling will have to be adopted by DSB for implementation within 60 days of the release of the order. However, countries can mutually request DSB for delay in adoption of the ruling.**
- A dispute panel of the **WTO on April 17, 2023,** said import duties imposed by India on certain information and technology products violate global trading norms.
- The ruling followed a case filed by the **EU, Japan and Taiwan against these duties in WTO.**
- Besides formulating norms for global exports and imports, **the Geneva-based 164-member multilateral body adjudicates trade disputes among the member countries.**

About the case:

- In May 2019, Chinese Taipei had filed a case against India in the **WTO over the import duties imposed on certain electronic goods, including telephones for cellular networks; machines for reception, conversion and transmission or regeneration of voice, images or other data; and parts of telephone sets.**
- India has stated that these **ICT products are part of WTO's Information Technology Products (ITA-2) agreement, and New Delhi is not part of this pact. India is a part of ITA-1, signed in 1997, which did not have any obligation to eliminate customs duties on these products.**
- According to WTO rules, **a member country can file a case in WTO if they feel that a particular trade measure is against the norms of WTO.**
- Bilateral consultation is the **first step to resolving a dispute.**
- If both sides are not able to resolve the matter through consultation, either of them can approach the establishment of a dispute settlement panel.

About Dispute settlement body (WTO):

- The General Council convenes as the **Dispute Settlement Body (DSB) to deal with disputes between WTO members.**
- Such disputes may arise with respect to any agreement contained in the **Final Act of the Uruguay Round that is subject to the Understanding on Rules and Procedures Governing the Settlement of Disputes (DSU).**
- The DSB has 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 rulings contained in such reports, and authorize suspension of concessions in the event of non-compliance with those recommendations and rulings.**

Geneva-based UN-related body to review India's human rights accreditation status this week

Subject: IR

Sec: Int Org

Context:

- The **National Human Rights Commission (NHRC)** is preparing to defend the government's human rights processes at a meeting in Geneva this week.

More on news:

- The NHRC's ratings were put on hold in 2023 over concerns on its composition procedure, the presence of police personnel in human rights investigations, and the lack of gender and minority representation, and the decision over whether the **NHRC is given an A rating or a B rating would affect its ability to vote at the UN Human Rights Council and some UNGA bodies.**
- The meeting of the **Sub-Committee on Accreditation (SCA) of the UN-recognised Global Alliance of National Human Rights Institutions (GANHRI)** worldwide will be held on May 1.
- The **Ministry of External Affairs (MEA)** is understood to have reached out to various countries involved in the review process to make its case through diplomatic channels.

About the timeline:

- This is the **second time the Modi government is facing a possible listing downgrade.**
- Since being accredited in 1999, India had retained its A ranking in 2006 and 2011, while its status was deferred in 2016 and restored after a year.
- According to a **six-point submission by the SCA in March 2023**, the NHRC has failed to create conditions required to be able to operate independent of government interference.
- The **committee had slammed India for the involvement of police officers** in its investigative process, calling it a conflict of interest.

About Global Alliance of National Human Rights Institutions (GANHRI):

- The **Global Alliance of National Human Rights Institutions (GANHRI; known until 2016 as the International Coordinating Committee of National Human Rights Institutions or International Coordinating Committee, abbreviated ICC)** is a global network of national human rights institutions (NHRIs) which coordinates the relationship between NHRIs and the United Nations human rights system.
- It is **unique as the only non-UN body** whose internal accreditation system, based on compliance with the 1993 Paris Principles, grants access to UN committees.
- Institutions accredited by the **Subcommittee for Accreditation (SCA) of GANHRI with "A status"**, meaning full compliance with the Paris Principles, are usually accorded speaking rights and seating at human rights treaty bodies and other UN organs, mainly to the Human Rights Council.
- GANHRI representatives often present statements on behalf of individual NHRIs or the regional groups.



Debt, fiscal challenges facing low-income countries worry IMF

Subject: IR

Sec: world history

Context:

- **Shareholders of the International Monetary Fund** agreed on the importance of addressing challenges faced by low-income countries, many of which are facing unsustainable debt burdens.

More on news:

- **IMF chief Kristalina Georgieva** said that the body is working on ways to support low-income countries hit hardest by high debt levels.
- The IMF lowered its **2024 growth forecast for low-income countries** as a group to 4.7% from an estimate of 4.9% in January.
- The World Bank said half of the **world's 75 poorest countries** were experiencing a widening income gap with the wealthiest economies for the first time this century in a historical reversal of development.
- The **IMF was working to reinforce its ability to support low-income countries** hit hardest by recent shocks, including through a 50% quota share increase and by adding resources to its Poverty Reduction and Growth Trust.

Impact of high debt levels on low-income countries:

- High debt levels posed a **huge burden for low-income countries, including many in Sub-Saharan Africa, where countries face debt service payments of 12% on average, compared to 5% a decade ago.**
- High interest rates in advanced economies have lured away investments, and raised the cost of borrowing.
- Some countries' debt payments are up to **20% of revenues.**
- Affected countries needed to increase their domestic revenues by raising taxes, continuing to fight inflation, paring back spending and developing local capital markets.
- Concerns were raised about the situation facing low-income countries last week, warning China and other emerging official creditors against free-riding by curtailing loans to low-income countries just as the IMF or multilateral development banks were pouring funds in.
- Almost 40 countries saw external public debt outflows in 2022, and the flows likely worsened in 2023.

Centre and Congress spar over katchtheevu issue

Subject: IR

Section: Places in news

Where is the island of Katchatheevu?

- **Katchatheevu** is a **285-acre uninhabited speck in the Palk Strait, between India and Sri Lanka.**
- It lies **northeast of Rameswaram, about 33 km from the Indian coast.** It is about **62 km southwest of Jaffna, at the northern tip of Sri Lanka, and 24 km away from the inhabited Delft Island, belonging to Sri Lanka.**
- The **only structure on the island** is an **early 20th-century Catholic shrine – St Anthony's church.** During an annual festival, Christian priests from both India and Sri Lanka conduct the service, with devotees from both India and Sri Lanka making the pilgrimage.
- **Katchatheevu is not suited for permanent settlement** as there is **no source of drinking water** on the island.



When did Katchatheevu become a part of Sri Lanka?

- **Katchatheevu** became a part of **Sri Lanka** following an **agreement** signed between the then **Prime Ministers of India and Sri Lanka, Indira Gandhi and Sirima R.D. Bandaranaike, from June 26-28, 1974.**
- This **agreement** demarcated the **boundary** between the **two countries** in the **waters from the Palk Strait to Adam's Bridge, based on historical evidence, legal international principles, and precedents.**

- A **joint statement** issued on **June 28, 1974**, confirmed that the **defined boundary** placed **Katchatheevu one mile off the west coast** of its uninhabited land.
- This pact concluded negotiations that had been ongoing since **October 1921**, initially between the **governments of Madras (now Chennai) and Ceylon (now Sri Lanka)**.

How important has been Katchatheevu to the fisherfolk?

- **Katchatheevu** has been of significant importance to the **fisherfolk** of both **India and Sri Lanka**, serving as a **traditional fishing ground for them**.
- While the **1974 agreement** between **India and Sri Lanka** recognized this **traditional usage**, a **supplemental pact in March 1976** specified that **fishing vessels and fishermen** from the **two countries could not fish in the historic waters, territorial seas, exclusive zones, or exclusive economic zones** of either country **without explicit permission** from **Sri Lanka or India**.
- Additionally, **Katchatheevu** hosts an **annual festival** at **St. Anthony's Church**, typically in February or March, which attracts devotees from both sides of the **Palk Bay**, underscoring the **islet's cultural significance** beyond its **economic importance** to the fishing communities.

What triggered the negotiations between India and Sri Lanka?

- The negotiations between **India and Sri Lanka** over **Katchatheevu** were triggered by **conflicting sovereignty claims**.
 - **Sri Lanka claimed sovereignty** based on the **historical jurisdiction exercised by the Portuguese** during their occupation of the island from **1505 to 1658 CE**.
 - On the other hand, **India** argued that **Katchatheevu** was **part of the zamin (estate)** of the erstwhile **Raja of Ramnad (Ramanathapuram)**, indicating **long-standing possession and administration as part of his territory**.
- This claim was supported by an interview published by **The Hindu on March 6, 1968**, with the **erstwhile Raja Ramanatha Sethupathi**, who stated that **Katchatheevu** had been under the **zamin's jurisdiction "from time immemorial"** and had been a **tax-collecting point for the estate until 1947**, when it was taken over by the **State government** following the **Zamindari Abolition Act**.
- The matter was discussed in the **Lok Sabha in July 1974**, where the then **External Affairs Minister Swaran Singh** stated that the **decision** regarding the **islet** had been made after **"exhaustive research of historical and other records."**

What has been the stand of the Union government on the issue?

- As of August 2013, the **Union government's stance** conveyed to the **Supreme Court** was that the **retrieval of Kachchatheevu from Sri Lanka was not considered feasible**, arguing that **no Indian territory had been ceded to Sri Lanka**.
- The government presented the **islet** as a **historical dispute between British India and Ceylon (now Sri Lanka)**, with **no established boundary prior to the dispute**.
- This issue was reportedly resolved through the agreements made in **1974 and 1976**. Further, in **December 2022**, the Union government reiterated its position in the **Rajya Sabha**, referencing the **two agreements to affirm that Katchatheevu falls on the Sri Lankan side of the India-Sri Lanka International Maritime Boundary Line**.

Rwanda: Genocide Archives Released

Subject: IR

Section: Places in news

Context:

- **Human Rights Watch** announced that it is releasing a **series of archives** highlighting the **extraordinary efforts of human rights defenders in Rwanda and abroad**, to warn about the **planned 1994 genocide and attempt to stop the killings**. The documents painfully illustrate **leading international actors' refusal to acknowledge the slaughter of more than half a million people and act to end it**.

About Rwanda genocide:

- On **April 6, 1994**, the **assassination of Rwandan President Juvénal Habyarimana and Burundian President Cyprien Ntaryamira** triggered a **three-month genocide in Rwanda**.
- **Hutu extremists** killed approximately **three-quarters of the Tutsi population and moderate Hutus**, resulting in **over half a million deaths**.
- The **Rwandan Patriotic Front (RPF)** ended the **genocide in mid-July 1994** but also **committed killings**, primarily targeting **Hutu civilians**.
- **Human Rights Watch** and **Alison Des Forges** documented the **genocide** and the **failure of the international community to intervene**.
- Despite warnings of a **planned genocide**, **international and UN efforts to prevent or stop the killings were insufficient**.

Hutu tribe:

- The **Hutu** also known as the **Abahutu**, are a **Bantu ethnic or social group** which is **native** to the **African Great Lakes region**. They mainly live in **Rwanda, Burundi** and the **eastern Democratic Republic of the Congo**, where they form **one of the principal ethnic groups** alongside the **Tutsi** and the **Great Lakes Twa**.

Tutsi tribe:

- The **Tutsi**, also called **Watusi, Watutsi** or **Abatutsi**, are an **ethnic group** of the **African Great Lakes region**.
- They are a **Bantu-speaking** ethnic group and the **second largest of three main ethnic groups** in **Rwanda** and **Burundi** (the other two being the largest **Bantu ethnic group Hutu** and the **Pygmy group of the Twa**).
- Historically, the **Tutsi** were **pastoralists** and filled the ranks of the **warriors' caste**.
- Before **1962**, they **regulated and controlled Rwandan society**, which was composed of **Tutsi aristocracy** and **Hutu commoners**, utilizing a **clientship structure**.
- They occupied the **dominant positions** in the **sharply stratified society** and **constituted the ruling class**.

Missed opportunities to prevent the genocide:

- **Human Rights Watch** is releasing **archives from 1993 to 1994**, highlighting **advocacy efforts to prevent and stop the genocide**.
- The **archives reveal missed opportunities for international intervention** that could have halted the genocide.
- The **genocide** led to the adoption of the **"Responsibility to Protect" doctrine** in **2005** and **continues to influence foreign policy and perceptions of Rwanda**.
- Most genocide prosecutions have occurred in **Rwandan courts**, the **International Criminal Tribunal for Rwanda**, and under **universal jurisdiction in various countries**.
- The **30th anniversary prompts reflection** on the **progress in holding perpetrators accountable** and the **ongoing need for justice for victims**.



Zimbabwe's President Mnangagwa declares national disaster over drought

Subject: IR

Section: Places in news

Context:

- **Zimbabwe's President Emmerson Mnangagwa** has **declared a national disaster** in response to a **severe drought crisis**.
- **Main affected region:** South-western provinces of Matabeleland North and South.

African countries facing severe droughts



Details:

- The country requires **\$2 billion** to address **hunger** caused by **diminished rainfall**, which has led to the **loss of roughly half of the maize crop**.
- An estimated **2.7 million people** in **Zimbabwe** are **facing hunger due to the grain shortage and rising food prices**.
- Similar declarations of disaster have been made by neighbouring **Zambia** and **Malawi**, also affected by drought.
- There are concerns that the current **drought in southern Africa** could be **one of the worst in decades**.
- According to the **World Food Programme**, around **13.6 million people** in the **region** are **experiencing crisis-level food insecurity**.
- **Zimbabwe** is dealing with **high inflation**, significantly impacted by **food prices**.
- The **drought**, worsened by the **El Nino weather pattern**, has also impacted electricity production due to reliance on hydroelectric power.
- **Zimbabwe**, once a **major agricultural contributor** in **southern Africa**, has faced several severe droughts in recent years, affecting both crops and cattle.
- The country experienced its **worst drought in 1992** and has seen **increasing frequencies of such events**, with **significant droughts also declared** in **2016** and **2019**.

Causes of severe drought in Southern Africa:

- **El Nino**, a **naturally occurring climatic phenomenon** that **warms parts of the Pacific Ocean every two to seven years**, has varied effects on the **world's weather**.
 - In southern Africa, it typically causes below-average rainfall, but this year has seen the worst drought in decades.
- While not all droughts are directly linked to climate change, the phenomenon exacerbates drought conditions by **increasing atmospheric heat** and **moisture extraction**.
- **Global temperatures** have **risen approximately 1.2C** since the industrial era, with ongoing increases expected unless significant emissions reductions are achieved.

Israel's repeated attacks leave Iran in a strategic dilemma

Subject: IR

Section: Places in news

Context:

- **Israel's Defence Minister Yoav Gallant** stated **Israel is engaged in a multi-front war**, both **offensively** and **defensively**.
- **Israel is involved in conflicts with** **Iran, Syria, Lebanon, Hamas, and Hezbollah** forces.

Octopus doctrine:

- **Israel** identifies **Iran** as its **primary adversary**, connecting it to **various anti-Israel groups** in **West Asia** like **Hamas, Hezbollah, Houthis, and Islamic Jihad**.
- **Former Prime Minister Naftali Bennet** described **Iran** as the "**head of the octopus**" with the **militias acting as its tentacles**.
 - **Israel** is now attacking both the **head** and the **tentacles simultaneously**.
- **Israeli Prime Minister Benjamin Netanyahu** faces **internal pressure to resign** and the recent attack on the **Iranian embassy annex in Syria** marks a significant escalation in the **conflict with Iran**, challenging the norms protected under the **1961 Vienna Convention** regarding **diplomatic premises**.
 - The **1961 Vienna Convention** states that **embassy and consular premises should be protected even in times of war**.
 - **Israel** says the **annex** was a **consular section only in the name and it was actually used by the Quds Force**.
- **Israel's actions** suggest a readiness to **combat Iranian influence in the region**, even at the risk of **open conflict**, by demonstrating its capability to target senior Iranian military officials anywhere, including diplomatic sites.

Mutual response:

- **Iran's military strategy** focuses on **avoiding direct conflicts** with **more powerful nations**, utilizing **proxies and asymmetric warfare instead**. An **open conflict with Israel** is seen as **potentially disastrous for the region** and could involve the **U.S.**
- **Strategic restraint** is seen as beneficial for **Iran** to avoid **triggering a broader war**. However, **Israel's** continued strikes undermine **Iran's deterrence capabilities**, challenging **Iran to respond without initiating a full-scale conflict**.
- The killing of **Gen. Mohammad Reza Zahedi**, a **high-ranking Quds Force commander**, in the **Damascus consulate attack** presents a dilemma for **Iran**.

Islamic Revolutionary Guard Corps: Role, organisation

Subject: IR

Section: Places in news

Context:

Iran launched hundreds of aerial drones and missiles at Israel, on Saturday night, in what is being called first direct clash between the two enemy nations engaged in a shadow war for years. Until now, Iran had been involved in the war through its proxies.

Iran's Islamic Revolution Guard Corps (IRGC) said the attack was aimed at specific targets.' Earlier, country's supreme leader Ayatollah Ali Khamenei had vowed to 'retaliate' after an alleged Israeli strike on April 1 on its consulate in Damascus, Syria killed seven IRGC officers, including a top commander Mohammad Reza Zahedi.

What is IRGC?

IRGC is a multi-service primary branch of the Iranian Armed Forces different from country's traditional Army. While the Iranian Army protects the country's sovereignty, IRGC is largely aimed at defending the Islamic Republic of Iran against internal and external threats.

Over the years, the corps has gained an outsize role in executing Iran's foreign policy and it wields control over vast segments of the country's economy, according to US think tank, *Council on Foreign Relations (CFR)*.

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In 2019, the then US President Donald Trump designated the IRGC a terrorist organization. This was for the first time that the US had ever designated another government's department as a Foreign Terrorist Organization.

When was IRGC formed?

The IRGC, or the Sepah-e-Pasdaran, was set up by by Ruhollah Khomeini soon after the **1979 Islamic Revolution of Iran** largely to protect the the Shia Muslim clerical ruling system of Iran and provide a counterweight to the regular armed forces, according to a report in Reuters.

IRGC reports directly to the country's supreme leader.

How big is IRGC?

The IRGC is today considered one of the most powerful paramilitary organisations in the Middle East. In the past, the force is known to have aided Afghanistan, Iraq, Lebanon, the Palestinian territories, Syria, and Yemen.

Today, IRGC has an estimated strength between 125,000- 190,000 personnel with army, navy and air units, according to the many reports.

To explain how big the numbers are, for an area of 3.287 million sq km, India has 1,237,117 active army personnel. But for 1.648 million sq km area, Iran has 125,000 strong IRGC personnel. And remember, this is apart from the traditional Iranian army.

The Israeli military has about 170,000 active personnel and 465,000 reservists.

IRGC also comprises of **Basij militia**, a volunteer paramilitary force loyal to the clerical establishment of the country. This militia is often used to crack down on anti-government protests.

What is Quds Force?

IRGC's ties with region's armed groups such as the Hezbollah in Lebanon and the Hamas in the Palestinian territories, has helped Iran project influence and power.

Quds Force, the secret wing of IRGC, is responsible for its international operations. Mohammad Reza Zahedi, killed in Damascus on April was a senior commander in the **Quds Force**.

All eight units of IRGC operate under the leadership of the IRGC commander-in-chief Major General Hossein Salami and his deputy, Ali Fadavi. But the Quds Force's commander effectively operates within a parallel structure and reports directly to the Supreme Leader of Iran, Ayatollah Khamenei

As war looms over West Asia, many of its major water bodies are already on the brink

Subject: IR

Section: Places in news

Context:

- Tensions have escalated sharply in **West Asia**, highlighted by **Iran's missile attack on Israel** on the night of April 13-14, 2024.

Details:

- The **region also faces an acute water crisis**. The **Middle East and North Africa (MENA)**, holding **only 1% of the world's renewable freshwater** but **5% of its population**, is **one of the most climate-vulnerable regions globally**.
- This scarcity is aggravated by **rising temperatures** and **ongoing desertification**, impacting **security and stability**.

Cradle of civilization no more:

- **West Asia**, once the **cradle of ancient civilizations** like **Mesopotamia**, is now facing **severe water crises** due to **anthropogenic activities** and **historical conflicts**.
- The **Tigris and Euphrates rivers**, essential to **historical civilizations** such as **Assyria, Akkad, Sumer, and Babylon**, are threatened by **upstream dam constructions** by **Iraq's neighbours, Turkey and Iran**.
- Additionally, **environmental damage** from **past policies**, such as the **drainage of southern Iraq's marshes** under **Saddam Hussein**, exacerbates the situation.
- Similarly, the **Jordan River basin**, crucial for **Jordan, Syria, and Israel**, faces challenges despite existing **treaties for water sharing**. These treaties overlook Palestinian interests and fail to address the diminishing **Dead Sea**, underscoring the broader water crises in the region.

Iranian Plateau:

- **Iran** faces severe internal challenges from a burgeoning **water crisis**, leading to significant **protests** and **instability**.
- The **Zayandeh Rud** protests in **2021** were sparked by the **drying up of the river** due to **diversion** and **mismanagement**, affecting the **city of Isfahan** and its surrounding areas.
 - The **Zayandeh River**, which ends in **Lake Gavkhouni** near the fabled city of Isfahan, began to dry up in the early 2000s
- Additionally, tensions over **water resources** extend beyond domestic issues, involving **cross-border disputes** with **Afghanistan** over the **Helmand River**, which have escalated to violent confrontations.
- The **strategic location** of the **Red Sea** and **Persian Gulf** further complicates regional dynamics, as they are **crucial choke points** in **global supply chains**.

Water bodies	Description
Tigris River	<ul style="list-style-type: none"> • The Tigris is the eastern of the two great rivers that define Mesopotamia, the other being the Euphrates. • The river flows south from the mountains of the Taurus in Turkey, then through the Syrian and Arabian Deserts, emptying into the Persian Gulf. • Major cities on the river basin: Elazığ (Turkey), Diyarbakır (Turkey), Mosul (Iraq), Baghdad (Iraq).
Euphrates River	<ul style="list-style-type: none"> • The Euphrates is the longest and one of the most historically important rivers of Western Asia. • Originating in Turkey, the Euphrates flows through Syria and Iraq to join the Tigris in the Shatt al-Arab in Iraq, which empties into the Persian Gulf. • The Euphrates is the fifteenth-longest river in Asia and the longest in Western Asia, at about 2,780 km (1,730 mi), with a drainage area of 440,000 km² (170,000 sq mi) that covers six countries.

Jordan River	<ul style="list-style-type: none"> The Jordan River, also known as Nahr Al-Sharieat is a 251-kilometre-long (156 mi) river in the Middle East that flows roughly north to south through the Sea of Galilee and onto the Dead Sea. Jordan and the Golan Heights border the river to the east, while Israel and the occupied West Bank lie to the west. Both Jordan and the West Bank derive their names in relation to the river. The river holds major significance in Judaism and Christianity. According to the Bible, the Israelites crossed it into the Promised Land and Jesus of Nazareth was baptized by John the Baptist in it.
Helmand River	<ul style="list-style-type: none"> The Helmand River is the longest river in Afghanistan and the primary watershed for the endorheic Sistan Basin. It originates in the Sanglakh Range of the Hindu Kush mountains in the northeastern part of Maidan Wardak Province, where it is separated from the watershed of the Kabul River by the Unai Pass. The Helmand feeds into the Hamun Lake on the border between Afghanistan and Iran.
Zayandeh River	<ul style="list-style-type: none"> The Zayandeh River originates in the Zagros mountains, and travels around 300 km, before terminating in Gavkhouni. It is the largest river of the Iranian Plateau in central Iran.
Lake Gavkhouni	<ul style="list-style-type: none"> Gavkhouni or Batlaq-e-Gavkhuni, located in the Iranian Plateau in central Iran, east of the city of Isfahan, is the terminal basin of the Zayandeh River. Gavkhouni is a salt marsh with a salinity of 31.5% and an average depth of about 1 m. The marshes were designated a Ramsar site in 1975, the 19th wetland in Iran designated as a Wetland of International Importance on the Ramsar list. The wetland is home to a variety of migratory birds including flamingos, ducks, geese, gulls, pelicans, and grebes. The vegetation of the area is very specialised; there are no green plants and trees around the lake due to soil salinity, but in the wetland, different species such as reeds, cattail, Schoenoplectus, pondweeds and various algae grow.
Lake Hāmūn	<ul style="list-style-type: none"> Lake Hāmūn or the Hamoun Oasis, is a seasonal lake and wetlands in the endorheic Sīstān Basin in the Sistan region on the Afghanistan–Iran border. In Iran, it is also known as Hāmūn-e Helmand, Hāmūn-e Hirmand, or Daryācheh-ye Sīstān. The Hamun is fed by numerous seasonal water tributaries; the main tributary is the perennial Helmand River, which originates in the Hindu Kush mountains in Afghanistan.
Dead Sea	<ul style="list-style-type: none"> The Dead Sea, also known by other names, is a landlocked salt lake bordered by Jordan to the east and the Israeli-occupied West Bank and Israel to the west. It lies in the Jordan Rift Valley, and its main tributary is the Jordan River.

Iran-Israel Conflict and India's Oil Trade

Subject: IR

Section: Places in news

- **Impact of Escalation:**
 - Escalation in the **Iran-Israel conflict** could affect India's crude oil imports.
 - Geopolitical tensions in **West Asia** may increase risk premiums and raise concerns about supply disruptions.
 - India relies on imports for over **85%** of its crude oil needs.
- **Importance for India's Economy:**
 - India's economy is highly sensitive to **oil price volatility**.
 - High oil prices can lead to inflation, affect trade balance, foreign exchange reserves, and the value of the rupee.
- **Recent Developments:**
 - **Global benchmark Brent crude** breached \$90 per barrel due to tensions.
 - Prices were already rising due to production cuts by major producers.
- **Speculations on Prices:**
 - Analysts suggest oil prices could reach **\$100 per barrel** if conflict impacts oil availability.
 - Concerns about **supply and transportation disruptions** or attacks on production facilities.
- **Impact on India's Imports:**

- India currently does not import Iranian oil due to US sanctions.
- Potential impact on **competition with China** for oil from other suppliers, especially **Russia**.
- **Crude Suppliers to India:**
 - India imports from **West Asian suppliers** like **Iraq, Saudi Arabia**, and the **UAE**.
 - Potential disruption could impact supplies and prices.
- **Key Concerns:**
 - **Strait of Hormuz** is crucial for India's West Asian oil supplies.
 - Any disruption could lead to panic buying by Indian refiners.
- **Refiners' Response:**
 - India's crude suppliers are **diverse and large**.
 - Refinery sector officials monitoring the situation, concerns about **price upswing**.
- **Financial Impact:**
 - **High oil prices** may pressure refiners and fuel retailers' financials.
 - Possibility of losses on fuel sales unless retail prices are adjusted.
 - Refiners closely watching situation to assess future impacts.
- **India's Crude Suppliers:**
 - **March 2024:** Russia was India's top source of crude (33% of imports).
 - Cumulative share of Iraq, Saudi Arabia, and the UAE was almost **48%** in India's total oil imports.

Key points

The 'Axis of Resistance':

The 'Axis of Resistance' refers to a **coalition of groups and entities primarily aligned against Israel and its allies in the Middle East. It includes:**

1. **Hamas:** A Palestinian militant Islamist group controlling the Gaza Strip.
2. **Hezbollah:** A Lebanese Shia Islamist political party and militant group.
3. **Houthi Movement:** A Yemeni rebel group known formally as Ansar Allah.
4. Various **Shi'ite armed groups** in Iraq and Syria, often backed by Iran.

These groups are united by their opposition to Israel and, often, to Western influence in the region. They coordinate efforts and share resources to resist what they perceive as threats to their interests and territories.

Impact of Israel-Hamas Conflict on India:

India, as a net importer of crude oil, could be affected by prolonged conflicts such as the Israel-Hamas war in the following ways:

- **Increased Import Bill:** Rising oil prices due to conflict can lead to higher import bills for India.
- **Petrol and Diesel Prices:** Elevated global oil prices can translate to higher petrol and diesel prices domestically.
- **Inflationary Pressures:** Higher fuel prices can contribute to overall inflation.
- **Fiscal Deficits:** Government subsidies to control fuel prices could impact fiscal deficits.
- **Currency Depreciation:** A rise in import bills can put pressure on the Indian rupee.
- **Economic Growth:** Prolonged conflicts may lead to economic uncertainty and impact overall growth prospects.

Russian troops start to withdraw from Nagorno-Karabakh

Subject: IR

Sec: Places in news

Context:

- **Russian peacekeepers** have **started withdrawing** from **Nagorno-Karabakh** following the **territory's recapture** by **Azerbaijan** from **Armenian** separatists.
- The withdrawal follows a **2020 Moscow-brokered ceasefire** between **Azerbaijan (Baku)** and **Armenia (Yerevan)**.

About the Nagorno-Karabakh conflict:

- **Nagorno-Karabakh** (also known as **Artsakh** by **Armenians**) is a mountainous region in the **Caucasus**, **internationally recognized as part of Azerbaijan**, but predominantly **inhabited by ethnic Armenians**.
- It has an **unrecognised government** with **close ties to Armenia**.
- The **conflict started** in the **late 1980s** when the **region declared independence from Azerbaijan** amid the **Soviet Union's collapse**.

- A war ensued, ending in a **1994 ceasefire** with **Nagorno-Karabakh** and some surrounding areas under **Armenian control**.
- Despite the **ceasefire**, violations were frequent, and peace negotiations often failed.
- In **2020**, **Azerbaijan regained significant territory** in the **Second Karabakh War**.
- A **peace deal** was brokered by **Russia in 2020**, leading to the **deployment of Russian peacekeepers in the region**.



Azerbaijan:

- A country located in **Asia**, bordered by **Russia, Georgia, Armenia, and Iran**, with the **Caspian Sea** to the **east**.
- Its landscape features the **Caucasus Mountains** covering much of the **north and west**.
- Baku is the capital city.
- The **nation is rich in oil and natural gas resources**. A notable attraction is **Yanar Dag**, where **natural gas seepages** have fueled a **continuous fire** for over **65 years**, earning **Azerbaijan** the nickname "**The Land of Fire**."

Armenia:

- A **landlocked** country in the **Caucasus** with **Turkey** to the **west**, **Georgia** to the **north**, and **Azerbaijan** to the **east**.
- **Capital:** Yerevan.
- **Armenia** is a **mountainous country**.
- **Highest Peak:** Mount Ararat.

Burkina Faso expels French diplomats for 'subversive activities'

Subject: IR

Sec: Places in news

Context:

- **Burkina Faso** has **expelled three French diplomats**, **Gwenaelle Habouzit, Herve Fournier, and Guillaume Reisacher**, for alleged "**subversive activities**." The **French government** has **refuted these allegations** as unfounded.

Details:

- **Steps taken by Burkina Faso against French expulsions:**
 - Cancelled military agreements
 - Withdrawing French troops
 - Expelled diplomats on the charge of espionage
- Now **Burkina Faso** is seeking **security support from Russia**.
- **Collaborating with Russia** to build a **nuclear power station** in the country.
- Amidst ongoing **jihadi threats**, **Burkina Faso, Mali, and Niger**, all governed by **military juntas**, have **formed a defense and economic pact** named the **Alliance of Sahel States (AES)** and have withdrawn from the **ECOWAS**. The alliance focuses on combating terrorism in the region.

Alliance for Sahel States (AES):

- The **junta leaders** of **Mali, Burkina Faso** and **Niger** signed a **charter** to establish a **defence alliance** known as the **Alliance of Sahel States**.
- Under this alliance, **any attack on one or more signatory states will be considered an attack on all signatories**.
- The **alliance** between **three West African states**, all ruled by military juntas and **former French colonies**.
- These **three countries** were also members of the **France-supported G5 Sahel alliance joint force**, with **Chad** and **Mauritania** being the **other two allies**.

Burkina Faso:

Country	Location	Capital
Burkina Faso	A landlocked country in West Africa.	Ouagadougou

Bordering Nations	Features
Mali to the northwest, Niger to the northeast, Benin to the southeast, Togo and Ghana to the south, Ivory Coast to the southwest.	<ul style="list-style-type: none"> • The largest ethnic group in present-day Burkina Faso is that of the Mossi people. • Burkina Faso is a least developed country with a GDP of \$16.226 billion. • 63% of its population practices Islam. • Due to French colonialism, the country's official language of government and business is French.



Hainan Free Trade Port construction has gained momentum, says China

Subject: IR

Sec: Places in news

Context:

- Amid ongoing disputes in the **South China Sea**, Liu Xiaoming, Governor of Hainan province, announced significant progress in the development of the **Hainan Free Trade Port (FTP)**.

Hainan Free Trade Port (HFTP):

- This **initiative**, launched six years ago by **Chinese President Xi Jinping**, aims to transform **Hainan** into **China's most open economic region** by **2025** and a **tropical version of Dubai** by **2035**.
- The **FTP** is designed to **boost Hainan's development** through sectors like **deep-sea technology, marine equipment manufacturing, and aquaculture**.
- Additionally, **Hainan** is positioning itself as a key player in **aerospace**, benefiting from its **geographical location**.
- Recent developments include the completion of **launch pads** at China's first commercial spacecraft launch site.
- These developments occur against the backdrop of heightened tensions between **China** and **the Philippines** over **maritime disputes** in the **South China Sea**, with both nations experiencing **repeated naval confrontations**.
- China has defended its actions and attributed regional tensions partly to the influence of external nations like the United States.

About Hainan province:

- **Hainan** is an **island province** in the **People's Republic of China**, located in the **South China Sea**.
- It consists of the **main Hainan Island** and over 200 smaller islands spread across three archipelagos: **Zhongsha, Xisha, and Nansha**.
- The province is the **southernmost part of China** and its name, meaning "south of the sea," refers to its **location south of the Qiongzhou Strait**, which separates it from the **Chinese mainland's Leizhou Peninsula**.
- **Hainan** covers a total land area of 33,920 square kilometres, with the main island accounting for 32,900 square kilometres.
- Originally part of **Guangdong province** from 1950, **Hainan** became its own province in **1988** and was also designated as a **special economic zone** as part of **China's economic reform** initiatives led by **Deng Xiaoping**.

What is the South China Sea dispute?

- Several countries claim various parts of the sea, and these claims often overlap.
- In particular, China's sweeping claims – which include sovereignty claims over land parcels and their adjacent waters – have angered competing claimants like **Vietnam, the Philippines, Taiwan, Malaysia and Brunei**.
- Other countries have staked claims on islands and various zones in the sea, such as the **Paracels** and the **Spratlys**.
- **Nine-dash line:**
 - China claims by far the largest portion of territory in an area demarcated by its so-called "**nine-dash line**".
 - The line comprises nine dashes, which extend hundreds of miles south and east from its most southerly province of Hainan.

'Rwanda deportation flights in 10-12 weeks'

Subject: IR

Sec: Places in news

Context:

- **UK Prime Minister Rishi Sunak** announced that the controversial **Rwanda deportation legislation** would be pushed through a **parliamentary vote**, promising that deportation flights for **asylum seekers to Rwanda** would start within 10-12 weeks.

Details:

- Nearly **5,000 asylum seekers** arrived in the **UK** via the **English Channel** in the **first quarter of the year**, with most coming from **Afghanistan, Iran, Pakistan, India, and Bangladesh**.
- The policy, initially introduced by the **Boris Johnson government**, faced legal issues, including a ruling by the **European Court of Human Rights** and a **UK Supreme Court** decision deeming it **unlawful**. The **revised bill** now states that **Rwanda is a safe country for deportations**.
- Sunak emphasized the role of **people smuggling gangs**, particularly targeting **vulnerable Vietnamese migrants**, who have seen a significant increase in numbers.

Migrant crisis in the U.K.

- The **immigrant crisis in the UK** has **intensified** since **2018** with an **increase in refugees and asylum seekers** from regions like **Sudan, Afghanistan, Yemen, Iran, and Iraq** undertaking perilous journeys from **Calais (France) to Dover (the UK)**.
- The **UK government** has adopted **strict measures against illegal immigration**, exemplified by the **Nationality and Borders Bill, 2021**. This bill, still under review, could **enable the government to revoke citizenship without notification under special conditions**.
- Additionally, the controversial **Rwanda deal aims to deter illegal immigration by relocating migrants to Rwanda**, illustrating a hardline approach to controlling immigration.

Rwanda deal:

- The **Rwanda Deal**, formally known as the **UK and Rwanda Migration and Economic Development Partnership**, is a **Memorandum of Understanding** signed between the **UK and Rwanda**.
- Under this agreement, **Rwanda** agrees to **accept asylum seekers** who arrived in the **UK illegally** on or after **January 1, 2022**.
- These asylum seekers will be held in **Rwanda** while their asylum and resettlement petitions are processed by the **Rwandan government**.
- **Rwanda** commits to accommodating those who are not minors and do not have a criminal record.
- **Rationale behind the deal:**
 - The **Rwanda Deal** is designed to deter "**people smugglers**" by preventing them from **exploiting vulnerable migrants** with **high fees for dangerous boat journeys from France to England**, which frequently result in **mass drownings**.

- The **UK government** argues that this approach is **humane** and focuses on **disrupting the criminal networks** behind these illegal crossings.

How much will it cost to the U.K.?

- The **Rwanda Deal** involves the **UK paying Rwanda £120 million** for an "**economic transformation and integration fund**" and covering **additional operational costs**, including an unspecified amount per migrant.
- Presently, the **UK spends £4.7 million daily** to house around **25,000 asylum seekers**, totaling **£430 million annually in 2021** with an expected increase of **£100 million in 2022**.
- The deal **aims to reduce these expenses** by outsourcing the accommodation of migrants to Rwanda.

Do any other countries send asylum seekers overseas?

- Several countries, including **Australia, Israel, and Denmark**, have **policies of sending asylum seekers overseas**.
- **Australia** has utilized **offshore detention centers** since **2001**.
- **Israel** addressed an **influx of asylum seekers and illegal immigrants** from **Sudan and Eritrea** by making agreements with **third countries**.
- Those **rejected for asylum in Israel** were **offered either repatriation, \$3,500, and a plane ticket to a third country**, or **faced arrest if they remained in Israel**.

Ecuador's raid on the Mexican Embassy triggers outrage across Latin America

Subject: IR

Sec: Places in news

Context:

- **Ecuador's raid on the Mexico embassy in Quito breaches diplomatic norms** outlined in the **Vienna Convention on diplomatic relations**.

About Ecuador- Mexico diplomatic tension:

- **Ecuador's security forces stormed the Mexican embassy in Quito to arrest former Vice President Jorge Glas**, who had been **granted political asylum by Mexico**.
- **Jorge Glas**, sought on **corruption charges**, had been **granted asylum by Mexico** just the day before the **raid** and was subsequently transported under **heavy security** to a **jail in Guayaquil**.
- **Latin American countries**, including **Argentina, Bolivia, Brazil, Chile, Colombia, Cuba, Peru, Uruguay, and Venezuela**, expressed **strong disapproval** of Ecuador's actions.
- **Mexican President Andres Manuel Lopez Obrador** criticized the **incursion** as a **violation of international law and Mexico's sovereignty**. Ecuador's **President Daniel Noboa** justified the **raid** due to the **corruption charges against Glas**.
- The **Organization of American States** called for **dialogue and respect for international treaties**, including the **right to asylum**.
- **Mexico** has now moved the **International Court of Justice** in the **Netherlands**, demanding the **expulsion of Ecuador** from the **UN**.

Asylum-seeker definition and meaning:

- An **asylum-seeker** is someone who intends to seek or is awaiting a decision on their **request for international protection**.
- In some countries, it is used as a **legal term** for a person who has applied for refugee status and has not yet received a final decision on their claim.

The right to seek asylum:

- **Seeking asylum** is a **human right** and every person in the world has the **right to apply for asylum** if they are **fleeing conflict or persecution**.
- They **must not be expelled or returned to situations** where their lives or freedoms would be in danger.
- This is the **principle of non-refoulement** which is **enshrined** in the **1951 Refugee Convention**.
- It is also part of **human rights law and customary international law** and must be **guaranteed by all countries**.

About Vienna Convention on Diplomatic Relations:

- It was adopted on **14th April 1961** by the **United Nations Conference on Diplomatic Intercourse and Immunities** and entered into force on **April 24, 1964**.
- Currently, **193 countries** are parties to this convention.
- It is **nearly universally ratified**, with **Palau and South Sudan** being the exceptions. **India** has **ratified** the convention.
- **Framework:** Vienna Convention provides a **complete framework** for the **establishment, maintenance and termination of diplomatic relations** on the basis of **consent between independent sovereign States**.
- **Article 22:** Ecuador's police action on Mexico's embassy violated **Article 22** of the **Vienna Convention**.

- **Principle of Inviolability:** The premises of the mission shall be inviolable, the agents of the receiving State may not enter them except with the consent of the head of the mission.
- **Duties of the State:** The receiving State shall take appropriate steps to protect the premises of the mission against any intrusion or damage and to prevent any disturbance of the peace of the mission or impairment of its dignity.
- **Immunity:** The premises of the mission, their furnishings and other property thereon and the means of transport of the mission shall be immune from search, requisition, attachment or execution.

Five dead trying to cross English Channel hours after U.K. passes deportation law

Subject: IR

Sec: Places in news

Context:

- **Five individuals** died trying to **cross the English Channel**, soon after the **British Parliament** passed a **law allowing the deportation of asylum-seekers to Rwanda**.

Details:

- The **"Safety of Rwanda Bill"** was passed, and Prime Minister Sunak announced that the **first flights deporting migrants to Rwanda** could occur within **10-12 weeks**.
- The legislation faced opposition, especially concerning provisions for **Afghans** who assisted the **U.K. military**, but ultimately passed without those amendments.
- Migration issues are central as the U.K. approaches a general election.
- **Several human rights organizations**, including the **UN refugee agency** and the **Council of Europe**, have **criticized the U.K.'s new deportation law**.

English channel:

- Also known as the **Channel**, it is an **arm of the Atlantic Ocean** that **separates Southern England** from **northern France**.
- It **links to the southern part of the North Sea** by the **Strait of Dover** at its **northeastern end**. It is the **busiest shipping area** in the world.
- It is about **560 kilometres** (300 nautical miles; 350 statute miles) long and varies in width from 240 km (130 nmi; 150 mi) at its widest to 34 km (18 nmi; 21 mi) at its narrowest in the **Strait of Dover**.
- It is the **smallest of the shallow seas** around the **continental shelf of Europe**, covering an area of some 75,000 square kilometres (22,000 square nautical miles; 29,000 square miles).
- The **Channel** was a **key factor in Britain** becoming a **naval superpower** and has been utilised by **Britain** as a **natural defence mechanism** to **halt attempted invasions**, such as in the **Napoleonic Wars** and in the **Second World War**.
- The **population around the English Channel** is predominantly located on the **English coast** and the major languages spoken in this region are English and French.



The Indian seafarer deserves better in choppy high seas

Subject: IR

Sec: Places in news

Context:

- In response to increased safety concerns for **Indian seafarers** due to recent attacks in regions like the **Red Sea** and the **Strait of Hormuz**, **India** presented three papers at the **111th Session** of the **International Maritime Organization's (IMO) Legal Committee**.

Details:

- These papers focus on **seafarers' security, contractual terms, and wider maritime security challenges**.
- **India** emphasized the **importance of a comprehensive approach to maritime security** and advocated for better **contractual conditions for seafarers**.
- It also recognized the **IMO's efforts against maritime fraud** and urged greater international collaboration to address threats like **piracy, armed robbery, extremist attacks, regional conflicts, and new risks** such as **drone attacks** and the **deployment of maritime weapons**.

Protection against sea piracy:

- Recent **pirate attacks** off the coast of **Somalia**, including hijackings of vessels like the **MV Ruen** and **MV Lila Norfolk**, mark a resurgence of piracy.
- In response, **India** has urged for **increased vigilance, proactive measures, and international cooperation** under the **United Nations Convention on the Law of the Sea (UNCLOS)** to **safeguard seafarers**.
- **India**, home to **9.35%** of the **world's seafarers** and **ranking third globally**, faces significant challenges, evidenced by incidents like the **seizure of MSC Aries** and the prolonged detention of **MT Heroic Idun** in **Nigeria**.

International Maritime Organization's (IMO) Legal Committee:

- The **Legal Committee (LEG)** deals with **any legal matters within IMO's scope**.
- This includes **liability and compensation issues** related to the **operation of ships**, including **damage, pollution, passenger claims, and wreck removal**.
- The Committee also addresses **seafarer matters**, including the **fair treatment of seafarers**, and issues concerning **unlawful activities at sea** which affect the **safety of navigation**.

Human Rights at Sea campaign:

- The **Indian government** and the **National Human Rights Commission (NHRC)** have initiated the **'Human Rights at Sea' campaign** to address **abuses faced by Indian seafarers**, including **illegal detentions** and **unsafe conditions** in foreign waters.
- The initiative highlights cases such as **200 Indian seafarers detained in foreign jails** and **65 stranded in Indonesia for 151 days**, emphasizing the challenges in holding ship owners accountable, especially those operating under foreign registrations to evade taxes.

Maritime piracy:

- **Maritime piracy** remains a significant threat, with a recent report from the **International Maritime Bureau** showing a **more than 10% increase in serious piracy incidents** in the last 10 months, with **armed pirates** boarding nearly **90%** of **targeted ships**.
- Solutions include **deploying private guards** and **addressing the root causes of piracy on land**.

Maritime Labour Convention, 2006

- The **Maritime Labour Convention (MLC), 2006**, was adopted by the **94th (Maritime) Session** of the **International Labour Conference** on **February 23, 2006**.
- **Purpose:** It revises and consolidates **37 existing conventions and related recommendations**.
- **Format and Updates:** The **MLC, 2006** introduces a **new format** and updates to reflect modern conditions and language.
- **Comprehensive Coverage:** Sets forth comprehensive rights and standards for the world's **1.5 million seafarers** concerning their working and living conditions.
- **Key Provisions Include:**
 - Minimum age for seafarers
 - Employment agreement standards
 - Regulations on hours of work and rest
 - Payment of wages
 - Entitlement to paid annual leave
 - Rights to repatriation
 - On-board medical care
 - Use of recruitment and placement services
 - Standards for accommodation, food, and catering
 - Health and safety protection

- Accident prevention
- Complaint procedures for seafarers

Places in news:

- **Red Sea:**
 - **Bordering Countries:** Egypt, Saudi Arabia, Yemen, Sudan, Eritrea and Djibouti.
 - Connected to the **Indian Ocean** in the south through the **Bab el Mandeb Strait** and the **Gulf of Aden**.
 - In the **north** are the **Sinai Peninsula**, the **Gulf of Aqaba**, and the **Gulf of Suez** (leading to the Suez Canal).
- **Strait of Hormuz:**
 - A strait between the **Persian Gulf** and the **Gulf of Oman**.
 - It provides the **only sea passage** from the **Persian Gulf** to the **open ocean** and is **one of the world's most strategically important choke points**.
 - On the **north coast** lies **Iran**, and on the **south coast** lies the **Musandam peninsula**, shared by the **United Arab Emirates** and the **Musandam Governorate**, an exclave of **Oman**.
- **Gulf of Guinea**
 - The **Gulf of Guinea** is the **northernmost part** of the **tropical Atlantic Ocean** from **Cape Lopez** in **Gabon**, **north** and **west** to **Cape Palmas** in **Liberia**.
 - **Null Island**, defined as the **intersection of the Equator and Prime Meridian** (zero degrees latitude and longitude), is in the **gulf**.
 - Among the **many rivers that drain into the Gulf of Guinea** are the **Niger** and the **Volta**.
 - The coastline of the gulf includes the **Bight of Benin** and the **Bight of Bonny**.

Kosovo will conduct nationwide census that includes surveying ethnic Serb minority

Subject: IR

Section: Mapping

Context:

- **Kosovo** commenced its **first nationwide census** since **2011** on **April 5**, aiming to include the **ethnic Serb minority** despite **high tensions with Serbia**.
- The **census**, costing **12 million euros** and **funded by Kosovo's government, the EU, the UN, and the World Bank**, was delayed from **2021** due to the **pandemic**.

Details:

- **Around 4,400 surveyors** will gather data until **May 17** on **demographics, education, employment, and war damages**, aiming to aid **Kosovo's EU integration efforts**.
- **Kosovo**, which **declared independence** from **Serbia** in **2008** after a **1999 NATO campaign**, still faces **non-recognition from Belgrade**.
- The **2011 census** recorded **1.74 million residents**, with **ethnic Serbs** making up nearly **1.5%**.
- **Prime Minister Albin Kurti** has urged the **Serb minority** to participate in the **census for better governmental planning**.
- However, the **Srpska List party**, representing the **Serb minority** and **allied with Belgrade**, has called for a **boycott**, labelling the census as **"fake"** and a validation of alleged **Serb expulsion**.
- **Ethnic Serbs** have historically boycotted **Kosovo institutions** and recently opposed the ban on using the **Serbian dinar**, escalating tensions.
- The **Srpska List** claims conducting a census under current conditions would legitimize the claimed ethnic cleansing since **1999**.
- **Kosovo and Serbia's EU membership aspirations** are hindered by their **refusal to compromise on issues**, amidst fears in the West of escalating regional tensions during the ongoing war in **Ukraine**.



What was the Kosovo conflict about?

- **Ethnicities at the centre :**
 - Of the 1.8 million people living in Kosovo, 92% are Albanian and only 6% Serbian.
 - The rest are Bosniaks, Gorans, Turks and Roma.
 - Serbs are Eastern Orthodox Christians, while the Albanians in Kosovo are majority Muslims.
 - For many Serbians, the Kosovo region, is the heart of its national and religious identity — and home to numerous cherished mediaeval Serb Orthodox Christian monasteries.
 - On the other hand, Kosovo’s majority ethnic Albanians view Kosovo as belonging to them, and accuse Serbia of occupation and repression.
 - Root of conflict: breakup of Yugoslavia in the 1990s
 - The conflict can be traced back to the breakup of Yugoslavia in the 1990s.
 - After the disintegration, Kosovo – a province of the former country – sought its own autonomy and independence. This was opposed by Serbia.
 - As part of Yugoslavia, the republic of Serbia included the regions of Kosovo and Vojvodina.
 - Within Serbia, Kosovo and Vojvodina held the status of autonomous provinces.
- **Armed clashes :**
 - In 1998, armed clashes broke out between the Kosovo Liberation Army (KLA), an ethnic Albanian guerrilla group seeking independence, and the Serbian security forces.
 - The conflict intensified, leading to a significant loss of life and the displacement of thousands of people.
- **NATO’s intervention :**
 - International efforts to resolve the conflict was led by the United Nations and the North Atlantic Treaty Organization (NATO).
 - It resulted in a military intervention in 1999.
 - NATO conducted a bombing campaign against Serbian targets and forced the withdrawal of Serbian security forces from Kosovo.
 - The NATO-led Kosovo Force (KFor) is still based in Kosovo, with a current strength of 3,762.
- **Kosovo unilaterally declared independence :**
 - In 2008, Kosovo unilaterally declared independence.
 - A total of 99 out of 193 UN countries now recognise Kosovo’s independence, including the US, the UK and 22 out of 27 European Union (EU) countries.
 - But Russia and China (do not recognise Kosovo) have blocked Kosovo’s membership of the UN.

India to send new Defence Attachés in multiple missions in Africa

Subject: IR

Section: Msc

Context:

- **India is expanding its military diplomacy** by appointing **Defence Attachés (DAs)** to its **missions in Africa** for the **first time**, reflecting a **broader adjustment** of its **DAs worldwide** amidst **evolving strategic needs**, particularly in the **Indo-Pacific, Red Sea-Indian Ocean, and Eurasia**.

Details:

- **Four new DAs** are expected in **Africa**, with placements in **Francophone Western Africa** and countries in **Eastern and Southeastern Africa**, including possibly **Ivory Coast, Mozambique, Ethiopia, and Djibouti**.
- Additionally, the **Indian embassy in Poland** will receive a **new DA**, differentiating from the current arrangement where the **DA in the Czech Republic** also covers **Warsaw**.
- This realignment is in response to **defence cooperation needs, crisis management, and the protection of Indian interests**, highlighted by recent maritime security incidents.
- Further adjustments include new or revised DA postings in the **UK, Russia, Philippines, and Armenia**, with a **reduction in the number of DAs in Russia** as part of a "**rationalisation**" following the completion of several **India-Russia defence projects**.

Who is a 'Defence Attache'?

- A **defence attaché** is a **member of the military** serving in an **overseas embassy**, representing their **country's defence abroad**.
- The term '**defence attaché**' covers **personnel from all branches of the military**, and those in the **role have diplomatic immunity and status**.
- It is the **defence attaché's job** to **protect, develop and promote the defence interests of their country** in the nation they are assigned, as well as in bilateral military and defence relations.

New development:

- **France's significant role as a military hardware supplier to India** strengthens bilateral relations, bolstered by **high-level political, military, and strategic collaboration**.
- Additionally, the appointment of a **Defence Attaché** in the **Indian embassy** in the **Philippines** is significant due to **Manila's interest in Indian military hardware** amid tensions with **Beijing** over the **South China Sea**.
 - In January, the **Philippines** inked a deal worth **\$375 million** with **Brahmos Aerospace Pvt Ltd** for the purchase of **shore-based anti-ship variant** of the **Brahmos missile systems**.
- Similarly, **Armenia's procurement of Indian military equipment**, including **multi-barrel rocket launchers** and **anti-tank missiles**, signifies **India's growing presence** in the region, particularly in light of the **Armenia-Azerbaijan conflict** over **Nagorno-Karabakh**.
 - **Armenia** has purchased the **PINAKA multi-barrel rocket launchers (MBRLs)**, **anti-tank missiles**, **rockets** and **anti-drone systems** from **India**.

Indian Navy seizes 940 kg of contraband narcotics in Western Arabian Sea

Sub: IR

Sec : MSC

Context:

- **Indian Navy's elite MARCOs commandos**, deployed onboard frontline ship **INS Talwar**, seized the narcotics from a dhow as part of the '**Operation Crimson Barracuda**'.

More on news:

- **Indian Navy MARCOs Commandos of INS Talwar deployed in Western Arabian Sea** seized 940 Kgs of contraband narcotics from a dhow.

About the mission:

- **Indian Naval ship INS Talwar**, mission deployed in Western Arabian Sea for maritime security operations, as part of combined task force led **operation Crimson Barracuda**, **successfully apprehended a suspicious "dhow" on April 13**.
- **Operation Crimson Barracuda** serves as a testament to its commitment to promoting a secure and stable maritime environment in the region.

About INS Talwar:

- **INS Talwar (F40)** is the lead ship of the Talwar-class frigates of the Indian Navy.
- **The Talwar-class guided missile frigates** are modified Krivak III-class frigates built by Russia.
- **Talwar is a multirole frigate** and true to her name, has participated in various operations and exercises since her commissioning, including anti-piracy operations off the coast of Somalia.

Polity

CAA Rules open the door to dual citizenship by not requiring renunciation of previous citizenship, anti-CAA petitioners tell SC

Subject: Polity

Section: Constitution

Context:

- Written submissions filed by the petitioners ahead of the April 9 hearing of their plea to stay the **CAA Rules, said that Section 9 of the Citizenship Act of 1955 and Article 9 of the Constitution** both clearly and explicitly prohibit the acquisition of dual citizenship.

CAA and Dual Citizenship:

- The **Rules of the Citizenship (Amendment) Act** do not require foreign applicants to effectively renounce the citizenship of their native country, creating a possibility for dual citizenship.
- Creating a possibility for dual citizenship which is directly violative of the Citizenship Act.
- **Section 9 of the Citizenship Act of 1955 and Article 9 of the Constitution both clearly and explicitly prohibit the acquisition of dual citizenship.**
- Allowing dual citizenship, one of them being Indian, makes the Rules both “**ultra vires and manifestly arbitrary**”

About CAA:

- The CAA aims to **grant fast-tracked Indian citizenship to “illegal migrants” belonging to persecuted members of Hindu, Sikh, Buddhist, Jain, Parsi, and Christian** communities from Afghanistan, Bangladesh, or Pakistan who had entered India on or before **December 31, 2014.**

Exclusions from CAA:

- **Excluded refugee groups continue to remain illegal migrants**, barred from seeking Indian citizenship under any mode.
- Even while including **Pakistan in the list of countries, it fails to extend protection to the Ahmadiyya community which is one of the most persecuted groups in Pakistan.**
- Refugees from **Myanmar are excluded**, though the country was a part of **British India till 1935.**
- The **CAA and its Rules exclude Sri Lanka**, a neighboring country where **Tamil Hindus are under persecution.**
- It excludes China which is a border country where **Buddhists and Uighur Muslims are persecuted.**
- It excludes Jews who have experienced discrimination over decades,” the petitioners pointed out.
- Statement of Objects and Reasons of CAA mentions ‘Partition’ and ‘undivided India’ as the reason for the selection of non-Muslims as a protected class of refugees, the CAA included Afghanistan which was not a part of undivided India.

Genetic profiling of captive jumbos of Kerala to begin soon

Subject: Environment

Section: Species in news

Introduction

The **Wildlife Institute of India (WII)** is set to initiate **genetic profiling for the approximately 400 captive elephants in Kerala.** This initiative, aimed at incorporating the **details of these elephants into a national database**, signifies a pioneering effort in the conservation and management of captive elephants.

Details of the Initiative

- **Objective:** The project is designed to create a **comprehensive database that includes photographs, physical details (such as height), and genetic features** of each captive elephant in Kerala.
- **Implementation:** **Assistant conservators** (social forestry) across districts have been tasked with collecting blood and dung samples. The **Kerala Forest Department, equipped with forensic kits provided by the WII**, will spearhead this effort
- **Training and Timeline:** An online training session for forest officials on sample collection and reporting is **scheduled for April 5 and 6.** The **actual sample collection** is expected to commence in the **second week of April**, coinciding with Kerala’s temple festival season, a period of heightened activity involving captive elephants.

Context and Significance

- **Current Status:** Kerala, previously known for having the largest population of captive elephants, **now records about 25 elephant deaths annually, reducing the captive population to 407.**

- **National Perspective:** With an estimated **3,000 captive elephants across India**, similar profiling has been completed in several states. The data collected will be accessible through "**Gaja Suchana**," a **mobile application developed by the WII**, facilitating monitoring of elephant transfers and welfare.
- **Regulatory Framework:** The initiative aligns with the **Ministry of Environment, Forest, and Climate Change's** efforts to regulate the transfer of elephants and ensure their welfare, highlighted by the recent introduction of the **Captive Elephant (Transfer or Transport) Rules, 2024**.
- **Previous Efforts:** Notably, in **2019**, the **Kerala Forest Department** undertook **DNA profiling of elephants with the Rajiv Gandhi Centre for Biotechnology**, Thiruvananthapuram supporting it, marking an initial step towards scientific management of captive elephants.

Implications

- **For Conservation:** This profiling is a crucial step towards **enhancing the welfare of captive elephants and combating illegal transfers**, offering a methodical approach to monitoring and management.
- **For Research and Policy:** The **data generated will provide valuable insights** into the genetic diversity and health of captive elephants, informing future conservation strategies and policies.


Conclusion

The **genetic profiling of captive elephants in Kerala by the Wildlife Institute of India** represents a significant advancement in **elephant conservation efforts**. By **integrating modern scientific techniques with traditional practices**, it aims to ensure the **health, welfare, and sustainable management** of these majestic animals, embodying Kerala's rich cultural heritage.

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Right against adverse effects of climate change part of rights to life, equality: SC

Subject: Polity

Section: Constitution

Context:

In a significant ruling, the **Supreme Court has expanded the scope of Articles 14 and 21** to include the “right against the adverse effects of climate change.

Constitutional Provisions:

- **Article 48A of the Constitution** provides that the State shall endeavor to protect and improve the environment and to safeguard the forests and wildlife of the country.
- **Clause (g) of Article 51A** stipulates that it shall be the duty of every citizen of India to protect and improve the natural environment including forests, lakes, rivers and wildlife, and to have compassion for living creatures.
- Although these are not justiciable provisions of the Constitution, they are indications that the Constitution recognises the importance of the natural world.
- **Article 21 recognises the right to life and personal liberty** while **Article 14 indicates that all persons shall have equality before law and the equal protection of laws.**
- These **Articles are important sources of the right to a clean environment and the right against the adverse effects of climate change.**

Key takeaways from the verdict:

- The court pointed out that India aimed to achieve an installed renewable energy capacity (excluding large hydro) of **175 GW (Gigawatts) by 2022, a goal that signified the country’s commitment to clean energy adoption, and the future goal is 450 GW installed capacity by 2030.**
- A blanket direction for **undergrounding high voltage and low voltage power lines** of the nature that was directed by this Court would need recalibration.
- India is likely to account for **25% of global energy demand growth** over the next two decades, necessitating a move towards solar for **enhanced energy security and self-sufficiency** while mitigating environmental impacts.
- **Rampant air pollution emphasizes** the need for cleaner energy sources like solar to combat pollution caused by fossil fuels.
- Declining **groundwater levels and decreasing annual rainfall underscore** the importance of diversifying energy sources.

Environmental Jurisprudence in India

Subject: Polity

Section: Constitution

Polluter Pays Principle

- The Polluter Pays Principle was first adopted at international level in the 1972 OECD Council Recommendation on Guiding Principles concerning the International Aspects of Environmental Policies. The 1974 principle experienced revival by OECD Council in 1989 in its Recommendation on the Application of the Polluter Pays Principle to Accidental Pollution, and the principle was not to be restricted to chronic polluter. In 1991, the OECD Council reiterated the Principle in its Recommendations on the Uses of Economic Instruments in Environmental Policy. This principle was first stated in the Brundtland Report in 1987. This principle was also adverted to in Indian Council for Enviro-legal Action vs. Union of India. In this case this was held that once any activity is inherently dangerous or hazardous dangerous, the person carrying on such activity is liable to make good the loss caused to any other person by his activity irrespective of the fact whether he took reasonable care while carrying on his activity.
- In the Oleum Gas Leak case (M.C. Mehta v. Union of India) the Supreme Court laid down that an enterprise which is engaged in a hazardous or inherently dangerous industry which poses a potential threat to the health and safety of persons working in the factory and to those residing in the surrounding areas, owes an absolute and non delegable duty to the community to ensure that no harm results to any one on account of hazardous or inherently dangerous nature of the activity which it has undertaken. The enterprise must be absolutely liable to compensate for such harm and it should be no answer to the enterprise to say that it had taken all reasonable care and that the harm occurred without negligence on its part.

Precautionary Principle and Principle of New Burden of Proof

- The precautionary principle had its origin in the mid-1980s from the German Vorsorgeprinzip. The Supreme Court of India, in the case of Vellore Citizens’ Welfare Forum v. Union of India²² referred to the precautionary principle and declared it to be part of the customary law in our country. In the Vellore Case²³, Kuldip Singh J observed as follows: “The ‘onus of proof’ is on the actor or the developer/industrialist to show that his action is environmentally benign”

Sustainable Development

- In the international arena ‘Sustainable Development’ came to be known as a concept for the first time in the Stockholm Declaration of 1972. Justice P.N. Bhagwati once made a insightful observation: ‘We need judges who are alive to the socio-economic realities of Indian life’ This statement explains the gradual shift in the judicial approach while dealing with the issues of sustainable development

Public Trust Doctrine

- The ‘public trust’ doctrine was referred to by the Supreme Court in *M.C. Mehta v. Kamal Nath*²⁷. The doctrine extends to natural resources such as rivers, forests, sea shores, air etc., for the purpose of protecting the eco-system. The State is holding the natural resources as a trustee and cannot commit breach of trust.

Inter-Generational Equity

Principles 1 and 2 of the 1972 Stockholm Declaration refer to this concept. Principle 1 states that Man bears solemn responsibility to protect and improve the environment for the present and future generations. Principle 2 states that the national resources of the Earth must be safeguarded for the ‘benefit of the present and future generations through careful planning or management, as appropriate’. Principle 3 of the Rio Declaration, 1992 also states that the right to development must be fulfilled so as to equitably meet developmental and environmental needs of present and future generations.

Why High Court upheld Karnataka’s ban on hookah

Subject: Polity

Sec: Constitution

Context:

- The **Karnataka High Court** on Monday (April 22) upheld the state government’s ban on hookahs as being in the interest of the general public.

More on news:

- The Karnataka High Court ruled that hookah bars were an **illegal “service” under India’s anti-tobacco law**.
- On March 11, a **single judge Bench of Justice M Naga Prasanna** had reserved its judgment on the challenges by several restaurant owners to the government’s February 7 notification.

Article 47 and Article 19(1)(g) of the Constitution:

- The government argued that **Article 47 of the Constitution** places a duty on the **State to raise the level of nutrition and the standard of living and to improve public health, which includes the prohibition of the consumption except for medicinal purposes of intoxicating drinks and of drugs which are injurious to health**.
- **Article 47, along with the rest of the provisions in Part IV of the Constitution**, is a directive principle of state policy.
- According to the **Constitution, directive principles are not enforceable by any court**.
- The principles therein laid down are nevertheless fundamental in the **governance of the country and** it shall be the duty of the State to apply these principles in making laws.
- The HC held that **Article 47 was intrinsically linked with the right to life with dignity under Article 21**.
- States and its authorities aim to achieve an appropriate level of protection to human life and health which is a fundamental right guaranteed to the **citizens under Article 21**.
- **Article 19(1)(g)** provides the right to practice any profession, occupation, trade, or business.
- **Citizens have the freedom to choose and engage in their preferred livelihoods**.
- Reasonable restrictions can be imposed on this right in the interests of the general public, professional qualifications, or the sovereignty and integrity of India.
- The court also held that a directive principle such as Article 47 can be used to justify a restriction on citizens’ rights under **Article 19(1)(g)**.

Illegal ‘service’ under tobacco law COTPA:

- Under **Section 31 of the Cigarettes and other Tobacco Products (Prohibition of Advertisement and Regulation of Trade and Commerce, Production, Supply and Distribution) Act, 2003 (COTPA)**, the Centre can make further Rules to carry out the provisions of the Act.
- In 2008, the **Prohibition of Smoking in Public Places Rules were brought into force**.
- **Justice Nagaprasanna relied on Rule 4(3)** which, after an amendment in 2017, states No service shall be allowed in any smoking area or space provided for smoking.
- The court asked whether hookah smoking is plain smoking which can be permitted in a designated area or it is a product of service that needs to be rendered.

SC: Denying women child care leave is violation of Constitution

Subject: Polity

Sec: Constitution

Context:

- The Supreme Court said that participation of women in the workforce is a constitutional entitlement and denying mothers child care leave violates the constitution.

More on news:

- A bench led by **Chief Justice of India D Y Chandrachud and J B Pardiwala** was hearing a plea by a woman, who said the Himachal Pradesh government had denied her child care leave to attend to her child who is suffering from a genetic condition.
- The woman had **approached the state seeking child care leave as her son is suffering from Osteogenesis Imperfecta, a rare genetic disorder**, and had undergone several surgeries.
- But her application was declined on account of non-adoption of the provision of child care leave — as provided under **Rule 43-C of the Central Civil Services (Leave) Rules, 1972 — by the state government.**
- The woman moved the High Court, which dismissed her plea on April 23, 2021, on the ground that the state has not adopted Rule 43 (C).

What did the bench say?

- The **Supreme Court declared that two-year childcare leave**, alongside mandatory maternity leave, is a constitutional right for women employees.
- **Participation of women in the workforce is a matter not just of privilege but a constitutional entitlement protected by Article 15 of the Constitution.**
- The state as a model employer cannot be oblivious to the special concerns which arise in the case of **women who are part of the workforce.**
- The provision of child care leave to women sub-serves an **important constitutional objective of ensuring that women are not deprived of their due participation as members of the workforce.**
- In the absence of provision for child care leave, a mother may be constrained to leave the workforce.

Article 15 of the Constitution:

- **Prohibition of discrimination on grounds of religion, race, caste, sex or place of birth**
- The State shall not discriminate against any citizen on grounds **only of religion, race, caste, sex, place of birth or any of them.**
- **No citizen shall, on grounds only of religion, race, caste, sex, place of birth or any of them**, be subject to any disability, liability, restriction or condition with regard to-
 - access to shops, public restaurants, hotels and places of public entertainment; or
 - the use of wells, tanks, bathing ghats, roads and places of public resort maintained wholly or partly out of State funds or dedicated to the use of the general public.

Padma awards: Venkaiah Naidu, Mithun Chakraborty, Usha Uthup honoured

Subject: Polity

Sec: Constitution

Context:

- Former **Vice-President M. Venkaiah Naidu**, actor **Mithun Chakraborty**, singer **Usha Uthup**, and tennis player **Rohan Bopanna** were among the recipients of **Padma Awards** presented by **President Droupadi Murmu.**

Details:

- **Naidu**, along with the late founder of **Sulabh International Bindeshwar Pathak**, and **Bharatanatyam dancer Padma Subrahmanyam**, received the **Padma Vibhushan, India's second-highest civilian award.**
- **Chakraborty, Uthup**, and **others** were awarded the **Padma Bhushan**, including a **Gujarat-based cardiologist**, a **veteran Marathi film director**, and a **physician known for his work on Kala Azar.**
- The ceremony also honoured various individuals with the **Padma Shri**, including **artists, singers, and a spiritual leader from Tripura.**
- In total, the **President** approved **132 Padma awards** for 2024.

About Padma awards:

- **One of the highest civilian honours of India.**

- **Announced annually** on the eve of Republic Day (except for a brief interruption(s) during the years 1978 and 1979 and 1993 to 1997.).
- Given in **three categories: Padma Vibhushan** (for exceptional and distinguished service), **Padma Bhushan** (distinguished service of higher order) and **Padma Shri** (distinguished service).
- The award seeks to recognize achievements in all fields of activities or disciplines where an element of public service is involved.
- **Conferred** on the recommendations made by the **Padma Awards Committee**, which is constituted by the **Prime Minister every year**. The nomination process is open to the public. Even self-nomination can be made.
 - The **Padma Awards Committee** is headed by the Cabinet Secretary and includes the Home Secretary, Secretary to the President and four to six eminent persons as members.
- **Eligibility:**
 - **All persons** without distinction of race, occupation, position or sex are eligible for these awards. However, **Government servants** including those **working with PSUs, except doctors and scientists**, are **not** eligible for these Awards.
- A **higher category of Padma award** can be conferred on a person **only** where a period of at least **five years** has elapsed since the conferment of the earlier Padma award. However, in **highly deserving cases**, a **relaxation** can be made by the Awards Committee.
- The **total number of awards** to be given in a year (excluding **posthumous awards** and to **NRI/foreigners/OCIs**) should **not be more than 120**.
- The **award does not amount to a title** and **cannot** be used as a **suffix or prefix** to the awardees' name.

HISTORY AND RELEVANCE

- The **Government of India** instituted **two civilian awards-Bharat Ratna & Padma Vibhushan** in **1954**.
- The latter had **three classes** namely **Pahela Varg, Dusra Varg** and **Tisra Varg**.
- These were subsequently **renamed** as **Padma Vibhushan, Padma Bhushan** and **Padma Shri** vide Presidential Notification issued on **January 8, 1955**.

BHARAT RATNA:

- Highest civilian award of the country.
- Awarded in **recognition of exceptional service/performance of the highest order** in any field of human endeavour.
- It is treated on a different footing from the Padma Award.
- The **recommendations for Bharat Ratna** are made by the **Prime Minister** to the **President of India**.
- **No formal recommendations for Bharat Ratna are necessary**.
- The **number of Bharat Ratna Awards** is restricted to a maximum of three in a particular year.
- The government has conferred the **Bharat Ratna Award** on **53 persons till date**.

Source: [TH](#)

NCBC slams blanket categorisation of Muslims as backward caste in Karnataka

Subject: Polity

Sec: Constitution

Context:

- The Karnataka government's decision to categorize the entire **Muslim community as a backward caste for reservation purposes in the state** has drawn criticism from the **National Commission for Backward Classes (NCBC)**.

More on news:

- According to the data submitted by the **Karnataka Backward Classes Welfare Department**, all castes and communities within the Muslim religion have been enlisted as socially and educationally backward classes under **Category IIB in the State List of Backward Classes**.
- All castes/communities of **Muslim religion of Karnataka** are being treated as socially and educationally backward classes of citizens and listed as **Muslim Caste separately under Category IIB in the State List of Backward Classes** for providing them reservation in admission into educational institutions and in appointments to posts and vacancies in the services of the State for the purpose of **Articles 15(4) and 16(4) of the Constitution of India**.
- This categorisation has led to the provision of reservation benefits for **17 socially and educationally backward castes under Category I and 19 castes under Category II-A**.

Who are OBCs?

- **Other Backward Classes**, are a group of socially and educationally disadvantaged communities in India.

- The concept of OBCs emerged in the context of social reform movements during the colonial period and post-independence era.
- The **Mandal Commission's report, submitted in 1980, led to the implementation of 27%** reservations for OBCs in government jobs and educational institutions in 1990.
- **Article 15(4)** empowers the State to make any special provision for the advancement of any socially and educationally backward classes of citizens or for SCs & STs.

Constitutional Provisions:

- **Article 340** deals with the need to, inter alia, identify those “socially and educationally backward classes”, understand the conditions of their backwardness, and make recommendations to remove the difficulties they face.
- **102nd Constitution Amendment Act inserted new Articles 338 B and 342 A.**
- The amendment also brings about changes in Article 366.
- **Article 338B provides authority to NCBC** to examine complaints and welfare measures regarding socially and educationally backward classes.
- **Article 342 A empowers the President to specify socially and educationally backward classes in various states and union territories. He can do this in consultation with the Governor of the concerned State.**
- Law enacted by Parliament will be required if the list of backward classes is to be amended.

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What is Art 244(A), the constitutional promise of autonomy driving the election narrative at a tribal seat in Assam?

Subject: Polity

Sec: Constitution

Context:

- In Assam's tribal-majority **Diphu Lok Sabha constituency**, which voted on April 26, candidates of all parties have promised the implementation of Article 244(A) of the Constitution to create an autonomous 'state within a state'.

Where is Diphu, and what is the social profile of this Lok Sabha constituency?

- **Diphu is the most sparsely populated of Assam's 14 Lok Sabha constituencies**, with just 8.9 lakh voters. It is reserved for Scheduled Tribes (STs), and covers six legislative Assembly segments in three tribal-majority hill districts of Assam: Karbi Anglong, West Karbi Anglong, and Dima Hasao.
- These **three districts are administered under the provisions of the Sixth Schedule of the Constitution**, which describes the **Provisions as to the Administration of Tribal Areas in the States of Assam, Meghalaya, Tripura and Mizoram**.
- These areas come under two autonomous councils: **the Karbi Anglong Autonomous Council (KAAC) and the North Cachar Hills Autonomous Council**.
- Voters at the seat belong to various communities: **Karbi, the third largest tribe in the state, Dimasa, Hmar, Kuki, Rengma Naga, Zeme Naga, Bodo, Garo, Assamese, Bengali, Bihari, Gorkha, etc.**
- However, the seat has been represented by members of the Karbi community since 1977.

What is Article 244(A) of the Constitution?

- **Article 244(A)** was inserted by **The Constitution (Twenty-second Amendment) Act, 1969**, which enabled Parliament to pass an Act to form within the **State of Assam an autonomous State comprising (whether wholly or in part) all or any of tribal areas, including Karbi Anglong**.
- This autonomous state would have its own **Legislature or Council of Ministers or both**.
- This provision goes a step further than the provisions under the **Sixth Schedule**, which are already in place in these areas.
- The autonomous councils under the **Sixth Schedule** have elected representatives for more decentralized governance of these tribal areas, but they have limited legislative powers, do not have control over law and order, and have only limited financial powers.

When did the demand for autonomy start, and how has it played out so far?

- The demand for autonomy is as old as the movement in the **hill areas of undivided Assam, which began in the 1950s, seeking a separate hill state**.
- This movement resulted in the creation of the full-fledged state of **Meghalaya in 1972** however, because of the promise extended through **Article 244(A)**, the leaders of the **Karbi Anglong region opted to remain with Assam**.

About ASDC:

- **The Autonomous State Demand Committee (ASDC)** — which was set up as a **mass organization to press for the region's autonomy, and which continues to operate today** — along with student bodies in the region, signed a Memorandum of Settlement with the state and central governments in 1995 for enhancing the powers of the two autonomous councils in the region by increasing the number of departments under their charge to 30 from 10.
- Over the years, as autonomy for the region remained elusive, **the demand for implementation of Article 244(A) also took the form of an armed insurgency**.

Case before Supreme Court: Can Govt redistribute privately owned property?

Subject: Polity

Sec: Constitution

Context:

- The Supreme Court (SC) on Wednesday began **hearing an unrelated case about whether the government can acquire and redistribute privately owned properties** if they are deemed as "material resources of the community" as mentioned in Article 39(b) of the Constitution.

More on news:

- **Since 1977, the apex court has weighed in on the interpretation of Article 39(b)** on multiple occasions —most notably, in **State of Karnataka v Shri Ranganatha Reddy (1977)**.

Important minority opinion:

- **Falling under Part IV of the Constitution titled as Directive Principles of State Policy (DPSP), Article 39(b) places an obligation on the state to create policy towards securing the ownership and control of the material resources of the community that are so distributed as best to subserve the common good.**

- DPSP are meant to be guiding principles for the enactment of laws, but are not directly enforceable in any court of law.
- It was Justice Krishna Iyer's minority opinion which would become influential in years to come.
- To exclude ownership of private resources from the coils of Article 39(b) is to cipherise (make hidden) its very purpose of redistribution the socialist way.

Interpretation of Article 39(b):

- This interpretation of Article 39(b) was later affirmed by a five-judge Bench in **Sanjeev Coke Manufacturing Company v Bharat Coking Coal (1983)**, where the court upheld central legislation that nationalized coal mines and their respective coke oven plants relying on what Justice Iyer had ruled.
- The concurring opinion of Justice Paripoornan in the nine-judge Bench case of **Mafatlal Industries Ltd v Union of India (1996)** also relied on the interpretation of Article 39(b) offered by Justice Iyer and the Bench in Sanjeev Coke Manufacturing.
- The words 'material resources' occurring in Article 39 (b) will take in natural or physical resources and also movable or immovable property and it would include all private and public sources of meeting material needs, and not merely confined to public possessions.

Cessed properties dispute:

- The case currently before the SC arose out of a challenge to the **1986 amendment to the Maharashtra Housing and Area Development Act, 1976 (MHADA) by owners of 'cessed' properties in Mumbai.**
- **MHADA was enacted in 1976 to address a major problem in the city** — old, dilapidated buildings housing (poor) tenants despite becoming increasingly unsafe. MHADA imposed a cess on the buildings' occupants, which would be paid to the Mumbai Building Repair and Reconstruction Board (MBRRB) to oversee repair and restoration projects.
- **In 1986, invoking Article 39(b), Section 1A was inserted to MHADA** to execute plans for acquiring lands and buildings, in order to transfer them to "needy persons" and the "occupiers of such lands or buildings".
- The amendment also **inserted Chapter VIII-A to the legislation**, which contains provisions allowing the state government to acquire cessed buildings (and the land they are built on) if 70% of the occupants make such a request.

Over three decades with SC:

- The **Property Owners' Association in Mumbai challenged Chapter VIII-A of the MHADA** at the Bombay High Court claiming that the provisions violate the property owners' Right to Equality under Article 14 of the Constitution.
- The court **held that laws enacted in furtherance of DPSP** could not be challenged on the grounds that they violated the right to equality, as per **Article 31C of the Constitution** ("Saving of laws giving effect to certain directive principles").
- The Association appealed the decision in the SC in December 1992. In the apex court, the central question became whether "material resources of the community" as per Article 39(b) includes privately owned resources — which would include cessed buildings.

We are bound by the verdict in Keshavananda Bharati case: SC

Subject: Polity

Sec: Constitution

Current Legal Context:

- The ongoing case involves **16 petitioners**, including the **Property Owners Association (POA) of Mumbai**, challenging the **Maharashtra Housing and Area Development Act's Chapter VIII-A.**
- The case's outcome may **redefine property rights vis-à-vis state control** under DPSPs, following the **Court's interpretation** of the **basic structure doctrine** and **Article 31C's applicability.**

Recent Supreme Court Observations (9-Judge Bench led by Chief Justice DY Chandrachud):

- Reaffirmed the **Court's subservience** to the **historic 13-judge bench ruling** in the **Kesavananda Bharati case.**
- Discussed the ongoing **legal debate** about **whether private properties can be considered "material resources of the community"** under **Article 39(b)** of the Constitution, allowing the state to expropriate them for the **"common good."**

Kesavananda Bharati Case (1973):

- The Supreme Court affirmed the **"basic structure" doctrine**, which **limits Parliament's power to amend the Constitution.**
- **Upheld the constitutionality of Article 31C**, which **protects amendments** related to the **Directive Principles of State Policy (DPSP)** that **do not alter the Constitution's basic structure from judicial review.**

What Constitutes the Basic Structure of the Constitution?

- The Supreme Court is yet to define or clarify as to what constitutes the **'basic structure'** of the Constitution.

- At present, from the various judgements, the following have emerged as some of the **'basic features'** of the Constitution or elements of the 'basic structure' of the constitution-
 - Supremacy of the Constitution
 - Sovereign, democratic and republican nature of the Indian polity
 - Separation of powers between the legislature, the executive and the judiciary
 - Judicial review
 - Parliamentary system
 - Rule of law
 - Principle of equality
 - Free and fair elections
 - Independence of Judiciary
 - Limited power of Parliament to amend the Constitution

Minerva Mills Case (1980):

- Overturned **two provisions** of the **42nd Amendment** which:
 - **Prohibited** courts from questioning any **constitutional amendment**.
 - **Prioritized DPSPs over individuals' fundamental rights**, both deemed unconstitutional.
- Led to questions about whether the **original, un-amended version of Article 31C**, which was **upheld in the Kesavananda case**, **remains valid** while the expanded version **post-42nd Amendment is not**.

Article 31C of the Indian Constitution:

- **Article 31C** was inserted by the **25th Amendment Act of 1971**. It contained provisions related to the **saving of laws giving effect to certain directive principles**. It contains the following provisions:
 - No law that seeks to implement all or any of the directive principles specified in Part IV shall be void on the ground of contravention of the fundamental rights conferred by **Article 14** (equality before law and equal protection of laws) or **Article 19** (protection of six rights in respect of speech, assembly, movement, etc.)

How are symbols allotted to political parties?

Subject: Polity

Sec: Elections

- The **Election Symbols (Reservation and Allotment) Order, 1968** empowers the **Election Commission** to recognise political parties and allot symbols.
- An electoral or election symbol is a **standardized symbol** allocated to a political party.
- They are used by the parties during their campaigning and are shown on Electronic Voting Machines (EVMs), where the voter chooses the symbol and votes for the associated party.
- They were introduced to facilitate voting by **illiterate people**, who can't read the name of the party while casting their votes.
- In the 1960s, it was proposed that the regulation, reservation and allotment of electoral symbols should be done through a law of Parliament, i.e. **Symbol Order**.
- In a response to this proposal, the ECI stated that the recognition of political parties is supervised by the provisions of Election Symbols (Reservation and Allotment) Order, 1968 and so will the allotment of symbols.
- The Election Commission **registers political parties** for the purpose of **elections** and **grants them recognition as national or state parties on the basis of their poll performance**. The other parties are simply declared as **registered-unrecognised parties**.
- The recognition determines their right to certain privileges like **allocation of the party symbols, provision of time for political broadcasts on television and radio stations and access to electoral rolls**.
- Every national party and every state party is **allotted a symbol exclusively reserved for its use throughout the country and the states respectively**.
- A recognised political party has a reserved symbol that is not allotted to any other candidate in any constituency. For registered but unrecognised political parties, one of the free symbols is allotted as a common symbol during an election if that party contests in two Lok Sabha constituencies or in 5% of seats to the Assembly of a State as the case may be.

What is the current issue?

Rule 10B of the Symbols Order provides that the concession of a common free symbol shall be available to a **'registered unrecognised party'** for **two general elections**. Furthermore, a party shall be eligible for a common symbol in any subsequent general election if it had secured **at least 1% of votes polled in the State** on the previous occasion when the party availed of this

facility. Such an unrecognised party should however apply for a symbol **every time in the prescribed format**. This application can be made any time during the period commencing **six months prior to the expiry of the term of the Lok Sabha or State Assembly** as the case may be. The symbols are thereafter allotted on a **'first-come-first-served'** basis.

In the above cases, the NTK had secured more than 1% of votes in the last two elections with the common symbol of 'Ganna Kisan'. However, since they applied for that symbol only in February 2024, the ECI had allotted that symbol to Bharatiya Praja Aikyata Party (BPAP), that had applied earlier, based on the 'first-come-first-served' rule. However, the BPAP has not contested elections in Tamil Nadu before. The VCK was declined allotment of a common symbol as it had failed to secure 1% of votes polled in the elections to the State Legislative Assembly in 2021. The VCK notably has one Lok Sabha MP and four MLAs in Tamil Nadu contesting on the 'Pot' symbol in 2019 and 2021 elections.

What can be the way forward?

The ECI has decided on the applications of NTK and VCK as per existing rules. However, it is counter intuitive from a layman's perspective that the NTK which secured more than 6% of votes polled is not allotted the previous common symbol of its choice. It would be equally baffling for an average voter that the VCK which has elected representatives is ineligible to obtain a common symbol. The two VCK candidates have been eventually allotted the free symbol of 'Pot' by the respective returning officers.

The existing threshold for recognition of a party may continue. The candidates set up by recognised parties enjoy the advantage of being listed at the top of the ballot in the Electronic Voting Machine. Nevertheless, the ECI may consider amending the rules that registered unrecognised parties that secure **at least 1% of votes polled** in a previous election or have an elected representative in the Lok Sabha or State Assembly, shall have the right to be allotted a common symbol of their choice. This would ensure a fair weightage being given for their past electoral performance and strengthen the democratic process.

Election Symbols (Reservation and Allotment) Order, 1968:

- Under Paragraph 15 of the Order, EC can decide disputes among rival groups or sections of a recognised political party staking claim to its name and symbol.
- The EC is the only authority to decide issues on a dispute or a merger under the order. The Supreme Court (SC) upheld its validity in Sadiq Ali and another vs. ECI in 1971.
- This applies to disputes in recognised national and state parties.
- For splits in registered but unrecognised parties, the EC usually advises the warring factions to resolve their differences internally or to approach the court.
- In almost all disputes decided by the EC so far, a clear majority of party delegates/office bearers, MPs and MLAs have supported one of the factions.
- Before 1968, the EC issued notifications and executive orders under the Conduct of Election Rules, 1961.
- The splinter group of the party – other than the group that got the party symbol – had to register itself as a separate party.
- They could lay claim to national or state party status only on the basis of its performance in state or central elections after registration.

How many types of symbols are there?

As per the Election Symbols (Reservation and Allotment) (Amendment) Order, 2017, party symbols are either:

- **Reserved:** Eight national parties and 64 state parties across the country have "reserved" symbols.
- **Free:** The Election Commission also has a pool of nearly 200 "free" symbols that are allotted to the thousands of unrecognised regional parties that pop up before elections.

Types of Election Symbols

- **Reserved and Free Symbols:** Symbols can be either reserved, exclusively assigned to recognized political parties, or 'free' symbols that can be chosen by unrecognised registered parties' candidates. Unrecognized parties are those that haven't met the criteria for state party recognition.
- **Exclusive Symbols:** Recognized national and state parties are granted exclusive symbols, signifying their established status.

Symbol Selection by Parties

- **Preference Lists:** Unrecognized parties provide a list of ten preferred symbols from the free symbol pool.
- **Proposal of New Symbols:** Parties can propose up to three new symbols for consideration, provided they do not resemble reserved or free symbols, carry religious or communal connotations, or depict birds or animals.
- **Common Symbol Assignment:** The ECI may allot a proposed symbol as a common symbol for the party if it deems it suitable.

Why VVPAT was brought in, why Opposition wants all slips verified

Subject: Polity

Section: Elections

Context:

- With the first phase of voting set to take place on April 19, the Supreme Court (SC) last week said that petitions seeking 100% verification of Voter Verified Paper Audit Trail (VVPAT) slips would be taken up soon.

More on news:

- In March 2023, the **Association for Democratic Reforms** had filed a petition before the apex court saying that to ensure free and fair elections, the tally from **Electronic Voting Machines (EVMs) should be cross-verified with the VVPATs**.
- To make sure that this process is carried out as fast as possible, ADR suggested the use of barcodes on VVPAT slips.

What is a VVPAT machine? How does it work?

- The **VVPAT is an independent verification system** that generates a paper slip containing the **candidate's name and party symbol for whom you cast your vote**.
- This slip is visible to you through a **transparent window, allowing you to verify that your vote** has been correctly recorded before it falls into a sealed compartment within the VVPAT unit.
- This slip of paper, containing the **candidate's serial number, name, and party symbol**, is displayed in the machine behind a glass window, giving the voter seven seconds to verify her vote.
- The VVPAT unit is connected to the **EVM through a printer port**.
- When you cast your vote on the EVM, the **VVPAT simultaneously prints a paper slip displaying your choice**.
- This slip is visible to you for seven seconds through the **transparent window**, giving you ample time to verify that your vote has been correctly recorded.
- After the verification period, **the slip automatically drops into a sealed compartment** within the VVPAT unit.
- These paper slips are stored securely and can be accessed for verification purposes during the counting process or in case of any disputes.



Why did the Election Commission introduce VVPATs?

- The idea of the VVPAT machine first emerged in 2010, when the **Election Commission of India (EC)**, held a meeting to make the EVM-based polling process more transparent.
- The field trials were held in **Ladakh, Thiruvananthapuram, Cherrapunjee, East Delhi, and Jaisalmer in July 2011**.
- VVPATs with EVMs were used for the first time in a bye-election from **Noksen (ST) assembly constituency of Nagaland in 2013**.
- **VVPAT -fitted EVMs were used in entire Goa assembly elections of 2017** which was also the first time that VVPAT with EVM was used in the entire state.
- VVPAT was used in the general election of **2019 in all the 543 constituencies for the first time**.
- **VVPAT runs on a power pack (Battery) of 15 volts**.
- The **Conduct of Elections Rules, 1961** were amended to allow for a printer with a drop box to be attached to the EVM.
- The **VVPAT was used for the first time in all 21 polling stations** of the **Noksen Assembly constituency of Nagaland in 2013**, after which the EC decided to introduce VVPATs in a phased manner.
- By June 2017, there was 100% adoption of VVPATs.

Why are VVPAT slips of only five polling booths randomly counted?

- **VVPAT machines' are counted to verify** the accuracy of an election,

- In February 2018, the **EC mandated the counting of VVPAT slips** of one randomly selected polling station per Assembly constituency.
- This was increased to **five polling stations per Assembly seat, following a Supreme Court judgment in April 2019** .
- The five polling stations are selected by a **draw of lots by the Returning Officer concerned, in the presence of candidates/ their agents.**

What have been the legal cases surrounding the VVPAT?

- The **VVPAT has been a subject of multiple legal cases**, starting with **Subramanian Swamy vs Election Commission of India**, in which the SC ruled that a paper trail was indispensable for free and fair elections, and ordered the government to provide funding for the roll-out of VVPATs.
- In 2019, **Chandrababu Naidu moved the SC** asking for a minimum 50% randomized VVPAT slips to be counted.
- The court ordered the EC to count VVPATS in five polling stations instead.

Why are political parties demanding widened verification of VVPAT slips?

- Opposition parties continue to call for verification of more polling booths to make voting more transparent.
- They argue that the sanctity of a fair election outweighs the concern of delay in the declaration of results.

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At least 20 firms bought electoral bonds within 3 years of incorporation, a punishable offence: Data

Subject: Polity

Section: Elections

Context:

- Despite a **legal prohibition against companies less than three years old making political contributions**, including through **electoral bonds**, data indicates that **at least 20 such new firms purchased electoral bonds totalling about ₹103 crores**.

Details:

- Many of these companies were **established during economically challenging times in India**, such as the **2019 recession** and the **COVID-19 pandemic**, and proceeded to buy substantial amounts of **electoral bonds shortly after their incorporation**.
- Historically, the **restriction on new companies (less than three years old) making political donations** has been in place for **nearly four decades**, aiming to **prevent shell companies from channelling funds to political parties**.
- Despite amendments over the years, including those related to the **cap** on the amount a company could donate, this **age restriction was maintained to combat the potential misuse of funds**, including **money laundering** and the **use of black money**.
- Concerns are being raised by the **Election Commission of India** and the **Reserve Bank of India** regarding the **removal of the cap on donation amounts** and the **potential for electoral bonds to be used for money laundering and funnelling black money into the political system**. The issue highlights **discrepancies in the enforcement of legal provisions** meant to **prevent new companies from influencing political finance through substantial contributions**.

About the Electoral Bond scheme and Supreme Court verdict on it:

When were Electoral Bonds (EBs) introduced?

- It was introduced with the **Finance Bill (2017)**.
- On **January 29, 2018**, the **Narendra Modi-led NDA government** notified the **Electoral Bond Scheme 2018**.
- The bonds will be **issued in multiples of Rs 1,000, Rs 10,000, Rs 100,000 and Rs 1 crore** (the range of a bond is between Rs 1,000 to Rs 1 crore). These will be available at **some branches of SBI**.
- A donor with a **KYC-compliant account** can purchase the bonds and can then **donate** them to the party or individual of their choice.

How to use electoral bonds?

- Now, the receiver can encash the bonds through the **party's verified account**. The **electoral bond** will be **valid only for fifteen days**.
- The **29 specified SBI branches** are in cities such as **New Delhi, Gandhinagar, Chandigarh, Bengaluru, Bhopal, Mumbai, Jaipur, Lucknow, Chennai, Kolkata and Guwahati**.
- The **electoral bonds** are available for purchase for **10 days** in the **beginning of every quarter**.
- The **first 10 days of January, April, July and October** has been specified by the **government** for the purchase of electoral bonds.
- An **additional period of 30 days** shall be specified by the **government** in the year of the **Lok Sabha elections**.

When are the bonds available for purchase?

1. Any party that is **registered under section 29A** of the **Representation of the Peoples Act, 1951** (43 of 1951) and has **secured at least one per cent of the votes polled in the most recent General elections or Assembly elections** is **eligible to receive electoral bonds**.

Electoral bonds: Conditions

- The party will be **allotted a verified account** by the **Election Commission of India (ECI)** and the **electoral bond transactions** can be made **only through this account**.
2. The **electoral bonds** will **not bear the name of the donor**. Thus, the **political party** might not be aware of the donor's identity.

Are electoral bonds taxable?

- In **February 2017**, the then **finance minister Arun Jaitley** said that the **donations would be tax deductible**.
- Hence, a **donor will get a deduction and the recipient**, or the political party, will get **tax exemption**, provided **returns are filed by the political party**.

Restrictions that were done away with after the introduction of the electoral bond scheme

- Earlier, **no foreign company** could donate to any political party under the **Companies Act**
- A **firm could donate a maximum of 7.5 per cent** of its **average three-year net profit** as political donations according to **Section 182** of the **Companies Act**.
 - As per the same section of the Act, **companies had to disclose details of their political donations in their annual statement of accounts**.
- The government moved an **amendment in the Finance Bill** to ensure that this provision would not be applicable to companies in case of electoral bonds.
- Thus, **Indian, foreign and even shell companies** can now donate to political parties without having to inform anyone of the contribution.
- On **April 12, 2019**, the **Supreme Court** asked **all the political parties** to submit details of donations received through electoral bonds to the **ECI**.
- **Prioritizing voters' right to information** regarding political parties' sources of funding, the **Supreme Court** on **February 15, 2024**, struck down the **Electoral Bonds Scheme (EBS)**.

What does the [Supreme Court have to say on electoral bonds?](#)

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- The government moved an **amendment in the Finance Bill** to ensure that this provision would not be applicable to companies in case of electoral bonds.
- Thus, **Indian, foreign and even shell companies** can now donate to political parties without having to inform anyone of the contribution.

How did the law on disclosure of assets evolve?

Subject: Polity

Section: Elections

Context:

- Two recent events have highlighted issues related to the **disclosure requirements for election candidates**.
 - **Firstly, Rajeev Chandrasekhar**, a **BJP candidate in Thiruvananthapuram**, reportedly **did not declare all his assets** in the required affidavit with his nomination papers.
 - **Secondly**, the **Supreme Court** has indicated that **candidates do not need to disclose every minor detail**, acknowledging their **right to privacy**.
- These developments raise questions about **balancing transparency and privacy in election laws**.

What is the law related to disclosure?

- The law related to **disclosure for election candidates in India** stems from a **landmark Supreme Court judgment on May 2, 2002**, which established that **voters have the right to know about a candidate's criminal history, educational qualifications, and financial information**, including that of their spouses and dependents.
- This was based on the **principle** that the **right to information is essential for voters to make informed decisions**, thus forming a part of their **right to express their opinions through voting**.
- Following the **Supreme Court's decision**, the **Election Commission of India (ECI)** issued rules in **June 2002** to enforce this judgment.
- However, the **Central government** attempted to **limit these disclosure requirements** through an **ordinance in August 2002** that **amended the Representation of the People Act, 1951**.
 - This **ordinance** introduced sections that **restricted disclosures to only those specified in the Act** and set **penalties for nondisclosure or false disclosure**.

- These amendments were **challenged in court**, and on **March 13, 2003**, the **Supreme Court invalidated Section 33B of the ordinance**, thus **upholding the original disclosure norms**.
- Consequently, the **ECI reissued revised guidelines** and formats for **candidates' disclosures** in line with the **Supreme Court's ruling**.

What are the consequences of any omission?

- Under **Section 125A of the Representation of the People Act, 1951**, any candidate who fails to disclose required information, or provides false information, or conceals information, may face **up to six months in prison, a fine, or both**.
- Additionally, such **omissions or misinformation** can serve as **grounds for challenging the validity of a candidate's election in the High Court**.
- Specifically, an **election can be declared void if there is improper acceptance of a nomination or non-compliance with the legal provisions, rules, or orders under the act**.
- This **allows** an unsuccessful candidate to contest the **legitimacy of a winning candidate's nomination** based on **allegations of concealed or false information**, as well as any **breaches of mandatory disclosure requirements**.

What is the latest court ruling?

- The **latest court ruling** involved the **election of Karikho Kri**, an **independent candidate** who won a seat in the **Arunachal Pradesh Assembly in 2019**. His election was **challenged by a Congress candidate** on the basis that **Kri had failed to disclose certain movable assets** and issues related to **government accommodation**.
- The **Itanagar Bench of the High Court** declared his **election void**, finding faults in his nomination over **non-disclosure of three vehicles** and a **missing 'No Dues' certificate** from his previous term as **MLA**.
- However, the **Supreme Court overturned this decision**, ruling that the **non-disclosures by Kri were not substantial enough to affect the election outcome**.
 - It found that the **vehicles had been disposed of well before the election**, and although the **'No Dues' certificate** was from **2014**, it was **still valid as there were no new dues** and **Kri had not held any government accommodation since**.
- Thus, the **non-compliance did not materially affect the integrity of the electoral process**, leading to the reinstatement of Kri's election.

What is the takeaway from the verdict?

- The **Supreme Court's verdict** emphasizes that while the **voter's right to know is important**, it is **not absolute**.
- **Candidates are not required to disclose every detail of their lives or every minor possession**.
- **Disclosure is necessary only for items of significant value or those that could influence a voter's perception of the candidate's lifestyle**.
- However, the **court** also highlighted that **there is no uniform rule for determining the significance of an omission**; the **impact of each nondisclosure must be assessed** based on the **specific circumstances of each case**.
- This implies a need for **balance in disclosure requirements**, ensuring **transparency** while respecting a **candidate's privacy**.

Source: [TH](#)

Reforms needed in the voting process

Subject: Polity

Sec: Elections

Context:

- The Supreme Court has decided to hear petitions seeking 100% cross-verification of the **Voter Verifiable Paper Audit Trail (VVPAT) slips** with the vote count as per Electronic Voting Machines (EVMs).

What is the history of the voting process?

- In the **first two general elections of 1952 and 1957**, a separate box was placed for each candidate with their election symbol.
- Voters had to drop a **blank ballot paper into the box** of the candidate whom they wanted to vote for.
- Thereafter from the third election, the **ballot paper with names of candidates** and their symbols was introduced with voters putting a stamp on the candidate of their choice.

When were Electronic Voting Machines (EVMs) first introduced?

- The **EVM was introduced** on a trial basis in **1982 in the Assembly constituency of Paravur** in Kerala.

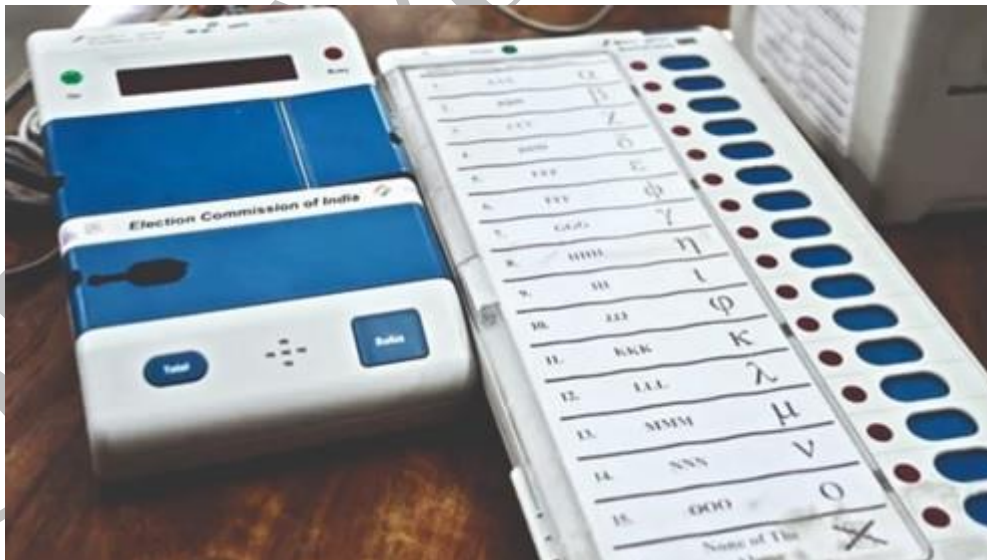
- They were deployed in all booths during the **Assembly elections of Tamil Nadu, Kerala, Puducherry and West Bengal** in 2001.
- The **Supreme Court in various judgments** has upheld the validity of using EVMs in elections.
- In the 2004 general elections to the Lok Sabha, **EVMs were used in all 543 constituencies**.
- In Subramanian Swamy versus Election Commission of India (2013), the Supreme Court ruled that a paper trail is an indispensable requirement for free and fair elections.
- The **2019 elections had EVMs backed with 100% VVPAT in all constituencies**.

What are international practices?

- Many **western democracies continue to have paper ballots for their elections**.
- Countries like **England, France, The Netherlands and the U.S.** have discontinued the use of EVMs, for national or federal elections, after trials in the last two decades.
- In **Germany, the Supreme Court** of the country declared the use of EVMs in elections as unconstitutional in 2009.
- Some countries like **Brazil**, however, use **EVMs for their elections**.
- Among our neighbors, **Pakistan does not use EVMs**.
- Bangladesh experimented in a few constituencies in **2018 but reverted to paper ballots for the general elections in 2024**.

What are the features of EVMs?

- **EVMs** bring significant benefits to the **electoral process**.
- First, the **EVM has virtually eradicated booth capturing** by limiting the rate of vote casting to four votes a minute and thus significantly increasing the time required for stuffing false votes.
- Second, invalid votes that were a **bane of paper ballots** and also a bone of contention during the counting process have been eliminated through EVMs.
- Third, considering the size of our **electorate which is close to one billion**, the use of EVMs is eco-friendly as it reduces the consumption of paper.
- Finally, it provides **administrative convenience for the polling officers** on the day of the poll and has made the counting process faster and error-free.
- There are mechanisms to uphold the integrity of **EVM and VVPAT processes**.
- These include random allocation of **EVMs to booths before polls**; conduct of a mock poll to display the correctness of **EVMs and VVPAT before commencement of the actual poll**; and the serial number of EVMs along with total votes polled shared with agents of candidates to verify the same at the time of counting of votes.



What have been the concerns raised by activists about EVMs?

- Despite its advantages, there have been doubts raised about the functioning of **EVMs by various political parties and civil society** activists from time to time.
- The most repeated allegation is that **EVMs are susceptible** to hacking as it is an electronic device.
- The ECI has time and again clarified that it is a standalone device like a calculator with no connectivity to any external device and hence free from any kind of external hack.
- The sample size for matching of the **EVM count with VVPAT slips** at present is five per assembly constituency/segment.
- This is not based on any scientific criteria and may fail to detect defective EVMs during counting.

- The present process also allows for **booth-wise polling behavior** to be identified by various parties that can result in profiling and intimidation.

What can be the way forward?

- The **100% use of VVPAT** has enabled the voters to verify that their votes are ‘**recorded as cast**’.
- **100% match of EVM count with VVPAT slips** would be unscientific and cumbersome.
- The sample for matching of **EVM count and VVPAT slips** should be decided in a scientific manner by dividing each State into large regions as suggested by experts.
- In case of even a single error, the **VVPAT slips** should be counted fully for the concerned region and form the basis for results.

The story of indelible ink, a lasting symbol of Indian elections, and who makes it

Sub: Polity

Sec :Elections

Context:

- With the first phase of voting for the 2024 Lok Sabha elections beginning on April 19, the classic symbol of Indian polls is visible everywhere – **a left hand with only its index finger extended, marked by a purple-black indelible ink.**

More on news:

- **Mysore Paints & Varnish Ltd, Karnataka Government Undertaking** which is the sole manufacturer of the ink in India, said that around **26.5 lakh phials or small bottles (with a capacity of 10 ml each) will be made for this election cycle.**
- Devised to prevent a person from **casting more than one vote, the ink has been used in Indian elections for a long time.**
- The India-manufactured has also traveled to other parts of the **world to be used in other elections.**

Concept of the ink:

- Once a voter has her credentials checked at the polling booth, and before she casts her vote by pressing a button on the **Electronic Voting Machine (EVM), the indelible ink is applied on her finger.**
- The **Representation of the People Act (RoPA) of 1951 mentions the ink.**
- Section 61 states that rules may be made under the Act ,for the marking with indelible ink of the thumb or any other finger of every elector who applies for a ballot paper or ballot papers for the purpose of voting at a polling station before delivery of such paper or papers to him.
- Until the **third general elections in 1962,** the mark was made on the **base of the forefinger, following which it was made just above the root of the nail on the skin.**

Era before EVMs:

- Before EVMs, **ballot papers existed at polling stations.**
- They contained the list of contesting candidates alongside their **party symbols and names.**
- Voters had to mark their preference on the paper and then drop it in ballot boxes to vote.
- Before being given the **ballot paper, a voter’s index finger would be marked with the ink.**

What makes the ink indelible?

- Indelible ink contains **silver nitrate.**
- It is a **colorless compound which becomes visible when exposed to ultraviolet light, including sunlight.**
- The **higher silver nitrate’s concentration,** say around 20 percent, the higher will be the ink’s quality.
- For up to 72 hours after application it can remain resistant to soap, liquids, home-cleansing, detergents, etc.
- This water-based ink also contains a solvent like alcohol to allow its faster drying.
- The precise protocol for making this ink including its chemical composition and the quantity of each constituent is, however, not known to many people.

Who makes the indelible ink for Indian elections?

- The indelible ink was **first manufactured at the ECI’s request by the government’s Council of Scientific & Industrial Research (CSIR).**
- The research work on formulating the ink began in the **1950s by scientists in the erstwhile Chemical Division.**
- It was later patented by the **National Research Development Corporation (NRDC), New Delhi.**
- **Mysore Paints & Varnish Ltd.** has been licensed to manufacture the ink and has been in the business since 1962.

- Earlier called **Mysore Lac & Paint Works Ltd**, it was established in 1937 by Nalwadi Krishnaraja Wodeyar, then the **Maharaja of Mysore**.
- The indelible ink is exported to more than 25 countries that include **Canada, Ghana, Nigeria, Mongolia, Malaysia, Nepal, South Africa and the Maldives**.
- The procedure of application can **differ in each election**.
- For example, in **Cambodia and the Maldives**, voters need to dip his/her finger into the ink while in **Burkina Faso** the ink is applied with a brush, and **nozzles** are used for its use in **Turkey**.



EVMs' control units do not recognise parties: SC

Subject: Polity

Sec: Elections

Supreme Court observations on EVM-VVPAT:

- The **Supreme Court** described the **microcontrollers** in **electronic voting machines (EVMs)** as "**agnostic**," meaning they **do not recognize political parties or candidates but only register the buttons pressed by voters**.
- The **buttons** on the **EVMs** are **interchangeable**, varying their assignment from one constituency to another. Justice Sanjiv Khanna emphasized that **EVM source code should remain undisclosed to prevent misuse and maintain integrity**.
- The **microcontrollers** are **one-time programmable** and **not accessible after manufacturing**.

About EVM Machine:

- An electronic voting machine is a portable voting machine based on electronics. Two main technologies exist: **optical scanning** and **direct recording (DRE)**.
 - In an **optical scan voting system**, or **marksense**, each voter's choices are marked on one or more pieces of paper, which then go through a scanner. The scanner creates an electronic image of each ballot, interprets it, creates a tally for each candidate, and usually stores the image for later review.
 - In a **DRE voting machine system**, a **touch screen displays choices to the voter**, who selects choices, and can change their mind as often as needed, before casting the vote. Staff initialize each voter once on the machine, to avoid repeat voting. Voting data are recorded in memory components and can be copied out at the end of the election.

Introduction of EVM in India:

- In **1989**, the **Election Commission (EC)** developed **India's indigenous Electronic Voting Machines (EVMs)** in alliance with **two central government undertakings-** the **Electronics Corporation of India (ECIL)** and **Bharat Electronics Limited (BEL)**.
- **EVMs** were used for the **first time** in the **Goa State Assembly elections of 1999**.

Working Module of EVM:

- An **EVM** consists of a **control unit** and a **balloting unit** connected together by a **five-metre cable**. The **control unit** belongs to a **polling officer** while the **balloting unit** is kept in a **compartment to cast votes**. EVMs can even be used in **areas with no electricity**, as they can be **operated on alkaline batteries**.
- The **control unit** is kept in the **polling station** with the **Presiding Officer** and is placed inside the **voting compartment** as the votes are counted through it whereas the **balloting units** are kept in the **voting compartment for electors to cast their votes**.
- The **balloting unit** presents the voter with **blue buttons horizontally labelled with corresponding party symbols and candidate names**. The **Control Unit**, on the contrary, provides the **officer-in-charge** with a **'Ballot'** marked button to proceed to the next voter, instead of issuing a ballot paper to them.

What is VVPAT?

- **Voter verifiable paper audit trail (VVPAT)** or **verified paper record (VPR)** serves as a **feedback mechanism in ballotless voting systems**.
- It enables voters to **confirm their vote** has been **accurately cast** by providing a paper record with the candidate's name and party symbol.
- **VVPAT** acts as an **independent check on voting machines**, helping to **detect fraud or malfunctions** and allowing for an audit of the electronic votes.
- Although its **adoption has increased in the United States**, it remains **less common than hand-marked ballots**.

Source: [TH](#)

Why was the BJP candidate declared winner in Surat?

Subject: Polity

Sec: Elections

Context:

- The BJP's candidate from the **Surat Lok Sabha constituency** in **Gujarat** has been **declared elected unopposed**. This follows the **rejection of the nomination paper of the candidate set up by the Congress party** and the **withdrawal of nominations by other candidates**.

What is the law for nomination?

- **Section 33** of the **Representation of the People Act, 1951**, details the **requirements for a valid nomination in India**.
- It allows an elector above **25 years** of age to **contest Lok Sabha elections from any constituency**.
- A candidate from a **recognized party** requires **one proposer from the same constituency**, whereas **candidates from unrecognized parties or independents** need **ten proposers**.
- Each candidate may submit **up to four nomination papers** with **different sets of proposers** to **safeguard against the potential disqualification of one set**.
- **Section 36** outlines the **scrutiny process of nomination papers** by the **Returning Officer (RO)**, stating that **nominations should not be rejected over minor defects**. However, it emphasizes that **a nomination can be rejected if the candidate's or proposer's signature is found to be not genuine**.

What is the current issue?

- In the **Surat constituency**, Congress candidate **Nilesh Kumbhani's nomination** was **contested** due to **allegedly forged signatures from his proposers—his brother-in-law, nephew, and business partner**.
- After the **Returning Officer (RO)** received affidavits from the **proposers denying their signatures on Kumbhani's papers** and given that the **proposers were not presented within the required timeframe**, the **nomination was rejected**.
- The **Congress party** had also **nominated Suresh Padsala** as a substitute, but his nomination faced rejection for similar reasons concerning the **authenticity of the proposer's signature**.
- Consequently, with other nominations **either rejected or withdrawn**, the **BJP candidate Mukesh Dalal** was **declared the winner**.

What is the legal recourse?

- There have been **at least 35 candidates who have been elected unopposed to the Lok Sabha**. The majority of them were in the **first two decades after independence** with the last being in **2012**.
- The Congress party has alleged **coercion in the retraction of proposers' signatures for their candidate in the Surat constituency** and has approached the **Election Commission (EC)** to **overturn the Returning Officer's (RO) decision** and to **restart the election process**.
- However, under **Article 329(b)** of the **Constitution** and the **Representation of the People Act (RP Act)**, elections can **only be challenged through an election petition in the High Court**.

- **One valid reason for such a petition includes the improper rejection of nomination papers.** The Congress party's legal recourse is to **file an election petition** in the **Gujarat High Court**, which is **mandated** by the **RP Act** to try to conclude such cases **within six months**, although this timeframe has often not been adhered to in the past.

Source: [TH](#)

SLU, 'matchbox' that feeds EVM candidate info

Subject: Polity

Sec: Elections

Context:

- While rejecting the plea for **100% verification of Voter Verifiable Paper Audit Trail (VVPAT)** slips against the **Electronic Voting Machine (EVM)** count, the Supreme Court on Friday directed the Election Commission of India (ECI) to "seal and secure" the Symbol Loading Unit (SLU) for 45 days after the declaration of election results.

More on news:

- Currently, only the **three components of the EVM — the ballot unit, control unit, and VVPAT — are stored for 45 days after the results.**
- This is the **first time that SLUs, used to load candidate symbols onto the VVPATs, will also be available for examination along with the EVMs if a candidate challenges the results by filing an election petition in court.**
- The election law currently states that an **election petition challenging a result can be filed in court by a candidate within 45 days of the declaration of results.**

What is a Symbol Loading Unit (SLU) and how does it work?

- **Symbol Loading Units (SLUs)** were introduced around the same time as VVPATs a little over a decade ago.
- VVPATs help voters verify their votes — they see a slip with a printed image of the party symbol they voted for.
- But for the VVPAT to print a symbol correctly, information pertaining to the list of candidates and their symbols must be loaded on to the VVPAT machine in the correct order.
- **This is where the Symbol Loading Unit, or SLU, comes in.**
- In fact, **the introduction of VVPATs necessitated the use of SLUs.**
- The SLU is used to **load the symbols of the candidates onto the VVPAT.**
- It is a matchbox-sized device that is first connected to a laptop or personal computer, from which a symbol loading application is used to load a bitmap file containing the candidates' names, serial numbers, and symbols.
- The SLU is then connected to the VVPAT to transfer that file on to the paper audit machine.
- This is done under the supervision of a district election officer.

At which point in the election process are SLUs used?

- The SLUs come into the picture **only a few days before polling in a particular seat, when the EVMs are being commissioned and the list/ order of contesting candidates** is decided and set on the ballot unit (the machine where you press the button to vote) and the VVPAT (which produces the paper audit trail of your vote).
- **Candidate-setting can happen at any time from five to two days before voting at a seat.**
- Once the **SLU is used to load symbols onto the VVPAT, the EVM is ready for use.**
- **After this, the SLU is of no relevance to the actual voting process.**

What happens to an SLU after symbols are loaded?

- A small number of SLUs are **enough to load symbols onto all VVPATs for a seat.**
- According to EC officials, it takes an **SLU two to three minutes to load each VVPAT.**
- Once the **symbol-loading is complete, the SLUs are handed over to the concerned district election officer for safekeeping.**
- They remain in the **officer's custody until the day after voting.**
- The SLUs are released to the engineers of the two EVM manufacturers, **Bharat Electronics Ltd (BEL) or Electronics Corporation of India Ltd (ECIL)**, so they can be used to load symbols onto VVPATs for other seats in subsequent phases.
- In a multi-phase election like the ongoing one for the **18th Lok Sabha, an SLU is typically reused after one phase of polling to load symbols onto VVPATs meant for other seats in subsequent phases.**

What has the SC said about the SLUs?

- The court has said that the **SLUs should be sealed and stored immediately after the symbol-loading process for a seat is complete.**

- It must be stored for a **period of 45 days after the declaration of results**, so that it can be opened and examined like EVMs in case of an election petition.
- This means that an **SLU used for loading symbols onto VVPATs for one seat can no longer be reused for other seats.**

And what has the top court said about microcontrollers?

- In an unprecedented move, the court has **allowed candidates to seek verification of EVM software.**
- This means that a candidate can ask ECI officials to check the one-time programmable software in the **BU (Ballot Unit), CU (Control Unit), and VVPAT for tampering, in case of any doubts regarding the result.**
- This verification involves inspecting the **burnt memory/ microcontrollers of these three components.**
- The court has proposed a formula for doing this: **engineers from the EVM manufacturers will conduct checks on 5% of the EVMs per Assembly constituency or Assembly segment of a parliamentary constituency.**
- Candidates must submit a written request within seven days of the announcement of results, and will have to bear the expense of the process.
- This right to seek verification is limited to those candidates who come in second or third.
- Engineers from the manufacturing companies will certify the authenticity and intactness of the memory/ microcontroller.

What happens if the microcontrollers, upon verification, are found tampered?

- The court has only said that if any tampering is found, the candidate will be refunded the cost of verification.

A long way from 1984: when SC junked ECI's first EVM experiment

Subject: Polity

Sec: Elections

Context:

- **The Supreme Court** on Friday put the stamp of its unequivocal approval on **electronic voting machines (EVMs).**

More on news:

- Forty years ago, when a voting machine was **first used at the Parur Assembly constituency in Kerala**, the court had set aside the election and ordered a repoll in 50 of the 85 polling stations.

The first experiment:

- In August 1980, the **Electronics Corporation of India Ltd (ECIL)** presented political parties with a prototype voting machine.
- In 1982, the **Election Commission of India (ECI)** announced that the machine would be used as a pilot project in 50 out of 84 polling stations in the Parur constituency during that year's Assembly elections in Kerala.
- The central government had **not sanctioned the use of the machines.**
- ECI used its constitutional powers under **Article 324, which gives it the power of "superintendence, direction, and control" over elections.**

Supreme court views:

- The ECI argued that its powers under **Article 324 would supersede any Act of Parliament, and if there was conflict between the law and the ECI's powers, the law would yield to the Commission.**
- The Bench unanimously held that introducing voting machines was a legislative power that only Parliament and state legislatures could exercise (Articles 326 and 327), not the ECI.
- The ECI also relied on **Section 59 of The Representation of the People Act, 1951 and Rule 49 of The Conduct of Elections Rules, 1961.**
- **Section 59** says votes shall be given by ballot in such manner as may be prescribed, and Rule states the ECI can publish a notification to direct that the method of voting by ballot shall be followed...at such polling stations as may be specified in the notification.
- In 1988, the election law was amended to insert Section 61A, which allowed the ECI to specify the constituencies where votes would be cast and recorded by voting machines.
- In a judgment which coincides with the second phase of the general elections to the Lok Sabha, also refused petitioners' suggestion to hand over paper slips from Voter Verifiable Paper Audit Trail (VVPAT) units to electors to take a leisurely look before inserting them into the ballot boxes.
- The court refused to intervene against Section 49 MA of the Conduct of Election Rules, which penalises a voter whose complaint of mismatch (of votes cast and votes counted) would attract penal proceedings initiated by poll officials under Section 177 of the Indian Penal Code for submitting false information.
- The Bench further declined petitioners', NGO Association for Democratic Reforms and Arun Kumar Agarwal, argument to direct the cross-verification of 100% EVMs and VVPATs across the country. Currently, only five percent of EVM-

VVPAT counts are randomly verified in any given Assembly constituency. Earlier it had been one percent, until the top court had intervened.

- The court suggested to the Election Commission (EC) to explore the possibility of devising an “electronic machine” to count the VVPAT paper slips. This direction may have been prompted by an affidavit submitted by the EC during the hearing of the case. The poll body had explained that it takes an hour to manually count the VVPAT slips of a single polling station.

Timeline of EVMs:

- **The Commission in December 1977** mooted the idea of EVM to overcome certain problems associated with use of ballot papers and taking advantage of development of technology so that voters cast their votes correctly without any resultant ambiguity and removing the possibilities of invalid votes totally.
- **MB Haneeefa** invented the **first Indian voting machine in 1980.**
- **It was first used in 1981 in the by-election to North Paravur Assembly Constituency of Kerala in 50 polling stations.**
- **The EVMs were commissioned in 1989 by Election Commission of India in collaboration with Bharat Electronics Limited and Electronics Corporation of India Limited.**
- **The law was amended by the Parliament in December, 1988 and a new section 61A was inserted in the Representation of the People Act, 1951** empowering the Commission to use voting machines.
- **The amended provision came into force with effect from 15th March, 1989.**
- A decade later, EVMs were used at **16 Assembly seats in Madhya Pradesh, Rajasthan, and Delhi. This was expanded to 46 Lok Sabha seats in 1999 and, in 2001, state elections in Tamil Nadu, Kerala, Puducherry, and West Bengal were entirely conducted using EVMs.**
- By the 2004 Lok Sabha election, EVMs had completely replaced ballot papers at all 543 seats.

Advantage of EVMs

- The EVMs have effectively eliminated booth capturing by restricting the rate of vote casting to four votes per minute, thereby prolonging the time needed and thus check insertion of bogus votes. EVMs have eliminated invalid votes, which were a major issue with paper ballots and had often sparked disputes during the counting process.
- Further, it noted that EVMs reduce paper usage and alleviate logistical challenges. Finally, they provide administrative convenience by expediting the counting process and minimising errors.
- Election officials have complete control of the polling process.
- After the pressing of the ‘CLOSE’ button on the control unit [of the EVM], there is no possibility of voting. By pressing the ‘TOTAL’ button on the control unit at any time, the total number of votes polled up to the time of pressing the button is displayed, without indicating the candidate-wise result of votes,” the judgment noted.
- The court highlighted that the microcontrollers of the EVMs are programmed at the manufacturing stage. Their original programme is agnostic both political party and candidate-wise. This process is done way before the elections and it is impossible to know the serial number of any candidate in advance. Thus, it is not possible to pre-program the EVM in a spurious manner.

No data available on President Kovind returning any Union Cabinet decision: RTI response

Subject: Polity

Sec: Executive

Context:

- A college student from **Chennai** filed a **Right to Information (RTI) query** asking about instances when **former President Ram Nath Kovind returned decisions from the Union Council of Ministers and other governmental bodies for reconsideration.**
- **Rashtrapati Bhavan**, through the **President's Secretariat**, responded stating that **there is no available information on any such instances involving former President Kovind.**

Details:

- Dissatisfied with the initial response, the student, **Yuvan Mithran**, appealed, questioning if the **absence of information implied that no decisions were ever returned or if the data simply was not recorded.**
- The **Officer on Special Duty/First Appellate Authority (FAA)** at **Rashtrapati Bhavan** upheld the initial reply, **confirming no information was held by the Secretariat on the matter.**

Lack of Information:

- **Rashtrapati Bhavan's** response to an **RTI query** revealed that **there is no record of instances where former President Ram Nath Kovind returned decisions from the Union Council of Ministers for reconsideration.**

- This **absence of information** was highlighted as surprising and problematic by Mr. Raj Kapil, a criminology professor.

Accountability Concerns:

- Mr. Kapil criticized the **lack of transparency and accountability**, suggesting that the **former President's use of the Suspensive Veto** was **not documented or reported** adequately. This raised broader questions about the **openness of the President's Secretariat**.

Key Presidential Decisions:

- During his tenure, **President Kovind** made significant **decisions** including **assenting to the Jammu and Kashmir Reorganisation Act, 2019**, the **Triple Talaq Bill**, amendments to the **Unlawful Activities (Prevention) Amendment Act, 2019**, the **Citizenship Amendment Bill**, and **three Farm Bills**.

The Veto Power of the President:

- **Article 111** states that a **bill of Parliament** can **only become an Act** when the **President gives his assent** to that particular bill, so, when the Indian parliament passes bills, the bill is then sent to the President for his assent.
- For any bill passed by the Parliament and sent to the president for his assent, the **President can choose to take one of the following actions**,
 - The President may give his assent to the bill passed by the Parliament,
 - The President may not give his assent or withhold the bill passed by the Parliament,
 - The President may **return the bill to the parliament for reconsideration** of the Parliament.
- The **President's power to withhold or not give his assent** to a parliament bill is called the **veto power of the president of India**.
- The President performs his veto power by his **conscience**; however, **two scenarios** can be given when the **president exercises his veto power**,
 - If President realises an **ill consideration by the parliament** in the passage of the bill, and
 - The President found it necessary to withhold a bill to **prevent non-constitutional legislation**.
- The **President of India** enjoys veto powers like an **absolute veto, suspensive veto, and pocket veto**.
- **Absolute Veto**
 - The Absolute Veto gives power to the President to **completely deny a bill of parliament**; in this case, the bill is dropped, and it doesn't become an act.
 - However, the President can use Absolute Veto in the following conditions,
 - If a Private Member of the Parliament presented the bill.
 - If the outgoing government passes the bill (passed before the resignation but resigned before the President's assent) and the new government advises the President not to give his assent.
- **Suspensive Veto**
 - When the **President sends the bill back to the parliament for reconsideration**, this veto power is called the **suspensive veto power** of the president of India.
 - However, there are **certain limitations to the suspensive veto power** of the **President of India**,
 - The President of India **cannot use Suspensive Veto over money bills**, as the **money bills are passed with his/her prior recommendation**.
 - If the President sends a bill for reconsideration of the Parliament, and parliament again passes the bill without making any changes to it. In that case, the **President is required to give his assent to such a bill**.
- **Pocket Veto**
 - When the **President decides to not decide on a bill of the Parliament**, this veto power of the **president of India** is called the **pocket veto power of the President**. The President **neither gives his assent nor withholds the bills**; instead, he chose not to take any action on the bill.
 - The **constitution of India doesn't prescribe any time limit for the exercise of pocket veto by the President of India**. In this regard, the Indian constitution gives a **wider pocket veto to the President than any other constitutional democracy**; for example, the **President of the United States can only exercise pocket veto for ten days**.

Source: [TH](#)

Supreme Court Hearing on Karnataka's Plea for Drought Assistance

Subject: Polity

Section: Federalism

- **Karnataka Government's Plea:**

- The plea, filed through advocate **DL Chidananda**, urges the Supreme Court to direct the Centre to release **financial assistance** from the **National Disaster Response Fund (NDRF) for drought management**.
- It seeks a declaration that the failure to release this assistance violates the fundamental rights under **Articles 14 and 21** of the Constitution.
- **Violation of Laws and Acts:**
 - The plea argues that the Centre's action is violative of the **Disaster Management Act, 2005**.
 - It also cites violations of the **Manual for Drought Management** and guidelines for the **State Disaster Response Fund**.
- **Drought Situation in Karnataka:**
 - Karnataka is facing a severe drought, affecting lives and livelihoods.
 - **223 out of 236 taluks** have been declared drought-affected, with significant agricultural and horticultural losses.
 - The estimated loss stands at **₹35,162 crore** for the Kharif 2023 season.
- **Financial Assistance Sought:**
 - The state government has sought **₹18,171.44 crore** from the NDRF.
 - This includes funds for crop loss input subsidy, relief for affected families, drinking water shortage, and cattle care.
- **Impact on Livelihoods:**
 - Agriculture, the primary livelihood source, has suffered, leading to lower yields and reduced incomes.
 - The drought has also impacted water availability for **urban and rural areas**.
- **Obligations of the Union of India:**
 - The plea highlights that under the Disaster Management Act, the Union of India is **obligated** to provide financial assistance to states.
 - Despite reports and assessments, the High-Level Committee has not taken action on the state's requests.
- **Impaired Fundamental Rights:**
 - The petition argues that the delay in assistance has **impaired the fundamental right to life** guaranteed under Article 21 of the Constitution.
 - It emphasizes the urgent need for relief and support in the face of the severe drought situation.

National Disaster Response Fund (NDRF)

- **Formation:**
 - NCCF (National Calamity Contingency Fund) was renamed as NDRF with the enactment of the **Disaster Management Act, 2005**.
 - Defined in **Section 46** of the Disaster Management Act, 2005.
 - Placed in the **“Public Account”** of the Government of India under **“reserve funds not bearing interest”**.
 - **Public Accounts:** Constituted under **Article 266 (2)** of the Constitution for transactions where the government acts as a banker (e.g., provident funds, small savings).
 - Expenditures from it **do not require approval** by Parliament.
- **Role:**
 - Managed by the **Central Government** for emergency response, relief, and rehabilitation in threatening disaster situations.
 - Supplements the **State Disaster Response Fund (SDRF)** in severe disasters if sufficient funds are not in SDRF.
 - SDRF is the primary fund for State governments to provide **immediate relief**.
- **Financing:**
 - Financed through a **cess** on specific items, chargeable to excise and customs duty.
 - Approved annually through the **Finance Bill**.
 - Currently, funded by the **National Calamity Contingent Duty (NCCD)**.
 - NCCD levied on goods specified in the **Seventh Schedule** (manufactured or produced goods).
- **Contribution:**
 - Centre contributes **75%** of SDRF allocation for **general category States and Union Territories**.
 - Centre contributes **90%** for **special category States/UTs** (northeast States, Sikkim, Uttarakhand, Himachal Pradesh, Jammu & Kashmir).
- **Monitoring:**

- **Department of Agriculture and Cooperation** (under Ministry of Agriculture) monitors relief activities for drought, hailstorms, pest attacks, cold wave/frost.
- **Ministry of Home Affairs (MHA)** monitors other natural calamities.
- **Comptroller and Auditor General (CAG)** audits NDRF accounts.

SDRF (State Disaster Response Fund):

- **Constitution:**
 - SDRF has been constituted under **Section 48 (1) (a)** of the **Disaster Management Act, 2005**.
- **Recommendations:**
 - It was constituted based on the **recommendations** of the **13th Finance Commission**.
- **Purpose:**
 - SDRF is the **primary fund** available with the State governments for responses to **notified disasters** to meet expenditure for providing **immediate relief**.
- **Audit:**
 - The fund is **audited** by the **Comptroller and Auditor General of India (CAG)** every year.
- **Contribution:**
 - The Centre contributes **75%** of the SDRF allocation for **general category States and Union Territories**.
 - The Centre contributes **90%** for **special category States and Union Territories** (northeastern States, Sikkim, Uttarakhand, Himachal Pradesh, Jammu and Kashmir).
 - The **annual Central contribution** is released in **two equal installments** as per the recommendation of the Finance Commission.
- **Disasters Covered:**
 - SDRF is meant for responses to a range of disasters, including **Cyclone, Drought, Earthquake, Fire etc.**
- **Local Disasters:**
 - A State Government may use up to **10%** of the funds available under the SDRF for providing immediate relief to the victims of **natural disasters** that they consider to be '**disasters**' **within the local context** in the State.
 - These **disasters are not included in the notified list of disasters of the Ministry of Home Affairs.**

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SC questions Centre's rigid position on control over industrial alcohol

Subject: Polity

Section: Federalism

Context:

- A **nine-judge Constitution Bench** of the **Supreme Court** raised questions about the **Central Government's insistence on maintaining exclusive control over industrial alcohol**, thereby **not allowing States the authority to regulate its misuse**, including its **illegal conversion to consumable liquor**.

Details:

- This situation **raises significant public health concerns** due to the potential for **industrial alcohol being diverted for human consumption**, leading to **health tragedies**.
- The bench is examining the **conflict between the Union and States** regarding the **authority to tax, manufacture, and produce alcohol**.
- The discussion also touched on the **States' authority over "intoxicating liquors" fit for human consumption**, covered under **Entry 8 of the State List**, and the **implications of a rigid classification** that could **limit state control over the illegal trade of industrial alcohol converted to consumable liquor**.
- The contention revolves around the **balance of power** between the **Union and the States in managing the production, distribution, and regulation of industrial alcohol vis-à-vis public health concerns**.

Key facts:

- The subject, '**Industrial alcohol**', is under **Entry 52 of the Union List**.
 - At present, only the **Centre** has the authority to **tax, manufacture, and produce industrial alcohol**.
 - **The Centre** has complete control over such industries. **Centre** argues that **control over industrial alcohol is retained in the public interest, ensuring equitable resource distribution across the country**.
- The subject, '**Intoxicating liquors**' is under **Entry 8 of the State List**.

Why Supreme Court's curative petition relief for Delhi Metro is significant

Subject: Polity

Section: Judiciary

Context:

- The Supreme Court on Wednesday ruled that the **Delhi Metro Rail Corporation (DMRC)** will not have to pay nearly Rs 8,000 crore to the **Delhi Airport Metro Express Private Limited (DAMEPL)**.

More on news:

- The ruling overturned the **Supreme Court's September 2021 judgment** that upheld the arbitral award.
- The court has now exercised its "**extraordinary powers**" in a curative writ petition to correct a "**fundamental error**" in its judgment.

History of the case

- In 2008, the **DMRC entered into a public-private partnership with DAMEPL**, a consortium led by Reliance Infrastructure Ltd, for the construction, operation, and maintenance of the Delhi Airport Metro Express.
- While **DMRC acquired the land and bore the cost of construction**, the consortium was to design, install, and commission the railway systems in two years.
- Until 2038, **DAMEPL was to maintain the line and manage its operations**, while paying a "concession fee" to DMRC.
- Before operations were finally handed over to **DMRC in June 2013, DAMEPL and DMRC** made a joint application before the **Commissioner of Metro Railway Safety for reopening the line**.
- While the line started functioning again, the government and Reliance began a battle before an arbitration tribunal for losses due to cancellation of the agreement.

Curative jurisdiction:

- **Curative, an extraordinary special jurisdiction** carved out by the Supreme Court under its inherent power vide **Article 129 and 142 of the Constitution of India**.
- A **curative writ petition** as a layer of appeal against a Supreme Court decision is not prescribed in the Constitution.
- It is a **judicial innovation, designed for correcting "grave injustices"** in a ruling of the country's top court.
- The SC first articulated the concept of a curative writ in **Rupa Ashok Hurra vs Ashok Hurra (2002)**.
- If there was a **significant miscarriage of justice** due to a final decision of the Supreme Court, could the court still correct it.

- However, **curative writs** are sparingly used.
- There are **narrow, mostly procedural grounds** that permit the filing of a **curative writ**.
- A claim must be made that principles of natural justice were not followed — for example, that a party was not heard, or that a judge was biased, or had a conflict of interest. These petitions need to be approved by a senior advocate designated by the court.

Curative writs are filed mostly in death penalty cases:

- The **SC in the Yakub Memon case (2015)** and the **Delhi gang rape convicts case (2020)** dismissed curative writs challenging death sentences.
- In 2023, in the Bhopal gas tragedy case, the SC refused to exercise its curative powers to enhance the compensation provided to victims that was deemed grossly inadequate.

Key takeaways from the judgment:

- The restoration of the **2019 position means that DMRC** does not have to pay the arbitral award. About Rs 2,600 crore that **DMRC had deposited with the High Court** in an escrow account will be restored.

How PMLA got its sharp teeth?

Subject: Polity

Section: Legislation in news

Context:

BRS leader K. Kavitha was produced at Rouse Avenue Court in connection with the Delhi excise policy-linked money laundering case.

More on news:

In 2023, **Delhi High Court granted bail to 49-year-old Preeti Chandra**, wife of Sanjay Chandra, who was the Director of M/s Unitech Group, underlining the exception for women.

What is the bail provision in PMLA?

- **Section 45** provides for bail on money laundering charges.
- This provision in the law, like the stringent bail standard in **the Unlawful Activities (Prevention) Act, 1967 (UAPA)**, puts the onus on the accused to prove that there is no prima facie case against them while seeking bail.
- Section 45(1) reads, No person accused of an offense under this Act shall be released on bail or on his own bond unless
 - **(i) the Public Prosecutor has been given an opportunity to oppose the application for such release; and**
 - **(ii) where the Public Prosecutor opposes the application, the Court is satisfied that there are reasonable grounds for believing that he is not guilty of such offense and that he is not likely to commit any offense while on bail.**
- However, there is a crucial exception to the bail standard.
- Provided that a person, who is under the age of sixteen years or is a woman or is sick or infirm, may be released on bail, if the Special Court so directs.
- This exception is similar to exemptions under the Indian Penal Code for women and minors.

What is the legal precedent?

- In 2023, Delhi High Court granted bail to 49-year-old Preeti Chandra, wife of Sanjay Chandra, who was the Director of M/s Unitech Group, underlining the exception for women.
- The ED, like in Kavitha's case, had made an argument that the accused was not a "household lady".
- The HC said that the **PMLA or the Constitution does not make a distinction between a household lady, a businesswoman, or a political figure.**
- To argue what kind of woman is entitled to fall within the proviso to **section 45(1) PMLA by creating an ad hoc illusory sub-classification of educated women**, business women, women belonging to high social strata, within the broader classification of "woman"... is misconceived," the court said.
- The court added a qualifier that the accused cannot be a **"flight risk" or "tamper witness" to be eligible for bail. (Preeti Chandra vs Directorate of Enforcement, June 14, 2023).**

Prevention of Money Laundering Act, 2002 (PMLA)

- **The Prevention of Money-Laundering Bill, 1998 was introduced in Lok Sabha on August 4, 1998, by the Atal Bihari Vajpayee government.**
- The proposed law was focused on **preventing money laundering and connected activities**, confiscation of the proceeds of crime, setting up of agencies and mechanisms to coordinate measures to combat money laundering, etc.

- **Prevention of Money Laundering Act, 2002 (PMLA)** was enacted to fight against the criminal offense of legalizing the income/profits from an illegal source. The Prevention of Money Laundering Act, 2002 enables the Government or the public authority to confiscate the property earned from the illegally gained proceeds.
- **Imprisonment:** The offender can face imprisonment for not less than three years, extending up to seven years. In some instances where the crime involves specified offenses, imprisonment can extend up to 10 years.
- **Monetary Penalty: In addition to imprisonment, a penalty of Rs. 5 lakhs can be imposed on the offender.**

Enforcement Directorate (ED)

- The Directorate of Enforcement is a multi-disciplinary organization mandated with investigation of offenses of money laundering and violations of foreign exchange laws. The statutory functions of the Directorate include enforcement of following Acts:
 - **The Prevention of Money Laundering Act, 2002 (PMLA):** It is a criminal law enacted to prevent money laundering and to provide for confiscation of property derived from, or involved in, money-laundering and for matters connected therewith or incidental thereto.
 - **The Foreign Exchange Management Act, 1999 (FEMA):** It is a civil law enacted to consolidate and amend the laws relating to facilitate external trade and payments and to promote the orderly development and maintenance of foreign exchange market in India.
 - **The Fugitive Economic Offenders Act, 2018 (FEOA):** This law was enacted to deter economic offenders from evading the process of Indian law by remaining outside the jurisdiction of Indian courts.
- ED has been given the responsibility to conduct investigation into suspected contraventions, enforce the provisions of the respective laws by conducting investigation to trace the assets derived from proceeds of crime, to provisionally attach the property and to ensure prosecution of the offenders and confiscation of the property by the Special court.

Supreme court verdicts:

- On July 27, 2022, a three-judge Bench headed by **Justice A M Khanwilkar (now retired) upheld the constitutional validity of PMLA**, which was under challenge in a batch of more than 200 individual petitions.
- The first challenge was against the **alternate criminal law system that the PMLA creates since the ED is kept outside the purview of the Code of Criminal Procedure (CrPC).**
- The **ED is not considered ‘police’**, and hence does not follow the provisions of CrPC for searches, seizures, arrests, and attachment of properties.
- This is significant — **since the ED is not a police agency**, statements made by an accused to the ED are admissible in court.
- The judgment in **Vijay Madanlal Choudhary & Ors vs Union of India** upheld these sweeping powers of the ED.
- The **PMLA, like the UAPA**, lays down a stringent standard for granting bail.
- **Section 45 of the PMLA is a ‘negative’ provision** — which bars courts from granting bail unless the accused can prove that there is no “prima facie” case against them, and that they will not commit any offense in the future.
- In **Nikesh Tarachand Shah v Union of India**, the Supreme Court struck down these provisions as unconstitutional.
- Parliament put them back in by amending the **PMLA through the Finance Act, 2018**. This was upheld by the 2021 ruling.

Two key amendments to PMLA:

- In **2009: ‘Criminal conspiracy’** under Section 120B of the Indian Penal Code was added to the PMLA’s schedule among various other offenses.
- In **2012: The PMLA was amended to move the Prevention of Corruption Act, 1988 (PC Act) to Part A of the statute’s schedule from Part B.** This was a significant move as it applied stringent bail conditions on those accused of corruption.
- Section 45(1) of the PMLA requires that the **public prosecutor must be given an opportunity to oppose any application for release on bail.** Where the public prosecutor opposes bail, the court must be satisfied that there were reasonable grounds to believe that the accused was not guilty and was unlikely to commit an offense if granted bail.
- This section, however, is applicable only to **Part A of the statute’s schedule.**
- When Parliament passed PMLA in 2002, **Part A only covered offenses such as waging war against the nation and trafficking of drugs. But the 2012 amendment expanded Part A to include the PC Act, the Wildlife (Protection) Act, the Immoral Traffic (Prevention) Act, the Antiquities and Arts Treasures Act, the Transplantation of Human Organs Act 1994, the Passports Act, the IT Act, and other laws.**

What is the ‘Adjudicating Authority’ that has confirmed ED’s attachment of Rahul-Sonia-promoted company’s assets?

Subject: Polity

Section: Legislation inn news

Context:

- The Adjudicating Authority under the **Prevention of Money Laundering Act, 2002 (PMLA)** on April 10 confirmed the attachment of assets worth Rs 751.9 crore belonging to the Congress party-promoted National Herald newspaper.

More on news:

- **The Enforcement Directorate (ED)** had provisionally attached these properties in November 2023 in a PMLA case against **Associated Journals Ltd (AJL)** that publishes National Herald, and Young Indian (YI), that owns the newspaper.

What is the role of the Adjudicating Authority?

- **Section 5 of the PMLA provides for the attachment** of any property that is suspected to have been acquired with the proceeds of crime in a case of any offense that is listed in the schedule of the law.
- The **attachment order is issued if the ED Director** feels that such proceeds of crime are likely to be concealed, transferred or dealt with in any manner which may result in frustrating any proceedings relating to confiscation of such proceeds of crime.
- This **provisional attachment order is valid for a period of 180 days.**
- It must be confirmed within this time by an **Adjudicating Authority appointed by the central government, failing which the property is automatically released from attachment.**
- As the **initial attachment is provisional**, the accused can continue to enjoy the property until the Adjudicating Authority confirms the attachment — after which the ED has the power to claim possession.

What happens after the Adjudicating Authority confirms the attachment?

- The accused has the right to challenge the **Adjudicating Authority’s confirmation order at the PMLA’s Appellate Tribunal within 45 days.**
- If the **Appellate Tribunal** too confirms the order, the accused can file a plea in the High Court, and so on.
- Unless the **property is released along the way**, it shall remain out of bounds for the owner until the trial is completed.
- Following **final confirmation, in case of a residential property, the ED will ask the owner to vacate the premises along with his belongings, and will take over possession.**
- In case of a conviction, the **trial court may order confiscation** of the attached property, and vest the rights to the property with the central government.
- Attached properties may remain locked for years as the **legal process continues, and may start to crumble and decay.**
- Any vehicles that are **attached are sent to warehouses owned by the Central Warehousing Corporation**, where the ED pays to park the vehicle. As cases drag on for years, the vehicles too rot.
- At the end of the trial, neither the accused nor the ED recovers anything from the vehicle.
- The agency could, in fact, end up paying more rent than the value of the vehicle.

Government should act on FMCG firms using ‘misleading’ ads: Supreme Court

Subject: Polity

Sec: Legislation in news

Context:

- The **Supreme Court of India**, led by **Justice Hima Kohli**, emphasized the need for the government to take action against **FMCG companies** using **misleading advertisements**, especially those targeting **vulnerable groups** such as **families with babies and schoolchildren.**

Recent cases of FMCG companies using misleading advertisements:

- **Higher sugar levels in Nestle’s baby food products** sold in **India** and other regions.
- **Patanjali Ayurved** and its **co-founders, Baba Ramdev and Acharya Balkrishna, allegedly advertising their ayurvedic drugs in contravention of the Drugs and Magic Remedies Act**, despite previously assuring the court they would not.

Details:

- Such **deceptive practices** could **negatively affect public health**, including that of **children.**
- The **Union Consumer Affairs Ministry** has **directed the Food Safety and Standards Authority of India** to investigate these claims against prominent **FMCG** companies.

- Participant ministries in the case concerning ‘misleading advertisements by **FMCG companies**’ - **Ministries of Consumer Affairs, Information and Broadcasting, and AYUSH Ministry.**
- The **Advertising Standards Council of India** had reported **948 objectionable advertisements** to the **AYUSH Ministry** over the past **two years** and questioned the follow-up actions taken on these reports.

FMCG companies:

- **Fast-Moving Consumer Goods (FMCG)** can be defined as **packaged goods** that are **consumed or sold at regular and small intervals.**
- Household and personal care products account for **50% of the sales** in the **FMCG industry**, **healthcare** accounts for **31-32%** and **food and beverage** accounts for the remaining **18-19%.**
- **FMCG** is the **fourth largest sector** in the **Indian economy.**

Drugs and Magic Remedies (Objectionable Advertisements) Act, 1954:

- It is a **legislative framework** to **control the advertisement of drugs** and **prohibit claims of magical qualities in remedies.**
- It encompasses various forms of **advertisements**, including **written, oral, and visual mediums.**
- Under the Act, the term “**drug**” refers to **medicines intended for human or animal use, substances for diagnosis or treatment of diseases, and articles affecting the body’s functions.**
- Other than articles meant for consumption, the definition for “**magic remedy**” under this Act also extends to **talismans, mantras, and charms** that **allegedly possess miraculous powers for healing or influencing bodily functions.**
- It **imposes strict regulations** on the **publication of advertisements related to drugs.**
- It **prohibits advertisements** that give **false impressions, make false claims, or are otherwise misleading.**
- Violations of these provisions can result in **penalties, including imprisonment or fines, upon conviction.**
- The term “**advertisement,**” under the Act, extends to **all notices, labels, wrappers, and oral announcements.**
- **Who comes under the Magic Remedies Act?**
 - The Act applies to **all individuals and entities involved in the publication of advertisements**, including **manufacturers, distributors, and advertisers.**
 - The Act can hold both **individuals and companies** accountable for contraventions.
 - If a company violates the act, **individuals in charge** of its business operations may also be **deemed guilty** unless they can prove a **lack of knowledge or demonstrate due diligence** in preventing the offence.
 - **Directors, managers, or officers** of the company may also be held liable if they consented to or neglected the offence.
- **Punishment**
 - Violating the Act can result in **imprisonment, fines, or both.**
 - If this is the first conviction for the violator, they may face up to **six months** in prison, fines or both.
 - For a **subsequent conviction, imprisonment** may extend to one year, fine, or both.
 - The Act **does not include any limits for the fines** that may be imposed on individuals or organisations.

Advertising Standards Council of India (ASCI):

- **ASCI** is a **self-regulatory organization** for the **advertising industry in India**, founded in **1985** and registered as a **non-profit** under **section 25** of the **Company Act.**
- **ASCI** is dedicated to **self-regulation** in advertising to protect consumer interests.
- The organization **ensures advertisements across all media** (including print, TV, radio, online, and promotional materials) comply with its **Code for Self-Regulation**, which demands **legality, decency, honesty, truthfulness, and safety in ads.**
- **ASCI** also strives for **fairness in competition** and **addresses complaints** about **misleading and harmful advertisements.**
- Recognized and supported by various government bodies such as the **Department of Consumer Affairs, FSSAI, Ministry of AYUSH, and Ministry of Information and Broadcasting** for its role in **co-regulating and curbing misleading advertisements.**
- The **Supreme Court of India**, in a **2017 judgment**, affirmed **ASCI’s self-regulatory mechanism** as an **effective preemptive action against misleading TV and radio advertising.**
- **ASCI** is part of the **Executive Committee** of the **International Council on Ad Self-Regulation (ICAS).**
- It has received several **awards** from the **European Advertising Standards Alliance (EASA)**, including **two Gold Global Best Practice Awards** for its mobile app “**ASCIonline**” and for **reducing the time to process complaints.**

Source: [TH](#)

Centre asks states to monitor, inspect organ transplants involving foreigners

Subject: Polity

Sec: legislation in news

Context:

- The Centre has directed the states to ensure that a **NOTTO (National Organ and Tissue Transplantation Organisation) ID** is generated for the donor and recipient for living-donor as well as deceased-donor transplants.

More on news:

- Pointing to reports of alleged commercial dealings in organ transplants involving foreign citizens, the **Union Health ministry has directed state authorities** to investigate such cases and take appropriate action for violations, if any.
- **In Rajasthan, fake NoCs were allegedly issued to Bangladeshi nationals, and in Delhi, poor Myanmar nationals were allegedly paid to donate kidneys.**
- India offers **world class transplantation at a fraction of the cost as compared to several Western countries.**
- There cannot be any commercial trading of organs if they are getting the transplant in India because the Indian law does not permit that.

Organ Donation in India:

- **NOTTO-ID being mandatory for considering allocation** of organs in case of deceased-donor transplant, this ID in case of a living-donor transplant shall also be generated at the earliest, maximum within 48 hours after the transplant surgery is done.
- Organs of the **deceased donor are anonymously allocated** to people waiting for a transplant, while an organ can be donated by a living person only if they (donor and recipient) are close relatives or share a close bond and want to donate altruistically.
- **Commercial trading of organs is not allowed under Indian laws.**

About NOTTO:

- **National Organ and Tissue Transplant Organization (NOTTO)** is a National level organization set up under the **Directorate General of Health Services, Ministry of Health and Family Welfare, Government of India.**
- **NOTTO would function as apex center for All India activities of coordination and networking for procurement and distribution of Organs and Tissues and registry of Organs and Tissues Donation and Transplantation in the country.**
- It lays down **policy guidelines and protocols for various functions.**
- Network with **similar regional and state level organizations.**
- It handles the **dissemination of information to all concerned organizations, hospitals and individuals.**

The legal Framework in India

Transplantation of Human Organs Act (THOA) 1994 was enacted to provide a system of removal, storage and transplantation of human organs for therapeutic purposes and for the prevention of commercial dealings in human organs. THOA is now adopted by all States except Andhra and J&K, who have their own similar laws. Under THOA, source of the organ may be:

- Near Relative donor (mother, father, son, daughter, brother, sister, spouse)
- Other than near relative donor: Such a donor can donate only out of affection and attachment or for any other special reason and that too with the approval of the authorisation committee.
- Deceased donor, especially after Brain stem death e.g. a victim of road traffic accident etc. where the brain stem is dead and person cannot breathe on his own but can be maintained through ventilator, oxygen, fluids etc. to keep the heart and other organs working and functional. Other type of deceased donor could be donor after cardiac death.

Brain Stem death is recognized as a legal death in India under the Transplantation of Human Organs Act, like many other countries, which has revolutionized the concept of organ donation after death. After natural cardiac death only a few organs/tissues can be donated (like cornea, bone, skin and blood vessels) whereas after brain stem death almost 37 different organs and tissues can be donated including vital organs such as kidneys, heart, liver and lungs.

Government of India initiated the process of amending and reforming the THOA 1994 and consequently, the **Transplantation of Human Organs (Amendment) Act 2011** was enacted. Some of the important amendments under the (Amendment) Act 2011 are as under:-

1. Tissues have been included along with the Organs.
2. 'Near relative' definition has been expanded to include grandchildren, grandparents.
- Provision of 'Retrieval Centres' and their registration for retrieval of organs from deceased donors. Tissue Banks shall also be registered.
1. Provision of Swap Donation included.

2. There is provision of mandatory inquiry from the attendants of potential donors admitted in ICU and informing them about the option to donate – if they consent to donate, inform retrieval centre.
3. Provision of Mandatory ‘Transplant Coordinator’ in all hospitals registered under the Act
 - To protect vulnerable and poor there is provision of higher penalties has been made for trading in organs.
 - Constitution of Brain death certification board has been simplified- wherever Neurophysician or Neurosurgeon is not available, then an anaesthetist or intensivist can be a member of board in his place, subject to the condition that he is not a member of the transplant team.
1. National Human Organs and Tissues Removal and Storage Network and National Registry for Transplant are to be established.
2. There is provision of Advisory committee to aid and advise Appropriate Authority.
3. Enucleation of corneas has been permitted by a trained technician.
 - Act has made provision of greater caution in case of minors and foreign nationals and prohibition of organ donation from mentally challenged persons

In pursuance to the amendment Act, Transplantation of Human Organs and Tissues Rules 2014 have been notified on 27-3-2014

Kerala might move SC against Governor on SHRC chief's appointment

Subject: Polity

Section: National Body

Context:

- The **Kerala government** intends to hold **Governor Arif Mohammed Khan** accountable for **casting suspicion on the judiciary** and **former Chief Justice S. Manikumar** by **delaying the appointment of Manikumar** as the **chairperson** of the **Kerala State Human Rights Commission (SHRC)** for eight months.

State Human Rights Commission (SHRC):

- **SHRC in India** serves as a **watchdog** to **ensure the protection and promotion of human rights within each state**. It was established as per the provisions of the **Protection of Human Rights Act (PHRA), 1993**.
- **Composition:** The State Commission shall consist of a **Chairperson** and **4 members**.

Position Qualification

Chairperson A person who has been **Chief Justice** or **Judge of a High Court**

One Member who is, or has been, a Judge of a High Court.

4 Members One Member who is, or has been, a district judge in that State.

Two members to be appointed from amongst persons having knowledge of human rights.

- **Appointment:** The **Chairperson** and **other Members** shall be **appointed** by the **Governor** after obtaining the **recommendation of a Committee consisting of:**
 - The Chief Minister
 - Speaker of the Legislative Assembly
 - Minister-in-charge of the Department of Home in that State
 - Leader of the Opposition in the Legislative Assembly.
- **Term:** **Three years** or until they attain the age of **70 years**, whichever comes first.
- **Removal:** The **Chairperson** or **any other Member** of the Commission shall be **removed** from his office by **order of the President** on the ground of **proved misbehaviour** or **incapacity** after the **inquiry of the Supreme Court**. The **President** also, by order, **removes** from office the Chairperson or any other Member if the Chairperson or such other Member:
 - Is adjudged insolvent.
 - Engages during his term of office in any paid employment outside the duties of his office.
 - Is unfit to continue in office by reason of infirmity of mind or body.
 - Is of unsound mind and stands so declared by a competent court.
 - Is convicted and sentenced to imprisonment for an offense which, in the opinion of the President, involves moral turpitude.

Working of the States Human Rights Commission:

- The Commission is **vested with the power to regulate its procedure**.
- It has **all the powers of a civil court** and its proceedings have a **judicial character**.
- It may **call for information or reports** from the **state government** or any other **authority subordinate hitherto**.

- The **Commission** is **not empowered to inquire into any matter** after the expiry of **one year** from the date on which the act constituting a violation of human rights is alleged to have been committed. In other words, it can look into a matter within one year of its occurrence.
- **The Commission may take any of the following steps during or upon the completion of an inquiry:**
 - It may **recommend the state government or authority to make payment of compensation or damages to the victim.**
 - It may **recommend to the state government or authority the initiation of proceedings for prosecution** or any other action against the state government.
 - It may **recommend the state government or authority for the grant of immediate interim relief to the victim.**
 - It may **approach the Supreme Court or state high court for the necessary direction, order or writs.**
- The **Commission** submits its annual or special reports to the **state government**. These reports are **laid before the state legislature**, along with a **memorandum** of action taken on the recommendations of the Commission and the reasons for non-acceptance of any of such recommendations.

Human Rights Courts:

- The **Protection of Human Rights Act (1993)** also provides for the **establishment of a Human Rights Court in every district** for the **speedy trial of violation of human rights.**
- These courts can be set up by the **state government only with the occurrence of the Chief Justice of the High Court of that state.**
- For every **Human Rights Court**, the **state government** specifies a **public prosecutor** or **appoints an advocate** (who has practised as a special prosecutor).

Source: [TH](#)

IRDAI marks 25th anniversary with slew of regulatory reforms

Subject: Polity

Sec: National Body

1. Introduction to IRDAI:

- The Insurance Regulatory and Development Authority of India (IRDAI) marks its Silver Jubilee year.
- **Established in 1999 as an autonomous body** to regulate and develop the insurance industry.
- Incorporated as a **statutory body on April 19, 2000.**

2. Regulatory Reforms:

- IRDAI initiated regulatory reforms announced in March, effective from the current financial year.
- Originated from the recommendations of the Malhotra Committee report.
- Opened up the **insurance market in August 2000, allowing foreign companies ownership of up to 26%.**

3. Achievements and Growth:

- Over the last 24 years, **IRDAI steered the industry towards growth, with premium income reaching significant figures.**
- Life and non-life insurance **registered premium income of ₹7.83-lakh crore and ₹2.57-lakh crore in 2022-23.**
- Expected growth of 13-16% in these segments in 2024.

4. Pivotal Role of IRDAI:

- IRDAI played a pivotal role in safeguarding consumer interests and industry advancement.
- Actively engaged with policyholders and prioritized their well-being.

Reform Agenda and Governance:

- IRDAI spearheaded a major regulatory revamp encompassing various domains.
- Replaced 34 regulations with six regulations to enhance clarity and coherence.
- Working on master circulars to implement recent reforms.
- IRDAI's inclusive approach facilitated ease of doing business while prioritizing policyholders' interests.
- Initiatives led to the development of consumer-centric insurance products and enhanced distribution access.

About IRDAI:

- **Establishment:** IRDAI (Insurance Regulatory and Development Authority of India) is an autonomous and statutory body established under the IRDA Act 1999.
- **Supervision and Regulation:** It serves as the apex body overseeing and regulating the insurance sector in India.

- **Objective:** The primary objective of IRDAI is to protect the interests of policyholders, regulate, promote, and ensure the orderly growth of the insurance industry in India.
- **Nodal Ministry:** IRDAI operates under the Ministry of Finance of the Government of India.
- **Head Office:** The headquarters of IRDAI is located in Hyderabad.
- **Composition:** IRDAI consists of a 10-member body comprising a Chairman, five full-time members, and four part-time members appointed by the Government of India.

Center releases disaster relief funds for Karnataka and Tamil Nadu

Subject: Polity

Sec: National Body

Context:

- The Union government has ordered the release of ₹3,730.32 crore towards “relief assistance for natural calamity” from the **National Disaster Response Fund (NDRF)** to states of Tamil Nadu and Karnataka.

More on news:

- An order by the Finance Ministry said that the amount is being released to the State governments based on the recommendation of the Ministry of Home Affairs (MHA) on April 24.
- For the damage caused by **Cyclone Michaung** in December 2023 and the floods later in the month in southern Tamil Nadu, the MHA approved an assistance of ₹285.54 crore and ₹397.13 crore respectively.

About State Disaster Response Fund (SDRF):

- SDRF has been constituted by **each state under the provisions of Disaster Management act 2005.**
- It was constituted based on the recommendations of the **13th Finance Commission.**
- The government of India contributes **75% and 90% of the total yearly** allocation of SDRF to general states and special category states respectively.
- The state executive committee headed by the Chief Secretary is authorized to decide on all matters relating to the financing of the relief expenditure from the SDRF.
- Disaster (s) covered under SDRF: Cyclone, drought, earthquake, fire, flood, tsunami, hailstorm, landslide, avalanche, cloudburst, pest attack, frost and cold waves.
- The SDRF is the primary fund available with State governments as part of their response to notified disasters to meet expenditure on providing immediate relief to victims.
- The Centre contributes **75% of the SDRF allocation for general category States and Union Territories and 90% for special category States (northeastern States, Sikkim, Uttarakhand, Himachal Pradesh, and Jammu and Kashmir).**
- As per **Section 46 of the Disaster Management Act, 2005, the NDRF supplements the State Disaster Response Fund (SDRF)** in case of a disaster of severe nature, provided adequate funds are not available in the SDRF.
- The States have to submit utilization certificates, pending which no future allocation is made.

About National Disaster Response Fund:

- Defined under sec 46 of **Disaster Management Act, 2005 (DM Act).**
- It is a fund managed by the Central Government for meeting the expenses for emergency response, relief and rehabilitation due to any threatening disaster situation or disaster.
- Constituted to supplement the funds of the **State Disaster Response Funds (SDRF)** of the states to facilitate immediate relief in case of calamities of a severe nature.
- **National Calamity Contingency Fund (NCCF) was renamed as National Disaster Response Fund (NDRF) with the enactment of the Disaster Management Act in 2005.**

Land portions from 10 cantonment boards to be run by local bodies

Subject: Polity

Section: PRI and local govt

Context:

The Centre has decided to **shrink the land under the jurisdiction of 10 key cantonment boards** across five states, and put them under the state local bodies.

More on news:

Any objection to the above declaration by any inhabitant of a cantonment may be submitted to the Central Government through the General Officer Commanding-in-Chief (GOC), within eight weeks from the date of publication of this notification.

Affected Cantonment Boards:

- The 10 affected cantonment boards are:
 - Ramgarh Cantonment in Jharkhand (7,500 acres);
 - Deolali Cantonment in Maharashtra (7,000 acres);
 - Dehradun Cantonment (2,250 acres) and
 - Clement Town Cantonment (1,000 acres) in Uttarakhand;
 - Mathura Cantonment (1,000 acres), Shahjahanpur Cantonment (75 acres), Babina Cantonment (350 acres), and Fatehgarh Cantonment (50 acres) in Uttar Pradesh; and
 - Nasirabad Cantonment (550 acres) and
 - Ajmer Cantonment (40 acres) in Rajasthan.

AREA TO BE SHRUNK	
Cantonment	Area*
Ramgarh Cantt	7,500
Deolali Cantt	7,000
Dehradun Cantt	2,250
Mathura Cantt	1,000
Clement Town	1,000
Nasirabad Cantt	550
Babina Cantt	350
Shahjahanpur Cantt	75
Fatehgarh Cantt	50
Ajmer Cantt	40

*in acres

Need for such step:

- It is not the job of the **Armed Forces and Indian Defence Estates Service officers** to run municipalities.
- A need was felt to **exclude certain areas from the limits of the cantonment boards** and merge them with the elected urban local bodies
- This is the first time that an excision of this scale is being undertaken. In the last seven decades, only partial excisions were undertaken in **five cantonment boards — Varanasi, Ahmedabad, Agra, Jhansi and Ambala in the 1950s and 1960s.**
- The last such exercise was carried out in 1986, when some areas of **Khasyol cantonment board in Dharamshala, in Himachal Pradesh,** were removed.

About Cantonment Boards:

- Set up for the **civilian population residing in cantonment areas**, it is created and managed by the central government.
- It refers to an **organization which is established to administer and manage the civilian population living in cantonment areas.**
- For every cantonment there shall be a **Cantonment Board.**
- Every Board shall be deemed to be a municipality under **clause (e) of article 243P** of the Constitution for the purposes of-
 - (a) **receiving grants and allocations; or**
 - (b) **implementing the Central Government schemes of social welfare, public health, hygiene, safety, water supply, sanitation, urban renewal and education.**
- The board operates in accordance with the provisions of the **Cantonment Act of 2006 and falls under the jurisdiction of the Union Defence Ministry.**
- It comprises elected representatives as well as **ex-officio and nominated members as per the Cantonments Act, 2006.**
- A cantonment board consists of **eight elected members, three nominated military members, three ex-officio members** (station commander, garrison engineer and senior executive medical officer), and one representative of the district magistrate.

- The cantonment boards are managed by **GOCs, Indian Defence Estates Service (IDES) officers, state bureaucrats, and a few elected members**
- The station commander of the cantonment is the **ex-officio president of the board.**
- An officer of the Indian **Defence Estates Service (IDES) or Defence Estates Organisation** is the chief executive officer and member-secretary of the board.
- The term of office of a member of a board is **five years.**
- Cantonments are divided into four categories, namely,
 - **Category I cantonments are those with populations above 50,000;**
 - **Category II between 10,000 and 50,000;**
 - **Category III between 2,500 and 10,000,**
 - **Category IV with populations below 2,500.**
- Of these, **only Babina Cantonment and Ajmer Cantonment** were established after independence.
- Of the 61 cantonment boards in the country, only six were established after independence — **Jammu in 1954, Badami Bagh in 1954, Morar in 1956, Dehu Road in 1958, Babina in 1959, and Ajmer in 1962.**

Cantonment Board and Military Station:

- A **cantonment board is a civic administration body notified under the Cantonments Act, 2006**, and functions like a **municipal body**. While it is under the administrative control of the **Ministry of Defence**, it can include civilian inhabitants.
- On the other hand, a **military station is built solely for the Armed Forces, and does not include civilian inhabitants**. Under the administration of the Armed Forces, the Cantonment Act does not apply to military stations.

After Karnataka, Tamil Nadu Moves Supreme Court Seeking To Direct Union To Release Disaster Relief Funds

Subject: Polity

Section: Msc

Context:

- **Tamil Nadu** filed a suit in the **Supreme Court** accusing the Union government of treating the people of the State in a “**step-motherly**” fashion by **delaying the release of disaster relief funds** of nearly **₹38,000 crore** sought by **Chief Minister M.K. Stalin** to help tide over the twin calamities of **Cyclone Michaung** and **unprecedented floods**.

Details:

- The suit was filed by the State under **Article 131** of the **Constitution**.
 - According to **Article 131**, the **SC** has **exclusive and original jurisdiction** over legal issues originating **between States** or between **States and the Union**.
- **There is no justification for delaying the release of funds.**
- The **differential treatment** in the release of funds in comparison to other States is tantamount to **class discrimination**.
- It **violates the fundamental rights** of those who have **suffered due to calamities** and **faced greater hardships and irreparable losses**.
- This step-motherly treatment **violates the National Disaster Management Policy**, including **financial relations** and the **federal nature of tax division** by unfairly allocating funds to some States over others.

The financial mechanism under the Disaster Management Act, 2005:

- **National Calamity Contingency Fund (NCCF)** was renamed as **National Disaster Response Fund (NDRF)** under the provisions of the **DM Act in 2005**. The fund is **defined** under **Section 46** of the **DM Act, 2005**. It is constituted under the **Public Account of India** under “**reserve funds not bearing interest**”.
- It is **administered** by the **Central Government** to meet the **expenditure** for **emergency response, relief and rehabilitation** due to any **disaster**
- It supplements the **State Disaster Response Fund (SDRF)** if a disaster is of **severe nature** and **adequate funds are not available in the SDRF**
- It is **financed through the levy of a Cess** on certain items, **chargeable to excise and customs duty**, and **approved annually through the Finance Bill**.
- Recently, The **Central Government** has allowed **contributions from any person or institution** to the **National Disaster Response Fund (NDRF)** as per **Section 46(1)(b)** of the **Disaster Management (DM) Act, 2005**
- **Department of Agriculture and Cooperation** monitors **relief activities for calamities associated with drought, hailstorms, pest attacks and cold wave/frost** while the **rest of the natural calamities** are monitored by the **Ministry of Home Affairs (MHA)**.

- The **National Disaster Response Fund** is audited by the **Comptroller and Auditor General (CAG)**
- The **main task of NDRF** is to provide a specialist response in case of disasters which broadly covers:
 - Assistance to civil authorities in distributing relief material
 - First medical response to victims
 - Capacity building
 - To conduct mock exercises in coordination with other stakeholders for well-coordinated response during disasters.
 - To train the State Disaster Response Force (SDRF), community and NGO in disaster management.

State Disaster Response Fund:

- **Established under Section 48 (1) (a) of the DM Act, 2005**, is the **primary fund available with State Governments** for responses to **notified disasters**.
- The **Central Government** gives **75% of the SDRF share** for **general category States/UTs** and **90% for special category States/UTs** (NE States, Sikkim, Uttarakhand, Himachal Pradesh, Jammu and Kashmir).
- The **annual Central contribution** is released in **two equal instalments** as per the recommendation of the **Finance Commission**.
- **SDRF** can be used only for meeting the expenditure for providing immediate relief to the disaster-affected people.
- **Local Disaster:** A **State Government** may use up to **10% of the SDRF** to provide **immediate relief to the people affected by natural disasters within the local context** in the **State** and which are **not included in the notified list of disasters** of the **Ministry of Home Affairs**. It is subject to the **condition** that the **State Government** has listed the **State-specific natural disasters** and **notified clear and transparent norms and guidelines for such disasters** with the approval of the **State Authority, i.e., the State Executive Authority (SEC)**.

Finance Commission recommendations on Disaster Management:

- The **15th FC** recommended for establishing **National & State Disaster Management Funds (NDMF and SDMF)** for **local-level mitigation activities**. It has also recommended **retaining the existing cost-sharing mechanism** between the **Centre and states to fund the SDMF (new) and the SDRF (existing)**. The **cost-sharing pattern between centre and states** is (i) **75:25 for all states**, and (ii) **90:10 for northeastern and Himalayan states**.
- The terminology, “**Disaster Risk Management**” instead of “**Disaster Management**” has been **introduced for the first time**. This signals a move towards an advanced approach to managing disaster risk, which is proactive and preparedness-based rather than response-centric.
- The term ‘**river erosion**’ has been used for the **first time** in the **Finance Commission report**. This may mark the beginning of systematic efforts to address ‘**riverine erosion**’ as a **significant hazard affecting vulnerable communities**.

Source: [TH](#)

Schemes

What is CDP-SURAKSHA, the government's new digital platform to disburse subsidies to horticulture farmers?

Subject: Schemes

Section: Agri

Context:

- The BJP-led government has come up with a new platform i.e. **CDP-SURAKSHA to disburse subsidies to horticulture farmers under the Cluster Development Programme (CDP)** — the Centre’s initiative to promote horticulture crops.

More on news:

- The move seeks to push the growth of **India’s horticulture sector**, which contributes nearly one-third to the agriculture **gross value addition (GVA)**, making a substantial contribution to the Indian economy.
- The **total production of horticulture crops has also spiked in recent years**.
- While in 2010-11, it stood at 240.53 million tonnes, the number rose to 334.60 million tonnes in 2020-21.

What is the CDP-SURAKSHA?

- The **CDP-SURAKSHA** is essentially a **digital platform**.
- **SURAKSHA** stands for **System for Unified Resource Allocation, Knowledge, and Secure Horticulture Assistance**.
- The platform will allow an **instant disbursal of subsidies to farmers in their bank account by utilizing the e-RUPI voucher from the National Payments Corporation of India (NPCI)**.
- The CDP-SURAKSHA has features such as database integration with **PM-KISAN**, **cloud-based server space from NIC**, **UIDAI validation**, **eRUPI integration**, **local government directory (LGD)**, **content management system**, **geotagging**, and **geo-fencing**.

How does the CDP-SURAKSHA work?

- The platform allows access to farmers, vendors, implementing agencies (IA), and cluster development agencies (CDAs), and officials of the National Horticulture Board (NHB).
- A farmer can login using their mobile number and place an order for planting material such as seeds, seedlings, and plants based on their requirement.
- Once the demand has been raised by the farmer, the system will ask them to contribute their share of the cost of planting material.
- The subsidy amount paid by the government will appear on the screen automatically.
- After the farmer pays their contribution, an e-RUPI voucher will be generated.
- This voucher will then be received by a vendor, who will provide the required planting material to the farmer.
- It is only after the verification that the IA will release the money to the vendor for the e-RUPI voucher.
- The vendor will be required to upload an invoice of the payment on the portal.
- However, the farmer, who raised the demand for the plant material using the platform, can avail of the subsidy at the first stage only.

What is e-RUPI?

- The **CDP-SURAKSHA platform uses e-RUPI vouchers from the NPCI.**
- The voucher is a **one-time payment mechanism that can be redeemed without a card, digital payments app or internet banking access, at the merchants accepting e-RUPI.**
- According to the **NPCI, the e-RUPI can be shared** with the beneficiaries for a specific purpose or activity by organizations or government via SMS or QR code.

How is the new system different from the old one?

- In the old system, a farmer **had to buy planting materials on their own.**
- They would then have to approach the **officials concerned for the release** of the subsidy.
- The **CDP-SURAKSHA platform**, however, will provide subsidies to farmers upfront, at the time of purchasing the planting material.
- Vendors, who will **supply planting materials to farmers**, will receive their payment only after farmers verify the delivery of their orders.

How many farmers and banks have come on board?

- While the **platform is yet to be unveiled** at the national level, around 8,400 farmers' details have been uploaded on the **CDP-SURAKSHA platform so far.**
- These included 8,000 farmers of **Sahyadri Farms Private Ltd**, which is implementing the grape cluster in Nasik, Maharashtra.
- Besides this, four banks namely **HDFC Bank, ICICI Bank, State Bank of India (SBI) and Bank of Baroda**, have been **onboarded on the platform.**
- These banks will generate e-RUPI vouchers for fund disbursement.

What is the Cluster Development Program (CDP)?

The CDP is a component of the **central sector scheme of NHB.**

It is aimed at leveraging the geographical specialization of horticulture clusters and promoting integrated and market-led development of pre-production, production, post-harvest, logistics, branding, and marketing activities.

So far, 55 horticulture clusters have been identified, out of which **12 have been selected for the pilot.**

Each cluster will have an implementing agency and a cluster development agency (CDA).

Electric Mobility Promotion Scheme (EMPS) 2024

Subject: Schemes

Section: Economy

Current Issue:

- Manufacturers of e2Ws and e3Ws **are in confusion regarding the continuation of discounts for customers under the EMPS 2024.**
- The scheme is set to commence on April 1.
- However, **the portal for companies to register their certificates to avail of subsidies is not ready.**
- Without the portal, **companies cannot pass on the benefits to customers, potentially impacting sales.**

- OEMs (Original Equipment Manufacturers) are worried about offering discounts without clarity.

Electric Mobility Promotion Scheme 2024

Aim and Objective:

- The scheme aims to **accelerate the adoption of Electric Vehicles (EVs) across the country.**
- It seeks to provide a **boost to the development of the electric vehicle** manufacturing ecosystem.
- Accelerate adoption of EVs, particularly in the two-wheeler and three-wheeler segments.
- Support the growth of the EV manufacturing ecosystem.
- Promote affordable and environmentally friendly public transportation.
- Encourage the use of advanced battery technologies in EVs.

Financial Allocation:

- The scheme is a fund-limited initiative with a total outlay of Rs. 500 crore.
- The duration of the scheme is for a period of 4 months, **starting from 1st April 2024 till 31st July 2024.**

Targeted Vehicles:

- Focus on faster adoption of:
 - **Electric Two-Wheelers (e-2W)**
 - **Electric Three-Wheelers (e-3W)**
 - **This includes registered e-rickshaws, e-carts, and L5 category e-3W vehicles.**
- **Eligibility Criteria:**
 - The scheme mainly **applies to e-2W and e-3W vehicles registered for commercial purposes.**
 - Additionally, **privately or corporately owned registered e-2W vehicles are also eligible.**
- **Advanced Technology Incentives:**
 - Incentives will be provided to vehicles fitted with advanced battery technologies.
 - This move aims to encourage the adoption of cutting-edge EV technologies.
- **Nodal Ministry:**
 - The scheme is under the **purview of the Ministry of Heavy Industries.**

Benefits for Stakeholders:

- **Consumers:**
 - Access to affordable electric two-wheelers and three-wheelers.
 - Reduced operating costs and environmental impact.
- **Manufacturers:**
 - Increased demand and market penetration for EV models.
 - Opportunity to contribute to India's green mobility goals.
- **Government:**
 - Promotes the "Make in India" initiative by boosting local EV manufacturing.
 - Contributes to reducing carbon emissions and achieving environmental sustainability targets.

Government approves E-Vehicle policy to Promote India as a Manufacturing Destination for e-vehicles

Subject: Schemes

Section: Economy

Context:

- **The Government of India** has approved a scheme to promote India as a manufacturing destination so that **e-vehicles with the latest technology** can be manufactured in the country.

The policy entails the following:

- **Minimum Investment required: Rs 4150 Cr (~USD 500 Mn)**
- **No limit on maximum Investment**
- **Timeline for manufacturing: 3 years for setting up manufacturing facilities** in India, and to start commercial production of e-vehicles, and reach 50% domestic value addition (DVA) within 5 years at the maximum.
- **Domestic value addition (DVA) during manufacturing:** A localization level of 25% by the 3rd year and 50% by the 5th year will have to be achieved

- **The customs duty of 15% (as applicable to CKD units)** would be applicable for a period of 5 years
- **Vehicle of CIF value of USD 35,000** or above will be permissible
- The total number of EV allowed for import would be determined by the **total duty foregone or investment made, whichever is lower, subject to a maximum of ₹6,484 Cr** (equal to incentive under PLI scheme).
- **Not more than 8,000 EVs per year** would be permissible for import under this scheme.
- The carryover of unutilized annual import limits would be permitted.
- The Investment commitment made by the company will have to be backed up by a bank guarantee in lieu of the custom duty forgone
- The **Bank guarantee will be invoked in case of non-achievement of DVA** and minimum investment criteria defined under the scheme guidelines.

Benefits of the policy:

- This will provide Indian consumers with access to the latest technology.
- It will boost the **Make in India initiative**.
- It will promote **economies of scale, lower cost of production, reduce imports of crude Oil, lower trade deficit, reduce air pollution, particularly in cities, and will have a positive impact on health and environment**.
- The policy is designed to attract investments in the **e-vehicle space by reputed global EV manufacturers**.
- Companies that set up manufacturing facilities for e-vehicles will be allowed limited imports of cars at lower customs duty.

States offer up thousands of hectares of 'degraded' forest land for green credits

Subject: Schemes

Section: Environment

Context:

- **Ten states** have identified around **3,853 hectares** of **degraded forest land** for the **Green Credit Programme (GCP)**, with **Chhattisgarh** and **Madhya Pradesh** contributing up to **40%** of this land.

Green Credit Programme:

- It was **first announced by the Union Finance Minister** in the **2023-24 budget** to leverage a competitive market-based approach and incentivise voluntary environmental actions of various stakeholders.
- **Green Credit** is an incentive that individuals, farmer-producer organisations (FPO), industries, and rural and urban local bodies, among other stakeholders, will be able to earn for environment-positive actions.
- By '**green credit**', the government means a singular unit of an incentive provided for a specified activity, delivering a positive impact on the environment.
- **Apart from incentivising individual/community behaviour**, the **Green Credit Programme** will **encourage private sector industries and companies** as well as other entities to meet their existing obligations, stemming from other legal frameworks, by taking actions which are able to converge with activities relevant to generating or buying green credits.
- **The activities include:**
 - Tree plantation, Water, Sustainable agriculture, Waste management, Air pollution reduction, Mangrove conservation and restoration, Ecomark, Sustainable building and infrastructure.
- The **Indian Council of Forestry Research and Education** shall be the administrator of the programme. The **institute** will develop **guidelines, processes and procedures** for the implementation of the programme and develop methodologies and standards, registration process and associated measurement, reporting and verification mechanisms.
- The **green credits** will be **tradable** and those earning it will be able to put these credits up for sale on a proposed domestic market platform.
- **Concern include:**
 - Greenwashing
 - Maintenance and monitoring challenges
 - Fraud in the utility of resources

Guidelines for implementation of the Green Credit Programme (GCP):

- The **GCP** allows **entities to finance afforestation on designated lands**, with **state forest departments** executing the **planting**.
- Two years post-planting, the **International Council of Forestry Research and Education (ICFRE)** will evaluate the efforts, and **each tree could translate into one 'green credit'**.

- Companies that have **cleared forest land** for development can **use these credits** to **meet their compensatory afforestation obligations**.

Compensatory afforestation:

- **Industries or institutions clearing forest land for non-forestry purposes** must provide **equivalent non-forest land for afforestation**, or **double the area in degraded forest land** if non-forest land isn't available.
- They are also required to **compensate for the forest ecosystem's loss**, paying for the **'net present value' lost** due to land diversion.
- States like **Chhattisgarh** and **Madhya Pradesh** face challenges in **finding contiguous non-forest land for compensatory afforestation**, often due to historical land diversion for mining.
- The **Compensatory Afforestation Fund**, filled with **compensation money from companies**, remains largely unspent due to the scarcity of suitable land for forest regeneration.

Creating new land banks:

- **Green credits aim to promote private investment in afforestation**, aligning with PM Narendra Modi's calls for **sustainable lifestyles** and **valuing activities like tree planting**.
- Experts caution against **assigning a monetary value to green credits**, as linking them to **compensatory afforestation** could lead to **creating land banks prone to commercial exploitation**.
- This could paradoxically **increase forest land diversion**, contradicting the **goal of compensatory afforestation laws** designed to discourage using forest land for commercial purposes.

Source: [TH](#)

How can small-scale farmers benefit from trees on farms?

Subject: Schemes

Sec: Env

Agroforestry:

- **Agriculture in India**, traditionally involving a **mix of crops, trees, and livestock** known as **agroforestry**, is gaining popularity after years dominated by **monocropping** due to the **Green Revolution**.
- **Agroforestry**, which can **improve both farmer livelihoods and environmental conditions**, saw **renewed interest** with the **National Agroforestry Policy** introduced in **2014**, supported by four decades of research investment.
- Despite its benefits, **agroforestry adoption is more common among farmers with larger landholdings** due to the **long growth period for trees, financial barriers, and poor market connections**.

Trees Outside of Forests India (TOFI) initiative:

- The **'Trees Outside of Forests India' (TOFI) initiative**, a **collaboration** between the **U.S. Agency for International Development (USAID)** and **India's Ministry of Environment, Forest and Climate Change**, aims to **increase tree cover in seven Indian states** by leveraging potential expansion opportunities and strategic actions.
- **Key challenges identified in these states—Andhra Pradesh, Assam, Haryana, Odisha, Rajasthan, Tamil Nadu, and Uttar Pradesh—include limited water availability and financial support** for transitioning to agroforestry.
- Despite these obstacles, solutions appear feasible and within reach, offering hope for improving tree cover outside traditional forest areas.

Jaltol- a water accounting tool:

- The **National Agroforestry Policy**, introduced by **India's Ministry of Agriculture in 2014**, recognized **water availability as a significant challenge**, particularly for **smallholders who often face financial difficulties** in securing **water resources**.
- To address this, a **collaboration with Bengaluru-based WELL Labs** adopted an **open-source water-accounting tool, 'Jaltol'**, to identify potential conflicts between tree and crop water usage.
- This technology assists **restoration practitioners and civil society organizations** in choosing **suitable tree-crop combinations** for agroforestry in **water-limited areas**.

Finding the right native species:

- Farmers often prefer **fast-growing, herbivore-resistant trees**, but these tend to be **non-native** and can **negatively impact soil health and human well-being**.
- For instance, **non-native species like casuarina and eucalyptus** are favoured for their **tolerance to saline soils and minimal labour needs**, but they are typically used in **large mono-crop plantations** rather than in **mixed or small-scale settings**.

- To **effectively address land degradation and enhance livelihood diversification**, it's necessary to find **native species** that meet multiple criteria.
- **Diversity for Restoration:**
 - A **tool** developed to help with **decision-making** on the **use of appropriate tree species** and **seed sources** for **tree-based restoration** or **other tree planting activities**, originally designed for **tropical dry forests** in **Colombia**, and aimed at **all those interested in planting or regenerating trees**, including scientists, restoration planners and practitioners as well as public authorities, investors and donors.

Indian Forest and Wood Certification Scheme 2023:

- **Objective:**
 - The **IFWCS** is designed to provide a **domestic alternative** to **private foreign certification agencies**, aiming to **enhance integrity, transparency, and credibility** in **certifying sustainable forest management** and **wood-based products**.
- **Certification Scope:**
 - **Sustainable Forest Management:** Ensures forests are managed sustainably.
 - **Sustainable Management of Trees Outside Forests:** Includes plantations and other non-forest tree areas.
 - **Chain of Custody:** Ensures traceability of forest products through their supply chain to guarantee ethical sourcing and handling.
- **Nodal Agencies:**
 - **Indian Forest and Wood Certification Council:** Serves as a multistakeholder advisory body.
 - **Indian Institute of Forest Management, Bhopal:** Acts as the scheme operating agency responsible for overall management.
 - **National Accreditation Board for Certification Bodies (Quality Council of India):** Accredits certification bodies to conduct independent audits and ensure compliance with the standards.
- **Trees Outside Forests Standard:**
 - This new standard covers trees growing in non-traditional forest environments, such as farm lands, private institutional and industrial lands, and includes trees in agroforestry systems, silvo-pastoralism, and urban and rural forestry systems.
- **Benefits:**
 - Enhances trust and transparency in forest management and the wood product industry.
 - Provides market incentives for entities adhering to responsible forest management and agroforestry practices, including state forest departments, individual farmers, Farmer Producer Organizations, and wood-based industries.
- **Global Context:**
 - The launch of **IFWCS** is part of **global efforts** to **combat deforestation**, aligning with commitments made by over **100 countries** at the **2021 Glasgow climate change conference** to **halt and reverse deforestation by 2030**.

Source: [TH](#)

Centre tweaks green credit programme norms

Subject: Schemes

Sec: Env

Green Credit Program (GCP):

- The **Green Credit Programme (GCP)**, initiated by the **Union Environment Ministry**, aims to **encourage investment in afforestation on degraded forest lands** to generate '**green credits**.'
- These **credits** are **intended** for organizations and individuals to contribute to **environmental restoration** rather than merely **tree planting**.
- Under the **GCP**, **387 parcels of degraded forest land**, totalling nearly 10,983 hectares, have been **identified** across **13 states** for restoration.
- Interested parties can fund these projects, with **actual afforestation conducted by State forest departments**.
- **Two years post-planting**, following an **evaluation** by the **Indian Council of Forestry Research and Education (ICFRE)**, each tree can earn one green credit.
- These **credits** can be **utilized** by **financiers** to **comply with forest laws** that necessitate **compensation for forest land used for non-forestry purposes**, or they can be applied towards meeting **corporate social responsibility objectives** or **environmental, social, and governance reporting norms**.

- Although **currently non-tradeable**, the **GCP's rules**, established in **October 2023**, outline a future where these credits could be tradable on domestic markets and potentially convert into carbon credits if they contribute to significant reductions in carbon emissions.

8 Key Activities Eligible for Green Credits:

- Tree Plantation, Water Conservation, Sustainable Agriculture, Waste Management, Air Pollution Reduction, Mangrove Conservation, Ecomark Acquisition, and Sustainable Building and Infrastructure.

Updates in the guidelines:

- The **Environment Ministry** has recently updated its **guidelines** for the **restoration of degraded forest landscapes**, giving states the **autonomy to determine the necessary tree density**, which was previously set at a minimum of **1,100 trees per hectare**.
- Recognizing that **not all degraded areas can support such density**, the **new guidelines allow for the inclusion of shrubs, herbs, and grasses** as suitable restoration elements.
- Although the program is in its pilot phase, there are ongoing deliberations on how to quantify non-tree vegetation for **green credits** and **determine the portion of compensatory afforestation obligations** that can be offset using green credits. The equivalence between green credits and carbon credits is also under review.

Source: [TH](#)

Govt. hikes prices of essential medicines again, claims 'it's miniscule'

Subject: Schemes

Sec: Health

Context:

- The **National Pharmaceutical Pricing Authority (NPPA)** implemented a **slight increase of 0.00551 per cent** in the **Maximum Retail Price (MRP)** of **scheduled drug formulations** for the **fiscal year 2024–25**, starting from **April 1**.

Details:

- The adjustments **aim to balance the cost of essential medicines with economic indicators**, ensuring affordability while maintaining a stable pharmaceutical market.
- This adjustment was made for **923 scheduled drug formulations** and **65 retail formulations**, as per the **annual price revision** based on the change in the **Wholesale Price Index (WPI)**.
- The adjustment reflects the annual change in the **WPI** during the **calendar year 2023 compared to 2022**, as reported by the **office of the Economic Advisor, Department of Industry and Internal Trade, Ministry of Commerce and Industry**.

Increase based on WPI:

- **Manufacturers** are now permitted to adjust the **Maximum Retail Price (MRP)** of **scheduled drug formulations** in line with the recent **Wholesale Price Index (WPI)** change of **0.00551%**, **without needing prior government approval**.
- **India regulates the prices** of around **400 molecules** and **960 formulations** listed under the **National List of Essential Medicines**, and also **monitors non-essential drug prices** to prevent **annual MRP increases exceeding 10%**.
- This policy, guided by the **Drug Price Control Order (DPCO)** of **2013**, aligns price adjustments with **WPI fluctuations**.
- The **Health Ministry** explained that the **National Pharmaceutical Pricing Authority (NPPA)** annually revises **scheduled medicine prices** based on **WPI changes**.

National Pharmaceutical Pricing Authority (NPPA):

- The **National Pharmaceutical Pricing Authority (NPPA)**, established by the **Indian government in 1997** under the **Ministry of Chemicals and Fertilizers**, plays a crucial role in **regulating drug prices**.
- It ensures that **medicines** are both **accessible** and **affordable** to the public, with the authority granted the **power to mandate price increases of over 10% for drugs and devices** listed on the **National List of Essential Medicines (NLEM)**, all of which are under strict price regulation.
- A notable shift in regulatory focus came with the introduction of the **new National Pharmaceutical Pricing Policy in 2012** and the **Drug Price Control Order (DPCO) in 2013**.

National List of Essential Medicines:

- The **National List of Essential Medicines (NLEM)** is a list released by the **Ministry of Health and Family Welfare**.
- The medicines listed in the **NLEM** are sold below a **price ceiling fixed by the National Pharmaceutical Pricing Authority (NPPA)**.
- **NPPA caps medicine prices and changes only based on wholesale price index-based inflation**.
- In India, it was framed on the lines of the **Essential Medicines List (EML)** released by the **WHO**.

- The **Ministry of Health and Family Welfare** prepared and **released the first National List of Essential Medicines of India in 1996** consisting of **279 medicines**. This list was subsequently revised in **2003, 2011, 2015 and 2022**.

Price hiked to save firms:

- In a significant move in **2019**, the **National Pharmaceutical Pricing Authority (NPPA)** leveraged its **emergency powers** to **increase the ceiling prices of 21 essential drugs by 50%**.
- The **Drug Price Control Order (DPCO) of 2013** permits an **annual price adjustment for scheduled formulations** in alignment with changes in the **Wholesale Price Index (WPI)**.
- Additionally, the **NPPA** sets the **retail prices for new drugs for existing manufacturers of scheduled formulations** under **DPCO, 2013**, aligning **annual price increases with WPI revisions**.
- For **non-scheduled formulations, manufacturers cannot increase the Maximum Retail Price (MRP) by more than 10% of the MRP** from the preceding 12 months, with instances of overcharging being addressed by the **NPPA** as per **DPCO 2013 provisions**.

Dependence on China:

- Despite **India's pharmaceutical industry** being **one of the most advanced among developing nations, ranking third globally in volume and 13th in value**, it remains **heavily reliant on China for bulk drugs and drug intermediates**.
- This dependency is significant, with about **two-thirds of India's total imports in this sector coming from China**.
- **India** has a significant role as a **major exporter of bulk drugs**, with the **United States** being the **primary destination**, followed by **Brazil, Bangladesh, Turkey, China, the Netherlands, Nigeria, Vietnam, and Egypt**.
- **India** stands as a **key supplier of bulk drugs to several developing countries**, including **Bangladesh, Nigeria, Vietnam, Egypt, Iran, and Pakistan**, underscoring its substantial but complex position as both a **major importer from China** and a **significant exporter, particularly to developing nations**.

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Purpose:

- Guide safe and effective treatment of priority disease conditions of a population.
- Promote the rational use of medicines.
- Optimize the available health resources of a country. It can also be a guiding document for:
- State governments to prepare their list of essential medicines
- Procurement and supply of medicines in the public sector.

Criteria for a Medicine to be Included in NLEM

- Several factors are looked at before including a drug in the **NLEM**. These are:
- **Essentiality:** A medicine may be essential considering the population at large and should fit into the definition mentioned earlier.
- **Changing disease burden:** With time, the disease burden keeps changing in the country. At one point, **TB** might be more important to tackle. At the next moment, another disease like **Covid-19** may become more important. So, the prevalent disease is considered while preparing the list.
- **Efficacy and Safety:** The medicine must have “unequivocal” evidence of efficacy and wider acceptance based on its safety to be included in the list.
- **Cost-Effectiveness:** The total price of the treatment must be considered while including the drug in **NLEM**. Only unit price may not be the best benchmark for this.
- **Fixed Dose Combinations (FDCs):** The single-dose medicines are considered for inclusion in **NLEM**. **FDCs** are only included if they have a proven advantage concerning the therapeutic effect.
- **Turnover:** High sales turnover alone is not considered a good benchmark for inclusion in the **NLEM**. Other factors are also required to be essentially considered for it.

When is a Medicine Deleted from NLEM?

- A **drug is deleted from the list if it gets banned** in India. Also, it is removed if reports of concerns about drug safety emerge.

- If medicine with better efficacy or favourable safety profile and better cost-effectiveness is now available, then it is removed from NLEM.

Source: [TH](#)

Progress in combating malnutrition remains 'sluggish'

Subject: Schemes

Section: Health

Context:

- **Malnutrition** remains a **major health challenge in India**, impacting its progress towards meeting the **United Nations' goal of eradicating malnutrition by 2030**, a key focus of the **2016–2025 Decade of Nutrition** led by **WHO**.

About the study:

- The study from the **Indian Institute of Public Health, Hyderabad** investigates **undernutrition in children under three across India**, using data from the **National Family Health Surveys**.
- It assesses the **prevalence** and **evolution** of **undernutrition** over a decade at both **national** and **state levels**.
- The study highlights that **undernutrition in children** can cause **serious health issues** such as **vision impairment, weakened bones, protein deficiency, and gastrointestinal problems**.
- The researchers emphasize the importance of understanding the **epidemiology of undernutrition** to effectively customize policies and interventions.

Key findings:

- The study analyzing data from **India's National Family Health Surveys (NFHS)** between **1992-93** and **2019-20** revealed **mixed trends in child malnutrition**.
- **Stunting (impaired growth)** and **underweight prevalence** among **children decreased** from **51.9%** and **34.1%** in the **first survey** to **45.8%** and **29.4%** in the **fifth**, respectively.
- Conversely, the **prevalence of wasting** (low weight for height) saw a **marginal increase** from **19.9%** to **20.5%**.
- The study also highlighted significant **geographical variations**, with **each state and union territory** following the **national trend** of **reduced stunting and underweight**, but showing **no consistent pattern for wasting**.
- **Urban children** showed **increased risks of malnutrition over time**.
- **Male children** had **higher risks of stunting, underweight, and wasting** compared to **females**, though this **wasn't uniformly seen across all surveys**.
- **Maternal education** was a **critical determinant of children's nutritional status**, with **children of less educated mothers** facing **higher risks of stunting** and being **underweight**. These risks, however, have **declined over successive surveys**.

Valuable insights:

- The study on **malnutrition trends in India** from the **National Family Health Surveys** has provided crucial insights into the **changing patterns of child malnutrition** and their associations with **socio-demographic factors**.
- It warns that, despite efforts, **India might not meet the World Health Organization (WHO) and Sustainable Development Goal 2 (SDG-2) targets by 2030**, and could see a **decline in its Global Hunger Index ranking** if current trends continue.
- **Government initiatives** like **Mission Indradhanush**, as well as **parents, caregivers, and preschool educators**, are crucial for combating undernutrition in India.

Government initiatives to reduce malnutrition in India:

- **The schemes/programmes (Direct intervention) include:**
 - The Integrated Child Development Services (ICDS),
 - National Health Mission (NHM),
 - Mid-Day Meal Scheme,
 - Rajiv Gandhi Schemes for Empowerment of Adolescent Girls (RGSEAG) namely SABLA,
 - Indira Gandhi MatritvaSahyogYojna (IGMSY)
- **Besides, indirect Multi-sectoral interventions include:**
 - Targeted Public Distribution System (TPDS),
 - National Horticulture Mission,
 - National Food Security Mission,
 - Mahatma Gandhi National Rural Employment Guarantee Scheme (MGNREGS),
 - Swachh Bharat Abhiyan,

- National Rural Drinking Water Programme
- The **Integrated Child Development Services (ICDS) Scheme** provides a **package of six services** namely **supplementary nutrition, pre-school non-formal education, nutrition & health education, immunization, health check-up and referral services.**
- Under **National Health Mission** of **Ministry of Health & Family Welfare**, the **remedial steps taken are as follows:**
 - Promotion of appropriate infant and young child feeding practices that include early initiation of breastfeeding, **exclusive breastfeeding till 6 months of age** and appropriate **complementary feeding after 6 months of age.**
 - Management of malnutrition and common neonatal and childhood illnesses at community and facility level by training service providers in **IMNCI (Integrated Management of Neonatal and Childhood Illnesses) training.**
 - Treatment of children with severe acute malnutrition at special units called the **Nutrition Rehabilitation Centres (NRCs)**, set up at **public health facilities.** Presently **875** such centres are functional all over the country.
 - Specific program to prevent and combat **micronutrient deficiencies** of **Vitamin A and Iron & Folic Acid (IFA)** in **under-five children, children of 5 to 10 years of age, and adolescents.**
 - **Village Health and Nutrition Days** and **Mother and Child Protection Card** are the **joint initiative** of the **Ministries of Health & Family welfare** and the **Ministry of Woman and Child** for addressing the nutrition concerns in children, pregnant women and lactating mothers.

Source: [TH](#)

‘Wise to assume bird flu pandemic will cause more severe disease in humans than COVID-19’

Subject: Science and tech

Section: Health

Context:

- **H5N1**, also known as **bird flu**, has been recognized as a **potential public health threat** for two decades, highlighted by recent cases in the **United States.**

Details:

- In **2022**, the **first human infection** in the **U.S.** occurred, and in April, a man in Texas **contracted the virus from cows**, raising **global health concerns.**
- Although **primarily affecting birds**, **H5N1's ability to infect mammals indicates its increasing adaptability**, with growing concerns about the **potential for human-to-human transmission.**

Origin of Bird Flue ([Avian Influenza or Highly Pathogenic Avian Influenza](#)):

- The **H5N1 strain of bird flu viruses, first identified in a goose in China in 1996**, has undergone significant **evolution, spreading globally and generating multiple subtypes.**
- The **latest subtype, known as H5N1 virus clade 2.3.4.4b**, emerged in **Europe** in late 2020 and has since caused widespread outbreaks across multiple continents, affecting both **avian and mammalian species**, including **minks and sea mammals.**
- A notable recent development is the **transmission of this clade to cattle in the United States**, which has led to a confirmed case of **cow-to-human infection.**
- At present, **no case of human-to-human transmission** of bird flu has been found.

Issue with the new subtype:

- The **current subtype** of the **bird flu virus** has demonstrated a concerning capability to **infect a broader range of wild birds and mammals.**
 - As the virus spreads among various hosts, it **increases the chances of genetic mutations**, thereby heightening the **risk of viral evolution and its potential adaptation to mammals.**
- The **global distribution** of **H5N1 viruses** primarily affects **poultry**, making them **panzootic among birds.** However, the concern arises from their **potential to transition into a human virus**, potentially triggering a **human pandemic.**

Avian influenza (AI)

- Avian influenza (AI) is a highly contagious viral disease affecting several species of food-producing birds (**chickens, turkeys, quails, guinea fowl, etc.**), as well as **pet birds and wild birds.**
- Occasionally mammals, including humans, may contract avian influenza.
- Influenza A viruses are classified into subtypes based on two surface proteins, Hemagglutinin (HA) and Neuraminidase (NA). For example, a virus that has an HA 7 protein and NA 9 protein is designated as subtype H7N9.
- Avian influenza virus subtypes include A(H5N1), A(H7N9), and A(H9N2).

- HPAI A(H5N1) virus occurs mainly in birds and is highly contagious among them.
- HPAI Asian H5N1 is especially deadly for poultry.
- **Prevention:** Strict biosecurity measures and good hygiene are essential in protecting against disease outbreaks.
- **Eradication:** If the infection is detected in animals, a policy of culling infected and contact animals is normally used in an effort to rapidly contain, control and eradicate the disease.

Highly Pathogenic Avian Influenza (HPAI):

- The two virus types identified so far in the outbreaks — H5N1 and H5N8 come under the category of Highly Pathogenic Avian Influenza (HPAI), which is of major concern to those keeping birds, because it leads to disease and death of fowl and causes economic havoc. H5N1 is a known threat to humans as well
- Out of the three types of influenza viruses (A, B, and C), influenza A virus is a zoonotic infection with a natural reservoir almost entirely in birds. Avian influenza, for most purposes, refers to the influenza A virus.
- Though influenza A is adapted to birds, it can also stably adapt and sustain person-to-person transmission.

Mode of transmission:

- Avian influenza is most often spread by contact between infected and healthy birds, though can also be spread indirectly through contaminated equipment.
- The virus is found in secretions from the nostrils, mouth, and eyes of infected birds as well as their droppings.
- HPAI infection is spread to people often through direct contact with infected poultry, such as during slaughter or plucking.

Is this influenza airborne?

- Though the virus can spread through airborne secretions, the disease itself is not an airborne disease.

Human to human transmission:

- In its present form, human-to-human infection is not known — human infections have been reported only among people who have handled infected birds or carcasses

Source: [DTE](#)

Science and tech

Holograms, blockchain tech can curb counterfeit drugs

Subject: Science and tech

Section: Awareness in IT

Context:

- **Sheetal Arora, CEO of Mankind Pharma Ltd, advocates the use of holograms and blockchain technology as essential tools to combat counterfeit drugs in the market.**

Details:

- **Holograms with advanced features and blockchain shipment tracking enhance drug authenticity and traceability, making counterfeiting difficult.**
- **The urgency to address counterfeit drugs is highlighted by the growth projection of the Indian pharmaceutical industry from \$50 billion in 2023 to \$130 billion by 2030.**
- **India's position as a potential global pharmacy contrasts with its status as a major counterfeit drug production hub, facilitated by the ease of setting up small-scale operations.**
- **The World Health Organization notes that approximately 10.5% of medications worldwide are substandard or fake.**
- **The counterfeit drug industry has intensified, especially during the pandemic, posing a serious threat that requires collaborative efforts from the pharma industry and the government.**
- **Measures proposed include strengthening regulatory control, enhancing drug testing labs, conducting surveys to track counterfeit drugs, and implementing strict liability for counterfeit drug manufacturers.**
- **The Indian government is urged to implement the 2018 draft guidelines on Good Distribution Practices and initiate a nationwide awareness campaign on the risks of counterfeit drugs.**
- **Pharmaceutical companies are encouraged to invest in secure packaging and periodically change designs to prevent counterfeiting, incorporating tamper-proof elements like QR codes, holograms, and security labels for product verification.**

Hologram:

- **A hologram captures a 3D light field through an interference pattern, allowing for the reproduction of images with depth and parallax similar to the original scene.**

- **Holograms** can be created from **actual light captured from scenes** or through **computer generation**, known as **computer-generated holograms**, to display virtual objects or scenes.
- The creation of **optical holography** requires **laser light to record the light field**, and the **resulting image** can exhibit **depth cues** such as **parallax** and **perspective**, changing realistically with viewing angle.
- **Traditionally, holograms** are made by **overlaying a reference beam onto a wavefront of interest**, generating an **interference pattern** recorded on a **physical medium**. This pattern, when illuminated by the reference beam, recreates the original wavefront.
- Although **3D images** from **holograms** can be viewed with **non-laser light**, doing so often involves significant compromises in image quality to eliminate the need for laser illumination.
- **Computer-generated holograms** are produced by **digitally modeling two wave fronts to create an interference pattern**, which can be **printed on a mask or film for reconstruction with light**, or **displayed directly on a dynamic holographic display**.

QR Code:

- The **QR Code** is a **two-dimensional version of the barcode**. 'QR' stands for "**Quick Response**", which refers to **instant access to the information hidden in the Code**.
- **Working:**
 - It consists of black squares arranged in a square grid on a white background.
 - Up to 7089 digits or 4296 characters can be entered in one Code.
 - The hidden information can be read by an imaging device such as a camera and the required data is then extracted from patterns that are present in code.
- **Applications:** It was first designed in **1994** for the **automotive industry in Japan**. Now it is **widely used to get to websites more quickly**. Key applications are **Product tracking, item identification, general marketing etc.**

Basic blockchain security:

- **Blockchain technology** is designed with **inherent security features** stemming from **cryptography, decentralization, and consensus principles**, fostering trust in transactions.
- **Data in blockchain or distributed ledger technologies (DLT)** is **organized into blocks**, each holding a transaction or a group of transactions, linked in a **cryptographic chain** that is **highly resistant to tampering**.
- **Transactions within blocks** are **validated and confirmed by a consensus mechanism** to ensure their **authenticity and accuracy**.
- The **decentralized nature of blockchain** involves **multiple participants** across a **distributed network**, **eliminating single points of failure** and **preventing any one user from altering the transaction record**.
- Despite these **secure foundations**, **different blockchain technologies may vary** in specific security details and implementations.

Source: [TH](#)

What is the technology behind manufacturing a semiconductor chip?

Subject: Science and Tech

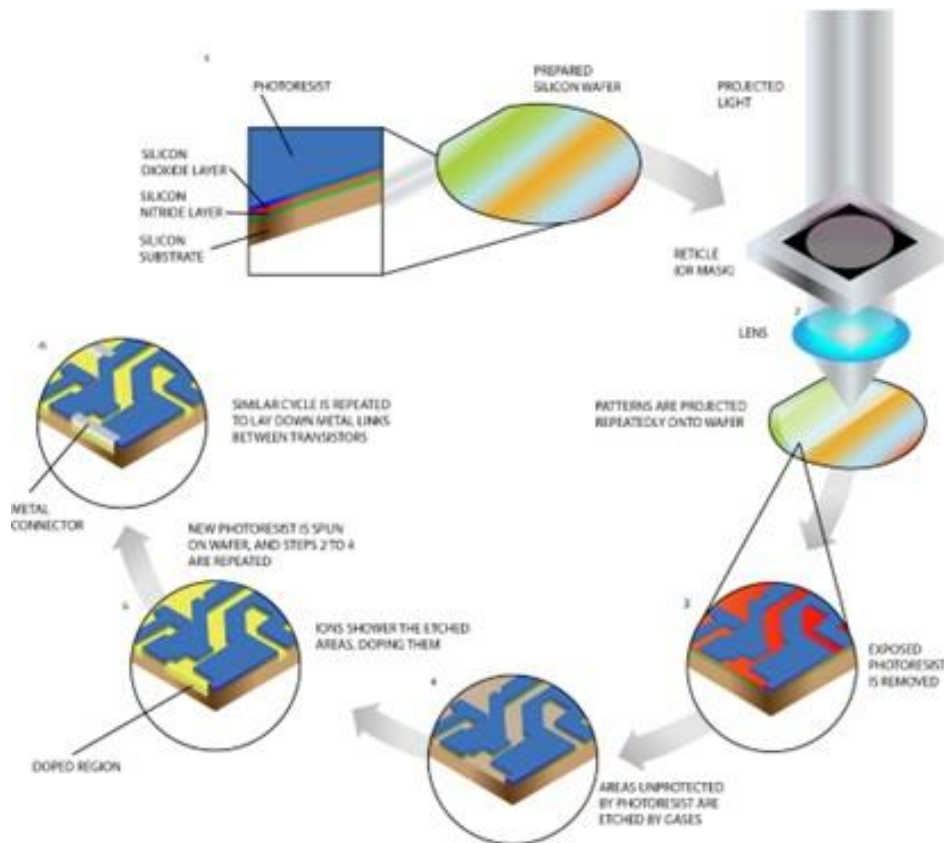
Section: Awareness in IT

Context:

- The **TATA group** has partnered with **Taiwan's Powerchip Semiconductor Manufacturing Corporation (PSMC)** to set up a **300mm wafer fabrication plant** in **Gujarat**. It will roll out its **first 28nm chip in 2026**. **Two assembly and test plants** in **Gujarat** and **Assam** have also been recently **approved** by the Government of India.

What is a semiconductor chip? How is it manufactured?

- A **semiconductor chip** is a **material with electrical conductivity between that of a conductor and an insulator**.
- It acts as a **very weak conductor in its pure form**, but its **conductivity can be significantly enhanced** by introducing **small amounts of specific substances**, known as '**dopants**'.
- Through a process akin to using **stencils** (referred to as '**masks**' in the semiconductor industry) and **spray paint** (analogous to **dopants**), **complex circuits** can be **crafted**
- This method allows for the **precise control of the semiconductor's electrical properties** to create **intricate and functional electronic circuits**.



What does India's semiconductor ecosystem look like?

- **India's semiconductor ecosystem** is notably strong in the **chip design sector**, a strength dating back to the **1990s**.
- With the advancements in **computer-aided design (CAD)**, it's possible to **design semiconductor chips entirely through software**, enabling engineers to **specify chip functionality, translate this into electronic circuits, validate these circuits, and optimize them for speed, power consumption, and size**, all from their computers.
- The finalized chip design is then **encapsulated into a file** and sent off to a **fabrication plant for physical manufacturing**, akin to creating and printing a graphic novel digitally.
- With a **solid foundation in chip design**, supported by a **continuous influx of skilled electronics and computer engineers**, **India** is well-positioned to expand into **semiconductor manufacturing**.
- This expansion into **manufacturing** offers opportunities for a **broader range of professionals**—including **process and control engineers, data scientists, material scientists, physicists, and chemical engineers**—to make significant contributions to the industry, capitalizing on the interdisciplinary nature of semiconductor manufacturing.

Related terminologies

Description

- A **transistor** is a **fundamental electronic component** made from a **semiconductor**, serving primarily as an **electronic switch**.
- It is crucial in **enabling the functionality of semiconductor chips**, which contain millions to billions of these switches to perform various **logical and computational tasks**.
- Beyond acting as switches, **transistors** are also employed as **amplifiers**, such as in **boosting weak signals for cell phones**, and are **essential in circuits for generating and processing high-frequency signals in wireless communications**.
- These **versatile applications of transistors** are often **integrated into a single semiconductor chip**, exemplified by the **WiFi chips** in mobile devices.
- **Fabrication technology** in the semiconductor industry refers to the **evolving manufacturing processes** that have significantly advanced over the past six decades, **enabling the production of semiconductor chips with ever-increasing levels of miniaturization**.
- Alongside **miniaturization**, there have been notable **improvements in transistor performance**, including **faster switching speeds for more computations per second** and **reduced power consumption for longer battery life and lower heat dissipation**.

Fabrication Technology

- The industry describes **advances in fabrication technology** using terms like '45nm', '28nm', and '16nm', where 'nm' stands for **nanometer**.
- These labels indicate the **level of miniaturization** achievable with each technology, with **smaller numbers signifying greater miniaturization and efficiency**.
- Research is increasingly focused on **exploiting the third dimension—height**—by stacking circuits atop one another to **maintain performance reliability** and further **reduce chip sizes**, thus continuing the trend of **semiconductor miniaturization**.
 - As the **length and breadth** of a **transistor switch decreases**, **increasing its height can help ensure reliable performance**.
- A **wafer**, in the context of **semiconductor manufacturing**, is a **thin, circular piece of semiconductor material**, typically **silicon**, on which a multitude of chips are printed, similar to how a sheet of postage stamps is produced.
- These chips are **arranged in an array on the wafer**, which is then **sliced, or "diced," to separate the individual chips**.
- Utilizing **larger wafers is beneficial** as it **enables the production of more chips per wafer**, enhancing both the **speed and cost-efficiency of chip manufacturing**.

Wafer

Source: [TH](#)

What is Doxxing and what can you do if it happens to you?

Subject: Science and tech

Section: Awareness in IT

Context:

- A woman in Mumbai reported harassment after a man shared a video of her dancing at an event on social media, likening her performance to sex work without her consent. Despite requests to remove the video, the man refused, and the video was widely shared, leading to further harassment.
- The video was eventually taken down by the **platform (X)** on **copyright grounds**, but the man, a verified user, defended his actions.

What is Doxxing?

- **Doxxing** involves **publicly releasing someone's private information without consent**. This can include **sensitive personal details** like **home addresses, phone numbers, and even medical records**, often **sourced through illicit means** like **hacking**.
- **Doxxing** is a **direct attack** on a person's **physical, digital, and emotional security**.
- **Legal and Social Implications:**
 - **Sharing private or semi-private content without consent** can also be considered a form of **doxxing**, leading to **legal and emotional distress** for the victim.
 - This can **compel victims to alter their lives drastically**, impacting their **physical, digital, and emotional security**.
- **Suggestions:**
 - keeping an **incident log**, reporting the **abuse to all relevant platforms**, **changing passwords**, and **enabling two-factor authentication**.
 - Victims in **India** can **report incidents** through the **National Cyber Crime Reporting Portal** and **file an FIR**.
 - **Victims** are advised to **secure their Personally Identifiable Information (PII)** and **ensure account security** before **returning to social media**.

Platform Policies and Tools:

- Platforms like **Meta, Google, X, and Reddit** have **mechanisms** to address **doxxing**, with some **providing specific tools** for **removing personal information** and **reporting abuse**.
- **Legal Framework and Policy Changes:**
 - Recent updates, such as **Discord's new guidelines**, **separate doxxing from harassment** to **clarify policy enforcement**.
 - Under **India's IT Rules**, platforms are **obligated to act swiftly** on **cybercrime complaints**.

Security practices to follow when posting on social media:

- **Use Strong Passwords:** Create unique, strong passwords for each social media account and enable multi-factor authentication to enhance security.

- **Be Cautious with Photos:** Avoid posting images that could reveal your location, such as those showing your neighbourhood, house facade, local landmarks, or places you frequently visit.
- **Workplace Privacy:** Refrain from sharing photos of your workplace, ID badges, or other sensitive company information that could identify your exact location or role.
- **Limit Location Details:** Be mindful of sharing videos or images, like apartment tours or vlogs, that could inadvertently disclose your daily routines or commuting paths.
- **Protect Conversations:** Avoid posting screenshots of private text conversations to prevent accidentally exposing personal phone numbers or private information.
- **Consider Content Impact:** Think carefully about the potential consequences of posting controversial or provocative content, as it could attract unwanted attention or go viral beyond your intended audience.
- **Avoid Sharing Others' Information:** Be cautious not to share media or information that could lead to doxxing others, as this could result in legal repercussions.

Source: [TH](#)

Looking beyond SMS

Subject: Science and tech

Sec: Awareness in IT

- **Evolution of Digital Communications:**
 - The success of modern digital communications is **largely attributed to the GSM (Global System for Mobile Communications) standard, evolving from 2G to the coveted 5G.**
- **Shortcomings of SMS:**
 - **SMS (Short Message Service), born in 1992, revolutionized text messaging but remained frozen in time amid technological advancements.**
 - **In today's digital age, SMS is mainly used for service messages, lacking end-to-end encryption and robust security measures.**
- **Introduction of RCS (Rich Communication Services):**
 - **GSMA established RCS as a unified messaging ecosystem, offering greater consistency, interoperability, and security.**
 - **RCS represents a paradigm shift with features like high-resolution images, videos, group chats, and read receipts.**
- **Security Features of RCS:**
 - **RCS offers end-to-end encryption and stringent security protocols, ensuring messages are shielded from interception and unauthorized access.**
- **Interoperability and Modernization:**
 - **RCS maintains interoperability with traditional SMS and modern messaging systems, facilitating seamless communication across platforms and devices.**
- **Potential in India:**
 - **India, with its digital ambitions and growing smartphone user base, can benefit from RCS adoption as a national standard.**
 - **RCS can enhance communication networks' efficiency and safeguard citizens' privacy and security.**
- **Enterprise Services:**
 - **RCS holds immense potential for enterprise services, offering businesses powerful tools for engaging with customers and streamlining communication processes.**
 - **Features like branded messages, interactive experiences, and secure transactions empower businesses to forge deeper connections with their audience.**
- **Promise of RCS in India:**
 - **RCS promises to usher in a new era of communication, innovation, and security in India, aligning with the country's digital aspirations and enterprise needs.**

What is Llama 3, Meta's most sophisticated and capable large language model yet?

Subject: Science and tech

Sec: Awareness in AI and Computers

Context:

- **Meta on Thursday introduced its most capable Large Language Model (LLM), the Meta Llama 3.**

More on news:

- The company also introduced an image generator, which updates pictures in real-time even as the user types out the prompt.
- Meta will be integrating its latest model into its proprietary virtual assistant — **Meta AI**.
- **Meta is pitching its latest models as the most sophisticated AI models, steering way ahead of its peers such as Google, Mistral, etc., in terms of performance and capabilities.**
- The updated Meta AI assistant will be integrated into **Facebook, Instagram, WhatsApp, Messenger, and a standalone website much like OpenAI's ChatGPT.**
- At present, Meta AI is available in English across the **US on WhatsApp. Meta is also expanding to more countries including Australia, Canada, Ghana, Jamaica, Malawi, New Zealand, Nigeria, Pakistan, Singapore, South Africa, Uganda, Zimbabwe, and Zambia.**
- Llama 3 models will soon be available on **AWS, Google Cloud, Hugging Face, Databricks, Kaggle, IBM WatsonX, Microsoft Azure, NVIDIA NIM, Snowflake, etc.**



What is Llama 3?

- **Llama or Large Language Model Meta AI** is a family of LLMs introduced by Meta AI in February 2023. The first version of the model was released in four sizes — **7B, 13B, 33B, and 65 billion parameters. The 13B model of Llama** outperformed OpenAI's GPT-3 which had 135 billion parameters.
- Meta released **Llama 2 in July last year**, a significantly upgraded version of its first LLM.
- **Llama 2 was released in 7B, 13B, and 70B parameters** and it was trained on 40 per cent more data when compared to its predecessor.
- Meta is back with **Llama 3, the latest iteration of its LLM** which is claimed to be the most sophisticated model with significant progress in terms of performance and AI capabilities.
- **Llama 3, which is based on the Llama 2 architecture**, has been released in two sizes, 8B and 70B parameters.
- Both sizes come with a base model and an instruction-tuned version that has been designed to augment performance in specific tasks.
- Meta has released text-based models in the Llama 3 collection of models.
- All models of Llama 3 support context lengths of 8,000 tokens.
- This allows for more interactions, and complex input handling compared to Llama 2 or 1.

How good is Llama 3?

- Meta claims that the **8B and 70B parameter Llama 3 models are a giant leap from Llama 2.**
- Llama 3 outperformed **Google's Gemma 7B and Mistral's Mistral 7B, Anthropic's Claude 3 Sonnet in benchmarks such as MMLU 5-shot (Massive Multitask Language Understanding), GPQA 0-shot (A Graduate-Level Google-Proof Q&A Benchmark), HumanEval 0-shot (a benchmark for evaluating the multilingual ability of code generative models), GSM-8K 8-shot and Math 4-shot, CoT (maths and word problems).**

Microsoft unveils Phi-3-mini, its smallest AI model yet: How it compares to bigger models

Subject: Science and tech

Sec: Awareness in IT & Computer

Context:

- A few days after Meta unveiled its **Llama 3 Large Language Model (LLM)**, Microsoft on Tuesday unveiled the latest version of its 'lightweight' AI model – the **Phi-3-Mini**.

More on news:

- **Microsoft has described the Phi-3** as a family of open AI models that are the most capable and cost-effective **small language models (SLMs) available**.

What is Phi-3-mini?

- Phi-3-Mini is believed to be **first among the three small models** that Microsoft is planning to release.
- It has reportedly outperformed models of the same size and the next size up across a variety of benchmarks, in areas like **language, reasoning, coding, and maths**.
- Language models are the backbone of AI applications like **ChatGPT, Claude, Gemini, etc**.
- These models are trained on existing data to solve **common language problems such as text classification, answering questions, text generation, document summarisation, etc**.
- The **‘Large’ in LLMs has two meanings** — the enormous size of training data; and the parameter count. In the field of Machine Learning, where machines are equipped to learn things themselves without being instructed, parameters are the memories and knowledge that a machine has learned during its model training.

What’s new in Microsoft’s Phi-3-mini?

- The latest model from Microsoft expands the selection of high-quality language models available to customers, offering more practical choices as they build generative AI applications.
- **Phi-3-mini, a 3.8B language model, is available on AI development platforms such as Microsoft Azure AI Studio, Hugging Face, and Ollama.**
- **Phi-3-mini is the first model in its class to support a context window of up to 128K tokens, with little impact on quality.**
- The model is instruction-tuned, which means that it is trained to follow the different types of instructions given by users.
- This also means that the model is **‘ready to use out-of-the-box’**.
- Microsoft says that in the coming weeks, new models will be added to the Phi-3 family to offer customers more flexibility.
- Phi-3-small (7B) and Phi-3-Medium will be available in the Azure AI model catalog and other model libraries shortly.

How is Phi-3-mini different from LLMs?

- Phi-3-mini is an **SLM**.
- SLMs are more streamlined versions of **large language models**.
- When compared to LLMs, smaller **AI models are also cost-effective to develop and operate, and they perform better on smaller devices like laptops and smartphones**.
- According to Microsoft, SLMs are great for resource-constrained environments including on-device and offline inference scenarios.
- The company claims such models are good for scenarios where fast response times are critical, say for chatbots or virtual assistants.
- Moreover, they are ideal for cost-constrained use cases, particularly with simpler tasks.

How good are the Phi-3 models?

- Phi-2 was introduced in December 2023 and reportedly equaled models like Meta’s Llama 2.
- Microsoft claims that the Phi-3-mini is better than its predecessors and can respond like a model that is 10 times bigger than it.
- Based on the performance results shared by Microsoft, Phi-3 models significantly outperformed several models of the same size or even larger ones, including Gemma 7B and Mistral 7B, in key areas.

A freak DNA change 25 million years ago is why humans lack tails

Subject: Science and Tech

Section: Biotech

Introduction:

- A **distinguishing anatomical trait of apes**, setting them apart from monkeys, is their **lack of a tail**. While **all mammals possess a tail at some stage of development, apes—including humans, chimpanzees, bonobos, gorillas, orangutans, and gibbons—shed theirs during fetal development**, leaving only a few **vestigial vertebrae** known as the **coccyx or tailbone**.
- This **evolutionary change** occurred approximately **25 million years ago** when **apes diverged from a common ancestor shared with monkeys**.

The compact genome:

- **Every cell within an organism** houses a **complete set of the organism's DNA**, termed the **genome**, which **encodes the instructions for making proteins—key functional components of the cell**. Specific segments of the **genome**, known as **genes**, are **responsible for coding individual proteins**.
- **Cells selectively produce proteins**. This **selective production** is achieved by creating a **temporary copy of the gene** in the form of **messenger RNA (mRNA)**, which then guides the synthesis of the corresponding protein.

‘Junk’ DNA:

- In complex organisms like **humans**, **genes** are significantly spread out across the **genome**, with only about **1.5%** of the **human genome actually coding for proteins**. The vast majority of the **genome**, previously deemed '**junk**' DNA due to its **unclear purpose**, is **now understood to play crucial roles**, including **regulating gene expression—essentially controlling when and how proteins are made**.
- A notable portion of this '**junk**' DNA comprises **transposable elements**, which are **segments of DNA capable of moving and replicating themselves within the genome**.
- One specific **transposable element**, known as **Alu** and **exclusive to primates**, is **relatively small** at about **300 base pairs** but is **extraordinarily prevalent**, with **approximately 1.4 million copies scattered throughout the human genome**.
- These elements generally **transpose** within the **genome** without significant effects on health or evolution since **their insertion impacts only the cell where the event occurs**. For instance, if an **Alu element inserts itself into a critical gene in one cell**, **only that cell may be adversely affected, leaving surrounding cells unaffected**. However, if such an insertion occurs in the **zygote—the initial cell formed at conception—this alteration in the DNA becomes permanent** and is **replicated in every cell** of the resulting offspring, potentially having far-reaching consequences.

The Alu accident:

- **Approximately 25 million years ago**, following the **divergence of ape and monkey ancestors**, a rare event occurred: an **Alu element inserted itself into a crucial gene within the zygote of an ancestral creature**. This extremely unlikely insertion, with odds of about one in a million, led to a **significant evolutionary trait—the absence of a tail in that creature and all its descendants**, marking the **lineage of all modern apes**.
- This discovery was reported by scientists from New York University (NYU) in a Nature paper published in February. The research team embarked on a meticulous investigation, **examining 31 genes** known to **influence tail development across apes and monkeys**. Through this comparative study, they **identified tens of thousands of mutations, deletions, and insertions** that might have contributed to the **loss of the tail in apes**. However, none of these **genetic changes**, located within the **protein-coding regions of DNA**, definitively explained the phenomenon.
- The **crucial Alu element** was eventually **found within the so-called 'junk' DNA**, a part of the **genome** not involved in **coding for proteins** but known to contain elements **regulating various genetic functions**. This discovery underscored the **importance of 'junk' DNA in evolution and the development of distinct traits in organisms**.

A tailoring defect:

- In complex animals, **genes** are **not continuous** but **segmented within the genome, interspersed with 'junk' DNA, and assembled only during mRNA creation**. This structure allows for the **versatile generation of different proteins from the same genetic sequence**. Researchers from New York University (NYU) identified an **Alu element insertion in the TBXT gene**, crucial for **tail development**, which disrupts this **gene's proper assembly in apes**, leading to the **production of a defective TBXT protein** and, subsequently, **tail loss**.
- This groundbreaking discovery was further confirmed by comparing **TBXT mRNA** in **human and mouse stem cells**, **revealing defects** in the **human mRNA** as anticipated.
- Beyond tail loss, the **defective TBXT protein** also led to **neural tube defects**, suggesting that **compensatory genetic changes** have occurred to mitigate these adverse effects.

Source: [TH](#)

Decoding genomics for public health

Subject: Science and tech

Section: Biotech

Context:

- **Genomics** is **significantly enhancing our understanding of health and disease genetics**, impacting **all stages of disease management** including **aetiology, risk assessment, prevention, diagnosis, and treatment**.

Details:

- **Genomics** has **improved the diagnosis rate** for rare diseases to **25-35%** for previously undiagnosed cases, with technologies like **exome sequencing reducing diagnosis time and associated costs**.
- **Preventive Screening:** Technologies like **carrier screening** and **Preimplantation Genetic Testing (PGT)** are becoming more accepted for **assessing risks of genetic conditions** such as **anaemia, cystic fibrosis, Fragile X syndrome, and Down syndrome**, particularly in contexts like **In-Vitro Fertilization (IVF)**.

- The **GenomeAsia 100K project**, launched by the **Government of India**, aims to create a **reference genomic database for India's diverse population**, addressing the underrepresentation of **Asian populations** in **global genomic databases**.
- **Application of Genomic Data:**
 - Studies utilizing the **GenomeAsia database** are already underway, including research on **coronary artery disease** that uses **polygenic risk scores** to assess CAD risk in the Indian population.
- **Public Health Initiatives:**
 - **India's UMMID (Unique Methods of Management and Treatment of Inherited Disorders) initiative** promotes **genetic screening of pregnant women and newborns** for **inherited genetic disorders** prevalent in the population.
- **Effective use of genetic data** requires building **comprehensive databases** that support **public health efforts**, necessitating **collaboration among government, researchers, healthcare providers, industry, and community organizations**.
- Ongoing advancements in **genomics** hold the potential to develop **accessible and cost-effective public health initiatives**, helping to forge a healthier and more resilient future globally.

GenomeAsia 100k Project:

- The **objective** of the **GenomeAsia 100k project**, first announced in **2016**, is to **sequence** the whole genomes of **100k Asians**, including **50,000 Indians**.
- It is being led out of the **National Technological University (NTU), Singapore**.
- The project is similar to the projects in the **United Kingdom, China, Japan** and **Australia** and the information from this will be used to improve health by designing 'personalised medicine.'
- The **Ministry of Health and Family Welfare** and the **Department of Biotechnology** would be closely associated with the project.

Genome India project:

- The **Genome India Project** is a **gene mapping project** sanctioned by the **Department of Biotechnology**.
- It was launched with the goal of **creating a comprehensive database of genetic variations among the Indian population**.
- The **project aims to sequence** the **genomes** of over **10,000 Indians** from **different regions of the country** and establish a reference genome for the Indian population.

Source: [TH BL](#)

Army inducts indigenous Akashteer system

Subject: Science and tech

Section: Defence

Context:

- The **Army has started the induction of control and reporting systems** under 'Project Akashdeep' to bolster its air defense capabilities.

More on news:

- The deployment of the systems began with flagging off of the **first batch of Control Centres from BEL Ghaziabad**.
- With 2024 designated as the '**Year of Tech Absorption**', **induction of Akashteer Control Centres** will meet the current and futuristic requirements of complex air defense operations.

About Akashteer Project:

- Developed by **Bharat Electronics Limited (BEL)**, the project is aimed at significantly enhancing the operational efficiency and integration of the Army's air defense mechanisms.
- The Akashteer Project is a **cutting-edge initiative designed to automate air defense control** and reporting processes by **digitizing** the entire process.
- Akashteer aims to revolutionize **air defense operations by seamlessly integrating radar and communication systems at all levels into a unified network**.

Germany to send additional Patriot system to Ukraine

Subject: Science and tech

Section: Defence

Context:

- Germany will provide **Ukraine** with an **additional Patriot air defense system** to bolster its **defences** against **increasing Russian airstrikes**.

Details:

- This decision reflects ongoing efforts to **strengthen Ukrainian air defence capabilities**, which have previously included deliveries of the **US-made Patriot systems** designed to counteract **Russian drone and cruise missile attacks**.
- The **US** has committed to **selling Ukraine equipment worth up to \$138 million** to maintain and upgrade its **HAWK air defence systems**, following the previous deployment of **HAWK interceptor missiles** as an enhancement over the smaller, **shorter-range Stinger systems**.

Patriot Air Defence System:

- The **Patriot (MIM-104)**, which stands for **Phased Array Tracking Radar for Intercept on Target**, is the **U.S. Army's most advanced air defense system**.
- It is an **all-weather surface-to-air missile defence system** to counter **tactical ballistic missiles, cruise missiles, and advanced aircraft**.
- It was developed by **Raytheon, an American multinational aerospace and defense conglomerate**.
- The system was **first** used in combat during the **1991 Gulf War**, with batteries protecting **Saudi Arabia, Kuwait, and Israel**, and was later used during the **U.S. invasion of Iraq in 2003**.
- It is in service with the **US and allied countries**, including **Germany, Greece, Israel, Japan, Kuwait, the Netherlands, Saudi Arabia, South Korea, Poland, Sweden, Qatar, the United Arab Emirates, Romania, Spain, and Taiwan**.
- **Features:**
 - It is a **mobile system** that usually includes **powerful radar, a control station, a power generator, launch stations, and other support vehicles**.
 - Depending on the version in use, the **interceptor missiles** can reach an **altitude of more than 24 kilometres** and **hit targets up to 160 kilometres away**.
 - Its **radar can track up to 50 targets** and **engage five of them at once**.
 - It is equipped with a **track-via-missile (TVM) guidance system**. Midcourse correction commands are transmitted to the guidance system from the mobile engagement control centre.
 - A **Patriot battery** can need as many as **90 troops** to operate and maintain it.

Other Air Defence Systems in the news:

Air Defence Systems	Description
1. HAWK Air defence	<ul style="list-style-type: none">• HAWK, short for 'Homing All the Way Killer',• It entered service with the US Army in 1959, during the Vietnam war.• It is an American medium-range surface-to-air missile.• It underwent upgrades over the decades that followed, including a major one in 1971 that produced the so-called I-HAWK (or improved HAWK), with a kill probability of 85%.• The HAWK system was the predecessor to the PATRIOT missile defence system that Raytheon built in the 1990s.• US forces largely stopped using HAWK from the early years of the new century.• VSHORADS is a Man Portable Air Defence System (MANPAD) designed and developed indigenously by DRDO's Research Centre Imarat (RCI), Hyderabad in collaboration with other DRDO laboratories and Indian Industry Partners.• VSHORADS missile incorporates many novel technologies including miniaturized Reaction Control System (RCS) and integrated avionics, which have been successfully proven during the tests.• The missile, meant for neutralizing low-altitude aerial threats at short ranges, is propelled by a dual thrust solid motor.• The design of the missile including launcher has been highly optimized to ensure easy portability.
2. Very Short-Range Air Defence System (VSHORADS)	<ul style="list-style-type: none">• The missile, meant for neutralizing low-altitude aerial threats at short ranges, is propelled by a dual thrust solid motor.• The design of the missile including launcher has been highly optimized to ensure easy portability.
3. HQ-9 (Hong Qi 9)	<ul style="list-style-type: none">• Developed by: China

4. Terminal High Altitude Air Defense System (THAAD)

- It has a 200 km radar detection range with active radar-homing missiles and cold launch capability but a shorter detection range and fewer missile types compared to the S-400.
- Developed by: USA
- It has a 200 km radar detection range optimised to intercept intermediate-range missiles in the endo-atmospheric region but has a shorter detection range than the S-400 and limited targets, like missiles only.

5. S-300PMU

- Developed by: Russia
- It has a 200 km radar detection range capable of tracking 300 targets simultaneously with multiple missile options but a shorter detection range than the S-400 as it is an older predecessor system.

6. S-400 Triumf (SA-21 Growler)

- Developed by- Russia
- A long-range surface-to-air missile (SAM) system, to counter advances in Western air defence systems like the **MIM-104 Patriot**. It was intended to replace the earlier **S-200** and **S-300** systems developed in the **1960s-1970s**.

7. Iron Dome System

- **Developed by- Israel**
- It was first deployed in **2011**.
- The **Iron Dome** has **three main systems** that work together to provide a **shield** over the area where it is deployed, handling multiple threats.
- It has a **detection and tracking radar** to spot any incoming threats, a **battle management and weapon control system (BMC)**, and a **missile firing unit**.
- It is capable of being used in **all weather conditions**, including during the **day and night**.
- The **missile** was **jointly** developed by **Israel Aerospace Industries** and the **Missile Defence Agency** in the **US**.

8. Arrow-3 Missile Defence System

- It is an **exo-atmospheric anti-ballistic missile defence system** for **long-range threat engagement**.
- Initially deployed in **2017**, **Arrow-3** is the top layer of **Israel's sophisticated air defence network**.
- It is designed to take out **ballistic missiles** while they are still outside of the atmosphere.

What is Israel's multi-layered air defense system, which helped thwart Iran's attacks?

Subject: Science and tech

Sec: Defence

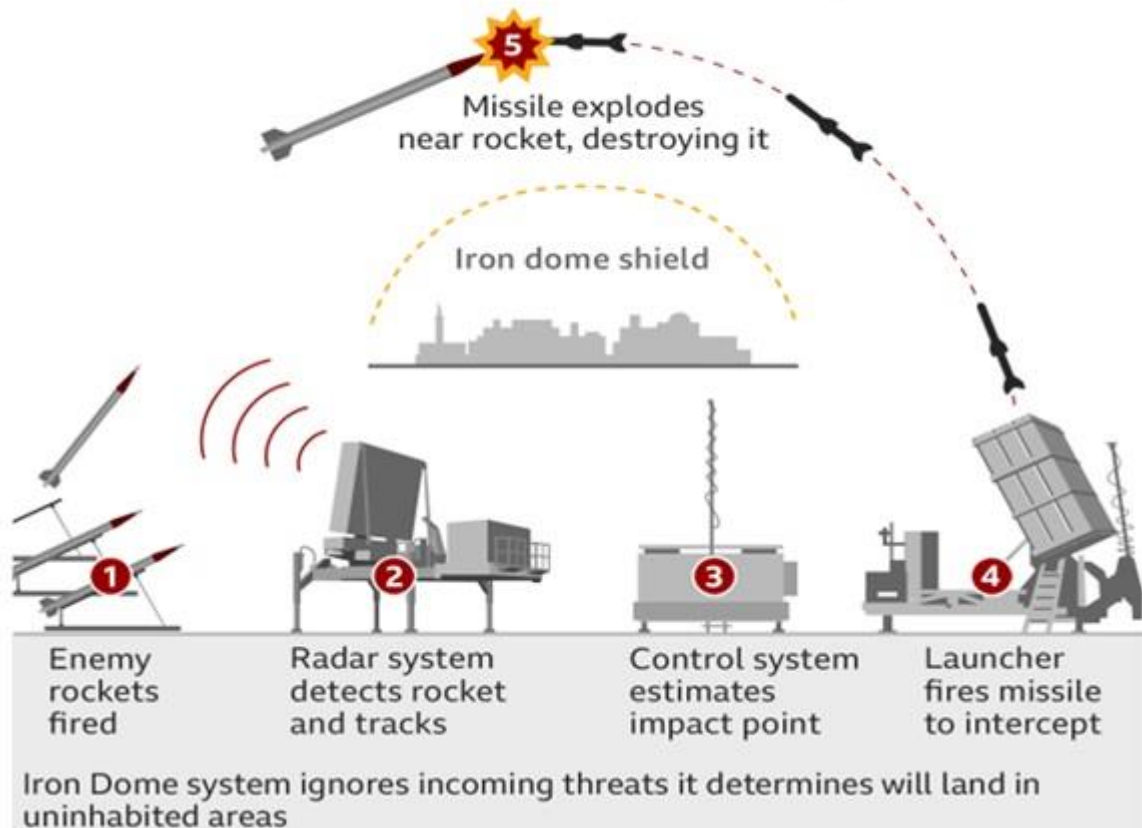
Context:

- **Israel's multi-layered air defense system** has defended the country from a major attack, with Iran launching over **300 armed drones and long-range missiles** launched towards it on Saturday night (April 13).

How does the Israeli air defense system work?

- **Israel's air defense system** is meant to provide multi-layered defenses against a range of aerial threats, which includes aircraft, cruise and ballistic missiles as well as **unmanned aerial vehicles (UAVs)**.
- While **cruise missiles fly at a low distance** from the ground, ballistic missiles follow a parabolic trajectory.
- It includes systems such as **Arrow 2 and Arrow 3, David's Sling (Stunner), Iron Dome, Patriot Advanced Capability-2, PAC-3 and advanced fighter jets operated by the country's air force**.
- They are designed to counter specific threats and are integrated to work in tandem to provide a full-proof protection from projectiles.

How Israel's Iron Dome defence system works



What are the components of Israel's defense system?

- The **Arrow system is a family of anti-ballistic missiles**, capable of intercepting long-range missiles.
- Developed in collaboration with the US, **Arrow-2 can intercept ballistic missiles** within the atmosphere.
- **Arrow-3 has the capability of intercepting missiles** outside the Earth's atmosphere and it was employed to intercept long-range missiles launched by the Houthi militia in Yemen. The Houthis are believed to be backed by Iran.
- **The David's Sling (or Stunner) is Israel's medium-range air defense system**, which can intercept cruise missiles, ballistic missiles, and aircraft. With a range of **300 kilometers**, it also has an advanced phased-array radar for easier detection.
- **The Iron Dome is Israel's indigenous short-range air defense system** which can intercept rockets, artillery shells, and mortar bombs.
- With a **70 kilometer range**, it has been effectively shooting down short-range threats such as rockets launched by Hamas.
- The **US-made Patriot PAC-2 and PAC-3 are air defense systems** that can intercept a range of missiles and target aircraft and drones.
- Counted as among the oldest air defense systems, they were employed during the **First Gulf War in 1991 for intercepting Scud missiles launched by Iraq**.
- The **F-16 and F-35 fighter jets play a major role in air defense**, being equipped with air-to-air missiles.
- Additionally, **Israel is developing the Iron Beam** to intercept incoming threats with laser technology.
- It is yet to be fully operational.

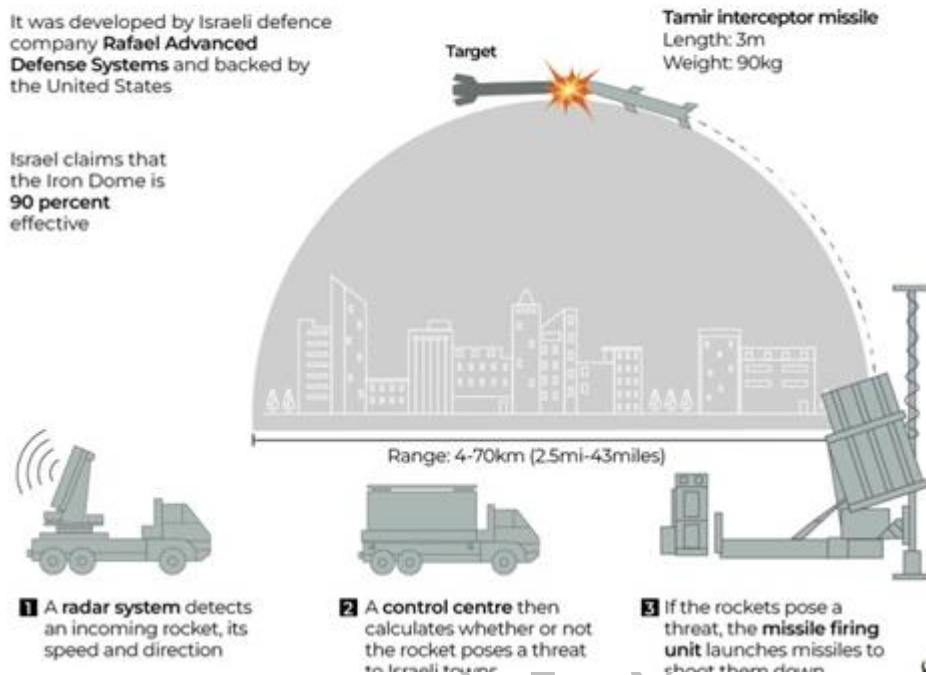
MILITARY

Israel's Iron Dome system

The Iron Dome is an Israeli air defence system that detects an incoming rocket, determines its path and intercepts it.

It was developed by Israeli defence company **Rafael Advanced Defense Systems** and backed by the United States

Israel claims that the Iron Dome is **90 percent** effective



How has Israel responded to the Iranian attack?

- Israel's air defense targets projectiles at the terminal stage, which is when they are about to strike.
- Air defense systems can also target projectiles at the source or when it is in transit. Ballistic missiles are easier to track since they have a **standard parabolic trajectory**, as compared to **cruise missiles which can fox air defense systems due to their maneuverability**.
- Israel deployed its **air defense and its allies' fighter jets** were pressed into action to intercept incoming projectiles from different locations.
- The **US military forces helped Israel** take down several Iranian drones and missiles, while the **UK's Royal Air Force** also helped shoot down drones launched by Iran. French jets from an air base in Jordan intercepted **Iranian drones and missiles over Jordan's air space**.

The significance of carrier aviation

Subject: Science and tech

Sec: Defence

Context:

On March 5, both aircraft carriers of the Indian Navy, INS Vikramaditya and INS Vikrant, showcased "**twin carrier operations**" with **MiG-29K fighter jets** taking off simultaneously from both and landing cross deck.

More on news:

- This demonstrated an ability that only a handful of nations can boast of. Further one of the carriers, **INS Vikrant is indigenously designed and constructed**.
- Commissioned in September 2022, **INS Vikrant has been fully operationalised** and integrated into the operational cycle in record time.
- India is currently negotiating with France for the purchase of **26 Rafale-M carrier jets** as the MiG-29Ks are in short supply while an indigenous twin engine deck-based fighter is currently under development.

What does INS Vikrant signify?

- The design work on the **Indigenous Aircraft Carrier (IAC)-I, later christened Vikrant, began in 1999**; however 2005-2006 were probably the most crucial years for the carrier and for India's war shipbuilding.
- The **crucial decision was on the warship grade steel, which till then was procured from Russia**.

- It was decided that it would be developed and produced in India, a collaborative effort between the **Steel Authority of India, the Defence Research Development Organisation (DRDO) and the Indian Navy.**
- **DMR-249 steel** is now being used for the construction of all warships in the country.

What is the composition of INS Vikrant?

- The **262m long and 62m wide ship is powered by four General Electric LM2500 engines** generating 88 MW of power giving it a maximum speed of 28 Knots and an endurance of 7,500 nautical miles.
- Built at an overall cost of around **₹20,000 crore and 76% indigenous content**, the ship has around 2,200 compartments, for a crew of around 1,600 that include specialized cabins to accommodate women officers and sailors.



What are its capabilities?

- **Vikrant can operate an air wing of 30 aircraft comprising MiG-29K fighter jets, Kamov-31, MH-60R multi-role helicopters, in addition to indigenous Advanced Light Helicopters and Light Combat Aircraft (Navy).**
- It uses the **STOBAR (Short Take-Off but Arrested Recovery) method to launch and recover aircraft for which it is equipped with a ski- jump to launch aircraft, and three 'arrestor wires' for their recovery.**
- The flight deck has an independent lighting system to **assist for bad weather and night operations.**
- Once the aircraft finishes the mission, they are safely vectored back to the ship and guided for a precision landing.
- The fighters which have a hook under the belly pick up one of the three arresting gear wires on the flight deck.
- The aircraft with a speed of more than 250 kmph is stopped within a distance of just 90m in just 2-3 seconds.
- **Vikrant has larger deck space and visibly larger hallways compared to previous carriers including Vikramaditya, which is of similar size.**
- The erstwhile 19,500 tonne **Vikrant was India's first carrier purchased from the U.K., which arrived in 1961 and played a vital role in the 1971 war.**
- Then came the 28,700 tonne **INS Viraat commissioned in 1987, formerly HMS Hermes, also from the U.K.**

After Vikrant, what next?

- An aircraft carrier is **fundamental to command, control and coordination of operations from the sea and to project combat power ashore, over the seas or in the air, noting that the fragile maritime security situation across the Indian Ocean Region (IOR) and India's stature as the largest resident naval power necessitate a strong and robust Navy.**
- Aircraft carriers play a **pivotal role in this and concurrent availability of two Carrier Battle Groups facilitate credible presence and preparedness on both Western and Eastern seaboard.**
- The Navy has already moved a case for a **second Indigenous Aircraft Carrier (IAC-II), a repeat of a Vikrant-like carrier.**
- The **IAC-II displacing 45,000 tonnes** will see some modifications and newer technologies incorporated in the original design of the Vikrant and will also be **manufactured by CSL.**
- The **proposed IAC-II has often been referred to as India's third aircraft carrier.**

About other countries:

- **Japan** has begun converting its helicopter carriers to **operate F-35 fighter jets.**
- **China announced that it is building its fourth aircraft carrier, likely a nuclear-powered supercarrier.**
- From commissioning its **first carrier, Liaoning, in 2012, launching second carrier Shandong in 2017, third carrier Fujian in 2022 and the fourth to be unveiled soon, China's pace is absolutely unprecedented.**

The ART of India's HIV/AIDS response

Subject: Science and tech

Section: Health

Context:

- **April 1** commemorates the **20th anniversary** of the launch of **Free Anti-retroviral Therapy (ART)** for **Persons living with HIV (PLHIV)** by the **Indian government**, a pivotal step in the **nation's HIV/AIDS response**.

Details:

- Initially, **HIV/AIDS** was seen as a **death sentence** following its emergence in the early **1980s**, surrounded by significant fear, stigma, and discrimination.
- The **first antiretroviral drug, AZT (zidovudine)**, was approved in **March 1987** by the **US FDA**, followed by the **approval of three more drugs in 1988** and the **introduction of protease inhibitors in 1995**.
- Despite these advancements, access to these **life-saving treatments** was mostly **restricted to high-income countries**.



The evolution of free ART:

- Antiretroviral therapy (ART) is the treatment of **people infected with human immunodeficiency virus (HIV)** using **anti-HIV drugs**. The standard treatment consists of a combination of drugs (often called "**highly active antiretroviral therapy**" or **HAART**) that suppress **HIV replication**.
- The commitment to **combat HIV** was solidified in **2000** at the **UN General Assembly's Millennium Summit**, leading to the **creation of the Global Fund to Fight AIDS, Tuberculosis and Malaria in 2002**, which advocated for **universal access to HIV services**.
- In **2004**, **India** had an estimated **5.1 million People Living with HIV (PLHIV)**, with a **population prevalence of 0.4%**, and very few were receiving **antiretroviral therapy (ART)**.
- The introduction of **free ART for adults in India** was a crucial step, expanded to include **children from November 2006**.
- By **2023**, **HIV prevalence in India** dropped to **0.20%**, with the **number of PLHIV** reduced to **2.4 million**, decreasing **India's global share of PLHIV** to **6.3%**.
- By the end of **2023**, **82% of PLHIV in India** knew their status, **72% were on ART**, and **68% had achieved viral suppression**.
- The **annual new HIV infections** declined by **48%**, and **AIDS-related deaths** decreased by **82%**, surpassing global averages and marking significant public health achievements.

Patient-centric approach to services:

- The **success in combating HIV in India** is not solely due to **free ART**; it also involves **comprehensive initiatives** including **free diagnostic services**, **prevention of mother-to-child transmission (PMTCT)**, and **managing opportunistic infections and co-infections like TB**.
- The **ART program** has evolved to be more **inclusive and patient-centric**, moving from **strict CD4 count eligibility criteria** to a "**Treat All**" policy in **2017**, allowing anyone diagnosed with **HIV** to start treatment regardless of **CD4 count**.
- **Rapid ART initiation policies** were adopted in **2021**, enabling **treatment to start within seven days of diagnosis**, sometimes on the same day.

95-95-95 target of UNAIDS:

- The **fifth phase of India's National AIDS Control Programme (NACP)** aims by **2025** to **significantly reduce new HIV infections** and **AIDS-related deaths**, **eliminate vertical transmission of HIV and syphilis**, and **achieve the 95-95-95**

targets set by UNAIDS: 95% of PLHIV knowing their status, 95% of those diagnosed on ART, and 95% of those on ART achieving viral suppression.

Next generation of medics to lead the fightback against AMR

Subject: Science and tech

Sec: Health

Antibiotics and Anti-microbial Resistance (AMR):

- The **discovery of antibiotics** in the **1920s** significantly **advanced the treatment and cure of previously fatal diseases**.
- **Antibiotics** are widely known for their ability to **combat bacterial infections**, but their **over prescription and misuse in animal and poultry industries** have led to a **crisis of antibiotic resistance**.
- The **burden of antimicrobial resistance (AMR) in India** is due to factors such as **high disease prevalence, inadequate infection prevention, a burdened public health system, easy antibiotic access without prescriptions, lack of effective surveillance for drug resistance, insufficient awareness, and limited diagnostic resources**.

'Prescriber Today, Steward Tomorrow' initiative:

- In response to the **AMR challenge**, the **AMR Declaration Trust and Rotaract Medicrew** have **initiated a venture to integrate antimicrobial stewardship into medical education and practice**, targeting future medical professionals.
- This initiative, **'Prescriber Today, Steward Tomorrow'**, aims to **infuse the medical curriculum with comprehensive training on AMR and antimicrobial stewardship (AMS)**, promoting the **rational use of antibiotics** and **preparing medical students to address AMR effectively**.
- **Early medical education** is critical in fostering a future where **antimicrobial stewardship** is integral to healthcare.

Source: [TH](#)

Urgent action needed to combat antimicrobial resistance: Report

Subject: Science and tech

Section: Health

Context:

- The **Global Steering Group on Antimicrobial Resistance (GLG-AMR)** published a **report** emphasizing the **urgent need for action against the rising dangers of AMR**, which includes **resistance to antibiotics, antifungals, and antiparasitics**.

Detail findings of the report:

- Political leaders are reportedly **neglecting the escalating threat of antimicrobial resistance (AMR)**, risking a **major health and economic crisis**.
- The **misuse of antimicrobials in humans, animals, and agriculture**, compounded by **environmental changes from the climate crisis**, is **accelerating the spread of AMR**.
- This report aims to **mobilize global leaders** before a **critical meeting in New York**.
- **AMR, a leading cause of death worldwide**, causes **1.27 million deaths annually**, disproportionately affecting **children under five in lower-income countries**.
- Without intervention, **AMR could decrease life expectancy by 1.8 years by 2035** and **inflict massive economic losses**, estimated at **\$855 billion annually** due to **health costs and lost productivity**.
- **Investing an average of \$46 billion annually in combating AMR** could **yield returns of up to \$13 for every dollar spent by 2050**, highlighting the **cost-effectiveness of addressing the issue**.

From local to global:

- **GLG-AMR** has set **specific goals for 2023** to **catalyze action**, aiming to **reduce deaths from bacterial AMR by 10%** and **ensure that at least 80% of human antibiotic consumption** comes from the **"ACCESS group"** of antibiotics, which is considered **crucial for treating common infections with a low risk of AMR development**.
- The group also targets a **30-50% reduction in antimicrobial use in the global agrifood system** compared to **current levels**.
- A more **ambitious goal** is to **eliminate by 2030 the use of medically important antimicrobials for non-veterinary and non-phytosanitary purposes** in **human and animal medicine**, as well as in **plant production and agri-food systems**.

Misuse of Antibiotics in agriculture and by poultry firms:

- The **overuse of antibiotics in agriculture** contributes to the **spread of drug-resistant pathogens**, posing **significant health risks worldwide**.

- **Two poultry farms in southern Telangana** were found using **antibiotics for growth promotion and preventative purposes**, a practice promoted by **Venky's** on its website.
- **The use of antibiotics for these purposes is banned in the EU and the U.S.**, with the **WHO** opposing it due to the **risk of diminishing drug effectiveness for treating human infections**.
 - In **2018**, investigations revealed **Venky's** was selling **colistin**, a critical "**last resort**" antibiotic, as a **growth promoter**, leading to **criticism** and a subsequent **ban** by the **Indian government**.
 - Despite previous claims of using **antibiotics solely for therapeutic reasons**, **Venky's** is now reported to be **selling drugs for preventive use and growth promotion**.
- Antibiotics used by them are **colistin, Tylomix, Amo-premix with amoxicillin, and Solutyl and Vendox**.

Source: [TH](#)

Influenza A H5N1 was detected in dairy cows in six States in the U.S.

Subject: Science and tech

Section: Health

Context:

- In March 2024, the **first detection of H5N1 in dairy cows** occurred in **the U.S.**, with outbreaks in **Texas and Kansas** and cases in **six states** overall, affecting the **dairy and meat industries**.

Avian Influenza spreading globally and affecting different species:

- A **new lineage (2.3.4.4b) of avian influenza (Bird flu)**, spreading globally since late 2020 via **migratory birds**, has **impacted birds worldwide**, with **economic losses and ecological damage**. Rarely, it has **infected mammals**, including over **200 species** and recently **polar bears in Antarctica**, with **potential spillover to humans** having a high fatality rate.
- In **Texas**, **wild birds** and **cats near affected farms** also **tested positive for H5N1**, with the **full extent of cow infections** unknown due to **mild symptoms and lack of routine testing**.
- A **human H5N1 case** was **reported in Texas in April 2024**, linked to **contact with infected cows**, marking the **second U.S. case** following one in **Colorado in 2022**. **Human infections are rare**, with over 800 cases reported to the **WHO** since 2003, showcasing a **variety of symptoms** and a **53% case-fatality ratio**.
- **Southeast Asia** raised concerns in **January 2024** with **two human H5N1 cases in Cambodia, one fatal**, and a **recent fatal case in Vietnam**, highlighting the ongoing threat of this virus to both animals and humans.

Genomic insights:

- **Sequencing of H5N1 from Texas cows and a human case** showed both **belonged to clade 2.3.4.4b**, with a **minor mutation in the human strain** potentially indicating **adaptation to mammals**, though **not increasing human transmissibility**. **CDC** maintains the public health risk is low.
- Since late 2021, this **clade** has been in **U.S. wild birds**, causing poultry outbreaks and rare mammal infections, including the **Texas cases**.
- **Global incidents in 2023**, like **seal deaths in Russia** and **marine mammal infections in Peru**, alongside **U.K. reports of otter and fox deaths from H5N1**, indicate a potential for **cross-species transmission**.
- The ongoing situation underscores the importance of continued **disease surveillance** and **genomic analysis** to manage and understand **H5N1's evolution and interspecies adaptability**.

Highly pathogenic Avian Influenza (HPAI):

- The **viral disease HPIA or avian influenza**, especially the **H5 and H7 strains**, mostly affects **birds**.
- These strains are **highly pathogenic** and have been reported in **domestic poultry**, resulting in **high mortality** if they manage to reach wild bird populations.
- It spreads among birds and mammals due to **predators and scavengers feeding on infected birds**. **Marine mammals** have also been found to be **infected**.
- Earlier, **HPAI H5N1** spread rapidly in **South America** and the **southern end** of the continent to **Tierra del Fuego** and led to mass scale death of **South American Sea lions**. The **Falkland Islands** are at the most risk.
- **Threatened species from HPAI:**
 - **Avian groups** like **gulls and skuas, birds of prey** such as **hawks and caracaras, terns and shorebirds**.
 - Among **marine mammals, fur seals, sea lions, southern elephant seals and dolphins**.
 - **It can spread to humans** also.

Source: [TH](#)

Strong link between high glycaemic index diet and diabetes, says study

Subject: Science and tech

Section: Health

Context:

- An international study published in **The Lancet Diabetes and Endocrinology** revealed that **diets low in glycaemic index (GI) and glycaemic load (GL) may help prevent type 2 diabetes**, particularly in **individuals with higher Body Mass Index (BMI)**.

Study findings:

- The study, spanning **five continents** and **involving 127,594 adults** over nearly **12 years**, found a **significant association** between **high GI/GL diets** and an **increased risk of developing type 2 diabetes**.
 - The **Glycaemic Index (GI)** measures **how carbohydrate-containing foods affect blood glucose levels post-meal**, while the **Glycaemic Load (GL)** considers **both the quality and quantity of carbohydrates in food**.
- The research highlighted that **individuals with high BMI** and a **family history of diabetes** could **delay the onset of the disease** through **better dietary choices**.
- The findings underscore the **importance of dietary composition in managing diabetes risk**, challenging previous controversies around the **impact of GI on diabetes** and providing evidence applicable to a broad population.

About Diabetes:

- Diabetes is a **chronic disease** that occurs either when the pancreas does not produce **enough insulin** or when the body cannot effectively use the insulin it produces.
- **Insulin is a hormone that regulates blood glucose**. Hyperglycaemia, also called raised blood glucose or raised blood sugar, is a common effect of uncontrolled diabetes and over time leads to serious damage to many of the body's systems, especially the nerves and blood vessels.

Type 1 diabetes:

- Type 1 diabetes (previously known as **insulin-dependent**, juvenile or childhood-onset) is characterized by deficient insulin production and requires daily administration of insulin. In 2017 there were 9 million people with type 1 diabetes; the majority of them live in high-income countries. Neither its cause nor the means to prevent it are known.

Type 2 diabetes:

- Type 2 diabetes affects how your body uses sugar (glucose) for energy. It **stops the body from using insulin properly**, which can lead to high levels of blood sugar if not treated.
- Over time, type 2 diabetes can cause serious damage to the body, especially nerves and blood vessels.
- Type 2 diabetes is often preventable. Factors that contribute to developing type 2 diabetes include being **overweight, not getting enough exercise, and genetics**.

Diabetes: Type 1 vs. Type 2

Diabetes is on the climb — but there is a difference between Type 1 and Type 2. Do you know it?

Type 1 Diabetes		Type 2 Diabetes
Your body is no longer able to produce insulin	Why	Your body still produces insulin, but it doesn't make enough of it or it doesn't use it efficiently
Usually develops during childhood, but can develop at any age	Age	Can develop at any age but is most common in adults over 45
Family history	Risk Factor	- Overweight and/or inactive - Family history - High blood pressure
- Bedwetting - Blurry vision - Frequent urination - Increased appetite and thirst - Mood changes and irritability - Tiredness and weakness - Unexplained weight loss	Symptoms	- Increased appetite and thirst - Dark patches on armpits/neck - Frequent urination - Blurry vision - Tiredness and weakness - Unexplained weight loss
No known prevention methods	Prevention	Healthy lifestyle
Insulin injections	Treatment	Healthy living, possible insulin support

Source: [TH](#)

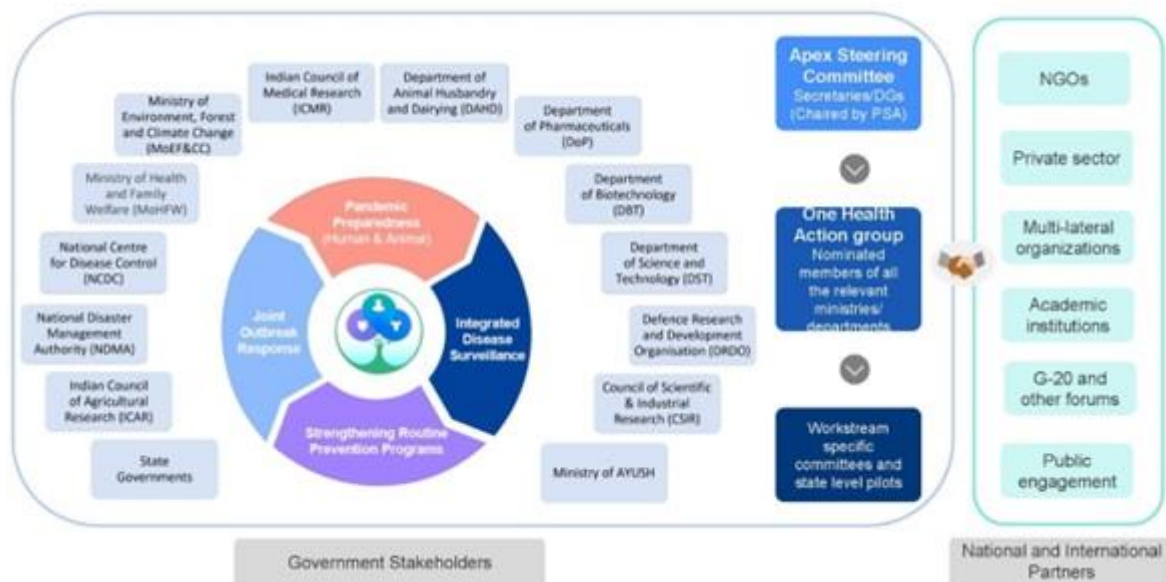
The advent of a holistic approach to 'one health'

Subject: Science and tech

Section: Health

What is One Health?

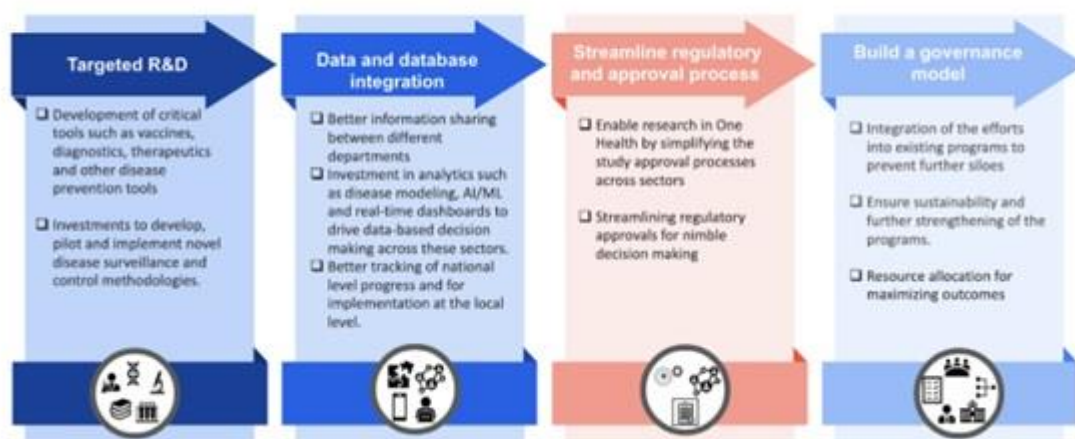
- **One Health** is a concept that **promotes collaboration across various sectors** to address **health, productivity, and conservation challenges**, particularly relevant to **India** due to its **diverse wildlife, large livestock populations, and dense human population**.
- This approach is **critical in managing the risks of disease spread** among these groups. **Examples** such as the **Covid pandemic, Lumpy Skin Disease in cattle, and Avian Influenza** illustrate the **need for a holistic approach** that encompasses **human, livestock, and wildlife health**.
- The **aim** is to **leverage the strengths and complementarities** of each sector to develop **integrated, robust, and agile response systems** for health challenges.



National One Health Mission:

- In July 2022, the initiative received endorsement from the Prime Minister’s Science, Technology, and Innovation Advisory Council (PM-STIAC), leading to collaboration among 13 Ministries and Departments, including the Department of Science and Technology, the Department of Biotechnology, the Council of Scientific and Industrial Research, the Department of Pharmaceuticals, and AYUSH, the Ministries of Health, Animal Husbandry and Environment as well as Defence.
- It recognises the interdependence of humans, animals, and the environment, especially in the context of pandemics like COVID-19 and livestock diseases such as lumpy skin disease.
- This collaboration aims to adopt a comprehensive approach towards health and pandemic preparedness. A significant step in this mission was the laying of the foundation stone for the National Institute for One Health in Nagpur by Prime Minister Narendra Modi on December 11, 2022, which will serve as the central coordinating body for national and international one health activities.

Critical enabling activities of the One Health Mission



Exercises to strengthen the existing programs and enable their integration into the One Health Mission:

- Disease gap prioritization exercise
- Mapping of existing surveillance programs
- Mapping of laboratory capabilities of existing and upcoming BSL-2, 3 and 4 levels
- Mapping institutional capabilities

Federated model for data:

- A **Federated model** will be followed where **data** will be **held** in **different distributed places** and it will be integrated by **APIs** and **other technical means** by harmonizing the **input** and following the **data standards**.
- **The data platform will host data related to, but not limited to-**
 - **Integrating surveillance and routine care data** within sectors and across sectors like **integrating across human health sectors** (efforts on linking vector born and NCDC data). **Integrating information across sectors**, such as between **IDSP/NDLM/NRC-W** and beyond.
 - Disease incidences and outbreaks across sectors
 - R&D and preparedness efforts
 - Various analytics such as **disease modelling, epidemiology capabilities** etc. for **better decision-making**

Source: [GOI](#)

Crafted in Indian labs, NexCAR19 takes India to next level in cancer care

Subject: Science and tech

Section: Health

NexCar19:

- **NexCar19** is a type of **CAR-T** and **gene therapy** developed indigenously in **India** by **ImmunoACT**, which is a company incubated at **IIT Bombay**.
 - It is designed to **target cancer cells** that carry the **CD19 protein**.
- **CAR-T therapy** **modifies a patient's T cells** to **attack cancer cells**, had already been **launched** in the **US** but was prohibitively expensive, costing up to **₹4 crores** excluding additional hospitalization costs.

How are CAR-T cells made?

- **CAR-T cells** are created by **collecting T-cells**, a type of **white blood cell**, from a patient using a procedure known as **leukapheresis**. These **T-cells** are then **genetically modified** in a laboratory to express **chimeric antigen receptors (CARs)**.
- This modification involves **inserting a synthetically developed gene** that **codes for the CAR** into the **T-cells** using **viral vectors**, commonly lentiviral vectors. After the modification, these **engineered T-cells** are **cultured in the lab** to **increase their number into the millions**. These cells are then returned to the hospital and **infused into the patient**, who typically undergoes **chemotherapy prior to this infusion** to **improve the effectiveness of the therapy**.
- The **structure** of a **CAR** includes both an **external segment**, which is composed of **antibody fragments** specifically chosen to target **cancer cell antigens**, and an **internal segment** responsible for initiating **cellular signaling** once the **CAR binds to an antigen**.
- This **dual structure enables the CAR-T cells to recognize and attack cancer cells effectively**. Notably, while similar therapies in the US use **murine-derived antibodies**, **NexCAR19** includes **human proteins alongside mouse antibodies**, creating a **'humanized' CAR** that potentially **reduces toxicity**.
- To date, the **FDA** has approved **six CAR-T cell therapies**, with **four targeting CD19**, a marker found on certain **leukemia and lymphoma cells**. **NexCAR19** follows this target approach but stands out due to its **humanized antibody design**.

Collaboration with National Cancer Institute (NCI):

- The team sought expertise from the **National Cancer Institute (NCI)**, enhancing their approach through insights gained at a conference hosted by the **American Association for Cancer Research (AACR)**.
- By October 2023, the team achieved a major milestone when **CDSO approved the therapy for treating relapsed or refractory B-lymphomas and B-Acute Lymphoblastic Leukemia (B-ALL)** after other treatments had failed.
- This accomplishment marked the emergence of a **Made-in-India CAR-T cell therapy**, a testament to the team's commitment and the impactful collaboration with **NCI**.

Risks of CAR-T cell therapy:

- The most common **side effect** is **cytokine release syndrome (CRS)**, an **intense inflammatory response** that can lead to **severe complications**.
- **Neurotoxicity, infections, and low blood cell counts** are also potential side effects, although the early clinical trials using **'humanized' antibodies** in **NexCAR19** **did not report neurotoxicity**.
- Despite its **efficacy**, the **cost of CAR-T therapy** remains a barrier.
 - **NexCAR19**, developed to be **more affordable than its US counterparts**, still costs between **₹40 to 45 lakh**, making it **one of the most expensive cancer treatments** available.

- Factors influencing the cost include labor, logistics, materials, facility expenses, and the costs associated with marketing, distribution, and intellectual property.

Source: [TH](#)

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If you get one percent better each day for one year,
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Geroscience: the science related to ageing

Subject: Science and tech

Section: Health

- ‘Geroscience’ describes a **field focused on aging-related studies**. He has developed a **blood test** that can **measure the rate of ageing by analyzing DNA methylation** through an **enzyme** called ‘gerozyme.’
- Research groups are exploring medications and techniques to manipulate this **enzyme** to potentially **slow ageing**.
- Notably, studies suggest **drugs** like **metformin** and **inhibitors** of the **enzyme TORC1** may enhance **immunity** and **reduce infections** in the **elderly**, with ongoing research into **rapamycin’s** potential benefits for **longevity** and **disease management**.
- Additionally, Dr. Belsky's research indicates that **socioeconomic factors** can **influence DNA methylation rates**, affecting **ageing**.
- Complementary to these findings, the Columbia Aging Centre highlights the **importance of a balanced diet** in supporting **brain health** and **reducing age-related decline**, emphasizing **proteins, healthy fats, and antioxidants**.
- This is particularly relevant in **India**, where a significant portion of the population is **elderly**, and such dietary components are readily available for diverse dietary preferences.

Inhibited by exercise:

- Researchers at Stanford University have **discovered a drug** that **enhances muscle strength in ageing or injured mice** by **blocking the action of an age-related enzyme, 15-PGDH**, which **increases in muscles with age** and in **neuromuscular diseases**. This **inhibition rejuvenates physical activity** in aging mice.
- Additionally, the **Mayo Clinic** enumerates **seven benefits of regular physical activity**, particularly for seniors, such as **weight control, disease prevention, mood improvement, increased energy, better sleep, improved sexual health, and social interaction benefits**.
- Furthermore, research from **Spain** suggests that **music may influence the same ageing-associated enzyme**, offering potential as a **treatment for dementia**.
- A **2020 study** found that **music could be a significant therapeutic strategy for dementia**, and more recent research proposes that **music can modulate gene expression related to age-related cognitive disorders**.
- This indicates a promising intersection of **music therapy and neurology** in managing ageing processes and related diseases.

Source: [TH](#)

Why is there a WHO alert on viral hepatitis?

Subject: Science and tech

Section: Health

Context:

- **India** accounted for **11.6%** of the **total viral hepatitis disease burden globally in 2022**, making it the **country with the second highest disease load** after **China**, according to the **World Health Organization’s (WHO) Global Hepatitis Report 2024** released recently.
- **Bangladesh, China, Ethiopia, India, Indonesia, Nigeria, Pakistan, the Philippines, the Russian Federation and Vietnam**, collectively shoulder nearly **two-thirds of the global burden of hepatitis B and C**.

What does the report highlight?

- The disease is the **second leading infectious cause of death globally** — with **1.3 million deaths per year**, the same as **tuberculosis, a top infectious killer**.
- New data from **187 countries** show that the estimated number of deaths from viral hepatitis increased from **1.1 million in 2019 to 1.3 million in 2022**. Of these, **83%** were caused by **hepatitis B**, and **17%** by **hepatitis C**.
- Every day, there are **3,500 people dying globally due to hepatitis B and C infections**.
- Half the burden of **chronic hepatitis B and C infections** is among people **aged 30-54 years old**, with **12%** among **children under 18 years** of age. **Men** account for **58%** of all cases.

Why is the report significant?

- The report is significant as it is the **first comprehensive WHO document consolidating global data on viral hepatitis**, covering **epidemiology, service coverage, and product access**.
- It provides the **most recent estimates of disease burden** and examines the **coverage of essential services for viral hepatitis across 187 countries**.

- Key findings reveal **low diagnosis and treatment rates: only 13%** of those with **chronic hepatitis B** are diagnosed, with about **3%** receiving **antiviral therapy**; for **hepatitis C**, **36%** are diagnosed and **20%** have received curative treatment.
- These figures are **substantially below the global targets of treating 80%** of those with **chronic hepatitis B and C by 2030**.
- Nonetheless, the report notes a **modest but steady improvement in both diagnosis and treatment rates since the last estimation in 2019**, marking some progress toward global hepatitis eradication goals.

What is Hepatitis?

- **Hepatitis** is an **inflammation of the liver** that can be **caused by various infectious viruses and non-infectious agents**, leading to potentially **fatal health issues**.
- There are **five main types of the hepatitis virus—A, B, C, D, and E**.
- Each type causes **liver disease** but **varies in transmission modes, illness severity, and geographic prevalence**.
- **Types B and C** are particularly significant as they **often lead to chronic conditions** and are the **major causes of liver cirrhosis, liver cancer, and deaths related to viral hepatitis**.

Why is India vulnerable?

- **India** is particularly **vulnerable to hepatitis** due to **multiple factors**, including **high population density, lack of awareness about the disease, insufficient screening and treatment options, and poor hygiene practices**.
- **Mother to child transmission** is responsible for **most new infections**.
- The **rise in non-viral hepatitis cases**, such as **alcoholic liver disease (ALD)** and **non-alcoholic fatty liver disease (NAFLD)**, exacerbates the situation.
- **Urban lifestyles with higher alcohol consumption** have **increased ALD cases**, while **obesity, metabolic disorders, and sedentary habits** have led to a surge in **NAFLD cases** across both **urban and rural India**.
- These conditions can progress to **severe liver diseases**, adding to the **hepatitis challenge**.
- Other risks include: infections from **intravenous drug use, sharing injections, and risky sexual practices**, contributing to **higher transmission rates of hepatitis B and C** among this group.

How can it be prevented?

- **Hepatitis B prevention** is achievable through **vaccination**, which is emphasized for **coverage enhancement**.
- Unlike **Hepatitis B**, **Hepatitis C** can be **cured using specific medications**.
- Despite the **severity of viral hepatitis**, the **mortality rates in India** are not as high as those from **tuberculosis**, partly because the **cost of hepatitis treatment is relatively low** due to the **availability of generic drugs in India**.
- The **government's viral hepatitis control program** provides **vaccines to high-risk adults**, including **healthcare workers**, and offers treatment options for both **hepatitis B and C**.
- Initially, the **hepatitis B vaccine** was rolled out in select cities and districts in **2002-2003**, and by **2011-2012**, the **vaccine for Chronic Hepatitis B infection (HBV)** was **integrated into the childhood immunization program**, expanding its reach and effectiveness in preventing the disease.

Source: [TH](#)

Siachen: 40 years of Op Meghdoot

Subject: Science and tech

Section: Health

Context:

- On April 13, 2024, it has been forty years since the **Indian Army gained a strategic position by occupying the glacier before Pakistan could act**.

Conflicting claims:

- **Siachen**, translating to "**land of roses**" in the **Balti language**, is ironically known as the **world's highest and coldest battlefield**.
- Strategically located with **Pakistan** to the **left** and **China** to the **right**, **Siachen** has been a **point of contention** since the **Partition of India and Pakistan**.
- The **Line of Control (LoC)** was established up to **point NJ-9842** by the **1972 Simla agreement**, but the **glacier area** remained unmarked.
- **India** bases its claim on the area through the **Jammu and Kashmir Accession Agreement of 1947** and the **Karachi Agreement of 1949**, which suggest the **ceasefire line** extends "**Northwards to the glaciers**."

- **Pakistan**, however, interprets the line as extending "**North-Eastwards**," claiming the territory beyond the **Salto Ridge** and **Siachen**, aiming for **direct connectivity to China** and **strategic control over the Ladakh region** and the **critical Leh-Srinagar highway**, thereby posing a significant threat to India.

THE HIGHEST BATTLEFIELD

Siachen is one of the largest glaciers after the two polar regions

- The glacier is located in the eastern karakoram Range. It is 75 km long and 2 to 8 km wide
- In local Balti language, 'sia' means 'rose', and 'chen' means 'place'; Siachen means the 'place where roses bloom'.
- Naib Subedar Bana Singh was awarded Param Vir Chakra for capturing Pakistan's Qaid Post in 1987. The post was later renamed Bana Post.
- More than 5,000 soldiers hold the front line at Salto ridge.
- The army has laid a 67-km-long pipeline to supply kerosene to its posts
- The Indian Army launched Operation Meghdoot in 1984 to capture Siachen.
- The 110km line beyond NJ9842 is called Actual Ground Position Line.
- Daily costs incurred by the army for sustaining operations at Siachen are estimated to be more than Rs 6 crore.
- The highest helipad in the world, Sonam (20,997 ft), is maintained in Siachen by India

Genesis of Operation Meghdoot:

- In the **1970s** and **1980s**, **Pakistan** allowed **foreign mountaineering expeditions** into **Siachen** as a way to support its **territorial claims**. In response to intelligence indicating potential **Pakistani military action**, **India** launched **Operation Meghdoot** on **April 13, 1984**.
- This **preemptive military operation** aimed to **secure control over the 76.4 km-long Siachen Glacier**.
- The successful capture was marked by the **Indian flag** being planted at **Bilafond La** by **Captain Sanjay Kulkarni** and his platoon.
- A significant moment came in **June 1987** when **Indian troops** captured the strategically important **Quaid post** during **Operation Rajiv**, which was subsequently renamed **Bana Top** in honour of **Naib Subedar Bana Singh**, who received **India's highest military honour for his role in the assault**.
- **Operation Meghdoot** remains ongoing, making it the **longest-continuous military operation in the world**.

Recent developments on the glacier:

- Technological improvements at Siachen include **better habitat, communication systems, mobility solutions, logistics, medical support, and green initiatives**.
- The glacier itself is experiencing the effects of **climate change**, evident from the **receding of the glacier's snout by over a kilometre since 1984**.
- The implementation of **VSAT technology** has revolutionized communications, providing troops with **data and internet access** which **enhances real-time situational awareness and telemedicine capabilities**.
- Mobility on the glacier has been significantly boosted by the introduction of **All-Terrain Vehicles (ATVs), ATV bridges, Chinook heavy-lift helicopters, and logistic drones**, which facilitate the delivery of essential supplies to isolated posts during winter months.
- The use of **special clothing, advanced mountaineering gear, and timely weather updates** helps **soldiers endure extreme temperatures** that can drop to **-60 degrees Celsius**.
- The **Indian Air Force (IAF)** plays a critical role, with nearly **all types of its aircraft**, including **Rafale, Su-30MKI, Chinook, Apache**, and others, supporting **Operation Meghdoot**.
- On the **medical front**, **telemedicine capabilities** have been expanded with the help of **ISRO**, while **medical facilities at Partapur and Base Camp** are equipped with **top-notch medical and surgical specialists, high-altitude pulmonary oedema (HAPO) chambers, and oxygen generation plants**, enhancing the medical support available to the troops stationed there.

What next?

- **Siachen's strategic importance** is accentuated by its location overlooking the **Shaksgam Valley**—part of **Pakistan-Occupied Kashmir (POK)** and near an area ceded by **Pakistan to China** in **1963** following the **India-China war**.

Shaksgam Valley:

- The **Trans-Karakoram Tract**, also known as the **Shaksgam Tract**, covers approximately 5,200 km² and is **located north of the Karakoram watershed**, mainly comprising the **Shaksgam Valley**.
- This area is administered by **China** as part of **Taxkorgan** and **Yecheng counties** in the **Xinjiang Uyghur Autonomous Region**.
- Historically, the tract was under **Pakistan's control since 1947**, but through the **1963 Sino-Pakistan Agreement**, **Pakistan recognized Chinese sovereignty over the area**, with **both countries agreeing on a border based on actual ground positions**.
- **India** claims the **Shaksgam Tract** as part of the **broader dispute over the Kashmir region**.
- The region was historically part of **Shigar** in the **Baltistan region**, with cultural ties indicated by infrastructure like polo grounds and local names for geographical features in **Balti/Ladakhi languages**.
- The area is characterized by **extreme terrain with high mountains**, bounded by the **Kunlun Mountains to the north** and the **Karakoram peaks**, including **K2 and Broad Peak, to the south**.
- The **southeast of the tract** is adjacent to the **Siachen Glacier region**, known as the **highest battlefield in the world**, currently controlled by **India**.

Source: [TH](#)

Acidification may strip Indian soils of 3.3 billion tonnes of essential carbon, affecting crop growth, sequestration: Study

Subject: Science and tech

Section: Health

Context:

- A recent study has raised concerns about the **significant loss of soil inorganic carbon (SIC) due to soil acidification in India**, where over **30% of cultivable land carries acidic soil**.

Details:

- This **acidification**, primarily **driven by industrial activities and intensive farming**, is projected to lead to a loss of **3.3 billion tonnes of SIC** from the **top 0.3 meters of soil** over the **next 30 years**.
- **SIC**, which includes **mineral forms like calcium carbonate**, is crucial for **regulating nutrient levels, fostering plant growth, and carbon storage**.
- The study highlights that **acidic soils**, particularly **prevalent in India's humid southwestern, northeastern, and Himalayan regions**, **reduce the availability of nutrients to plants and increase susceptibility to stress factors**.
- With a focus mainly on **soil organic carbon (SOC)** in past research, **SIC** has been relatively neglected, though it is a **substantial carbon pool**.
- **Soils store more than thrice the quantity of carbon in vegetation or double the quantity of carbon in the atmosphere**.
- The findings underscore the **global importance of SIC**, with estimates that **global soils store approximately 2,305 billion tonnes of carbon as SIC**.
- **India**, along with **China**, faces **significant future risks** due to ongoing **soil acidification**, exacerbated by **nitrogen fertilization and deposition**.
- The **potential relocation of lost SIC to deeper soil layers** or its release into the **atmosphere or water bodies** remains a concern.
- The study calls for more **comprehensive assessments of soil pH and strategies to mitigate the negative impacts of agricultural practices on SIC**, emphasizing the role of **SIC in climate change mitigation and carbon sequestration efforts**.

Soil Organic Carbon (SIC):

- Soil organic carbon (SOC) comes from plants, animals, microbes, leaves and wood, mostly found in the first metre or so.
- Soil organic carbon is a **measurable component of soil organic matter**. Organic matter makes up **just 2–10% of most soil's mass** and has an important role in the physical, chemical and biological function of agricultural soils.
- Organic matter contributes to **nutrient retention** and turnover, **soil structure, moisture retention and availability**, degradation of pollutants, and carbon sequestration.
- **Soil organic matter** is composed mainly of **carbon, hydrogen and oxygen**, and has small amounts of other elements, such as nitrogen, phosphorous, sulfur, potassium, calcium and magnesium contained in organic residues.
- It is **divided into 'living' and 'dead'** components and can range from very recent inputs, such as stubble, to largely decayed materials that might be many hundreds of years old. About 10% of below-ground SOM, such as roots, fauna and microorganisms, is 'living'.

Source: [DTE](#)

Nigeria makes history with rollout of new 5-in-1 meningitis vaccine

Subject: Science and tech

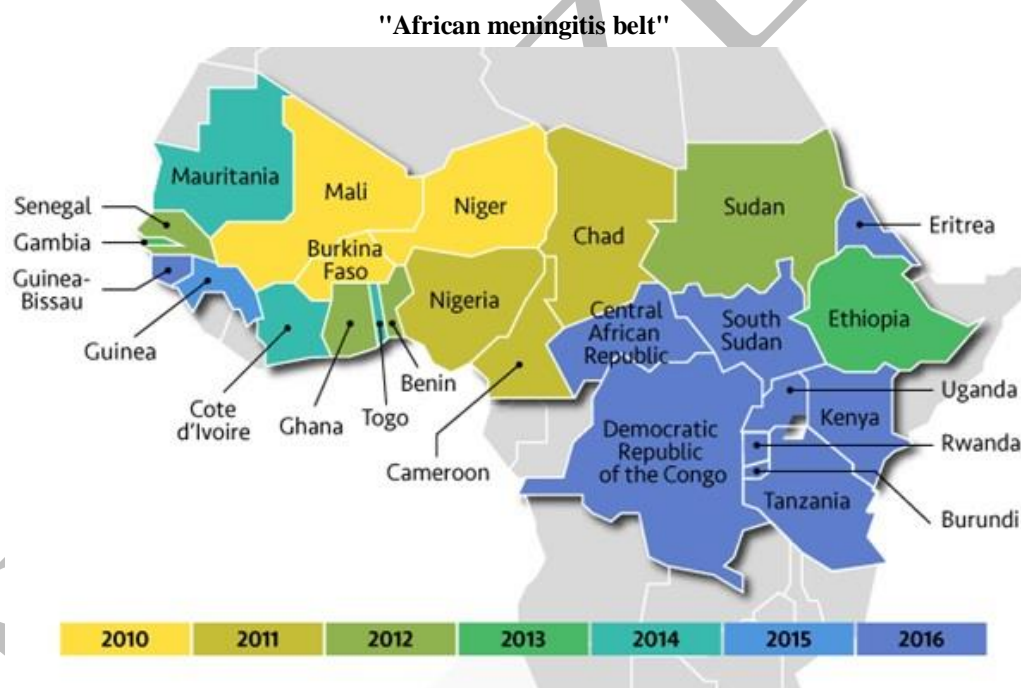
Section: Health

Context:

- Nigeria has become the **first country globally** to introduce **Men5CV**, a **new vaccine** endorsed by the **World Health Organization (WHO)**, which **protects against five strains of the meningococcus bacteria** responsible for **meningitis**.

Details:

- This **new vaccine** significantly enhances **protection** compared to previous vaccines that **targeted fewer strains**, marking a **major advance** in the **global fight against meningitis**.
 - It protects against strains **A, C, W, Y and X** of the **meningococcus bacteria**, all of which can **cause meningitis and blood poisoning**.
- The disease, which **inflames the brain and spinal cord membranes**, can lead to severe health issues including **brain damage** and **hearing loss**.
- The **introduction** of **Men5CV** is particularly relevant for the "**African meningitis belt**," an area spanning **26 countries**, including **Nigeria**, where **bacterial meningitis** is prevalent. Last year, **meningitis cases in Africa** surged by **50%**, underscoring the urgency for improved vaccination strategies.
- The **vaccine rollout** contributes to the **WHO's goal of eradicating meningitis by 2030**. Funded by **Gavi, the Vaccine Alliance**, the **campaign** enhances the **vaccine's accessibility**, ensuring **broader protection**.
- Following a recent **outbreak in Nigeria**, which led to numerous cases and deaths, a **targeted vaccination campaign** was **launched, aiming to immunize over a million people** between the **ages of 1 and 29**. This step could significantly reduce the incidence of the disease and prevent future outbreaks.
 - The outbreak occurred across **seven out of Nigeria's 36 states**: Adamawa, Bauchi, Gombe, Jigawa, Katsina, Yobe and Zamfara.



Meningitis:

- **Meningitis** is an **inflammation (swelling)** of the **protective membranes** covering the **brain and spinal cord**. These membranes are called **meninges**.
- The **most common causes** of **meningitis** are **viral and bacterial infections**. Other causes may include:
 - cancer
 - fungi
 - drug-induced reactions
- **Transmission:** Infections that cause meningitis can be spread through sneezing and coughing.
- **Symptoms:**
 - Common symptoms of meningitis are neck stiffness, fever, confusion or altered mental status, headaches, nausea and vomiting.

- Less frequent symptoms are seizures, coma and neurological deficits (for example hearing or vision loss, cognitive impairment, or weakness of the limbs).
- **Types of meningitis** caused by **viruses or bacteria** can have **similar symptoms**. Symptoms may be stronger in some types of meningitis than in others and require different treatments.
- **Treatment and Prevention:**
 - **Meningitis** is a **medical emergency**. It is potentially **fatal** within **24 hours** and requires **urgent medical attention**.
 - **Meningitis** can vary in **severity**, appropriate treatment and care depending on the cause. **Meningitis** caused by **bacteria** requires **immediate antibiotic treatment**.
 - **Vaccines** offer the **best protection** against **common types of bacterial meningitis**.
 - **Antibiotics** for **close contacts** of those with meningococcal disease, when given promptly, **decrease the risk of transmission**.

Source: [DTE](#)

Report claims Nestle adds 2.7 g sugar in every serving of Cerelac in India: What does this mean for you?

Subject: Science and tech

Sec: Health

Context:

- According to a report by a **Swiss NGO, Public Eye and International Baby Food Action Network (IBFAN)**, **Global food and beverage giant Nestle** sells baby products with higher sugar content in poorer south Asian (including India), African and Latin American countries as compared to markets in Europe.

More on news:

- Around 150 baby products sold in different counties were scrutinized for the report, which found them to contain sugar over and **above international food safety guidelines**.
- According to government officials, **lab reports of the Indian samples will be sought from IBFAN** and placed before the **Food Safety and Standards Authority of India (FSSAI) for examination**.
- The report claims that Nestle's wheat-based product, Cerelac, for six-month babies, which is sold without any added sugars in the UK and Germany, contained 2.7 grams of added sugar per serving in India.

What are added sugars?

- Added sugars are **sweetening agents such as syrups that are added in processed foods and beverages**.
- This is considered to be more harmful than the **naturally occurring sugars found in fruits and milk**.
- Added sugars or free sugars are **sugar carbohydrates (caloric sweeteners)** added to food and beverages at some point before their consumption.
- These include added **carbohydrates (monosaccharides and disaccharides)**, and more broadly, **sugars naturally present in honey, syrup, fruit juices and fruit juice concentrates**.
- They can take multiple **chemical forms, including sucrose (table sugar), glucose (dextrose), and fructose**.

Types of sugar

Natural sugar

Natural sugar refers to the sugar that is naturally present in whole, unprocessed foods and drinks. It may also be called **intrinsic sugar**.

Examples:



Fruit



Milk



Yoghurt
(unflavoured)

Added sugar

Added sugar is sugar added to foods and drinks during processing, cooking or before eating or drinking.

Examples:



Sucrose
(white sugar)



Brown
sugar



Rice malt
syrup



Maple
syrup



Coconut
sugar

Limit added sugar consumption to
6 teaspoons (24 grams) or less, per day.

HOW MUCH
SUGAR
IS HIDING IN YOUR TROLLEY?

Dental Health Week
3 - 9 AUGUST



Natural Sugar Vs Added Sugar What's the difference?

Natural Sugar

Those sugars found naturally occurring in foods such as fruits, vegetables, plain dairy, nuts, seeds & grains. These do not count towards daily sugar intake & consumption does not need to be reduced as these foods provide many nutrients.



Fresh fruit and vegetables



Frozen fruit
or vegetables



Dried fruit



Tinned
fruit or
vegetables
(in water or
juice)



Nuts and seeds



Plain milk and
yoghurts



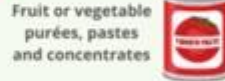
Grains such
as rice, flour,
oats etc.

Added Sugar

These get added to foods and drinks during manufacturing, in the home, by chefs or occur during food processing such as juicing. We need to reduce the amount of these sugars. Added sugar is also referred to as free sugar.



Honey, syrups,
and nectures



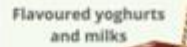
Fruit or vegetable
purées, pastes
and concentrates



Juices and
smoothies
(more than
150ml per day)



White sugar, brown
sugar, organic sugar,
coconut sugar etc.



Flavoured yoghurts
and milks



Cakes, chocolate,
soft drinks and
other confectionery

THE
NUTRITION
CONSULTANT

Why are added sugars harmful?

- The WHO advises against the **introduction of added sugars before the age of two years to prevent addictive eating habits.**
- This exposure can **lead to weight gain, obesity and an increased risk of developing chronic diseases such as type 2 diabetes, heart disease and certain types of cancer later in life.**
- Additionally, **high sugar consumption in infancy has been associated with an increased risk of dental caries (tooth decay) and poor nutrient intake, as sugary foods often displace more nutritious options in a child's diet.**

What do Indian guidelines say?

- They **do not prescribe any upper limit for added sugars.**
- The regulations allow use of **corn syrup and malt in cereal-based infant food.**

- It also allows the use of **sucrose and fructose** as a carbohydrate source, provided it makes up less than 20 percent of the carbohydrates in the food.

Randomised Control Trials: the technique that transformed TB treatment

Subject: Science and tech

Sec: Health

Context:

- Despite the discovery of the **TB bacterium** in **1882**, **effective treatments** were **not available for many years**, resulting in **countless deaths** across **different social strata**.
- Today, nearly a century later, the **treatment and management of TB** have **improved significantly**. The goal is now to **eliminate tuberculosis globally by the end of the decade**.
- The theme of **World TB Day in 2024** is “Yes, we can end TB”.

Historical Context of TB:

- **TB**, caused by **Mycobacterium tuberculosis**, has plagued humanity for millions of years, with its **presence traceable** back to the **dawn of civilization**.

Introduction of Antibiotics:

- The **discovery of antibiotics** by **Sir Alexander Fleming** initiated a new phase in **combating TB**. However, the **true revolution in TB treatment** came through the **pioneering work** of **Sir Austin Bradford Hill**.

Contributions of Sir Austin Bradford Hill:

- He introduced the **randomized control trial technique** at the **British Medical Research Council (BMRC)**.
- This **methodology** was employed in one of the **first randomized clinical trials** to **assess the efficacy of antibiotics against TB**.
- Hill is also renowned for establishing **early ethical guidelines for clinical trials**, thereby **setting new standards for scientific integrity in medicine**.

Randomized Clinical Trials (RCTs):

- **RCT** is a form of **scientific experiment** used to **control factors** not under direct experimental control.
- **Examples of RCTs** are clinical trials that compare the effects of drugs, surgical techniques, medical devices, diagnostic procedures, diets or other medical treatments.
- **Participants** who **enroll in RCTs** differ from one another in known and unknown ways that can influence study outcomes, and yet cannot be directly controlled.
- By randomly allocating participants among compared treatments, an **RCT** enables **statistical control over these influences**. Provided it is designed well, conducted properly, and enrolls enough participants, an **RCT** may achieve **sufficient control over these confounding factors** to deliver a **useful comparison of the treatments studied**.

Impact of Randomized Clinical Trials (RCTs):

- **RCTs** have revolutionized modern medicine by providing a **systematic, unbiased method to assess the efficacy of treatments and interventions**.
- This **technique** has **underpinned numerous medical advancements**, including the **development of therapies for heart attacks, HIV, mental health conditions, and COVID vaccines**.
- **Hill's** application of **RCTs** to test **streptomycin** significantly **changed TB treatment**. His research **not only proved the antibiotic's effectiveness against TB** but also **optimized its dosage**, transforming streptomycin from a laboratory discovery into a practical treatment.
- This **shifted TB management** from **specialized surgeons to primary care settings**.
- Beyond **TB**, **Hill** contributed foundational principles to **epidemiology** with his '**Bradford Hill Criteria**.'
- These **nine criteria** (strength, consistency, specificity, temporality, biological gradient, plausibility, coherence, experiment, analogy) provide a framework for establishing **causality in epidemiology**.
- They have been instrumental in **linking various factors** with **health outcomes**, such as the **relationship between smoking and lung cancer, alcohol and cardiovascular disease, and sugary drinks with obesity**.
- **Influence on Public Health Policy:**
 - The **impact of his work extends beyond TB treatment, influencing public health policies** and providing a **robust framework** for establishing causal relationships in **epidemiology**.
 - **Hill's research on smoking and lung cancer**, in particular, provided conclusive evidence that **countered tobacco industry misinformation**, leading to significant changes in public perception and health policies regarding tobacco use.

Source: [TH](#)

WHO defines pathogens that transmit through air

Subject: Science and tech

Sec: Health

Context:

- The **World Health Organization (WHO)** has standardized the term "**infectious respiratory particles**" (IRPs) to describe pathogens that **transmit through the air**. This initiative resolves the **lack of common terminology** previously evident, particularly during the **COVID-19 pandemic**.

Details:

- The decision was made after **extensive consultations** held between **2021** and **2023** involving multiple steps and contributions from various sectors to address the challenges experienced during the **COVID-19 crisis**, including **inconsistencies in terminology** which **affected public communication and intervention strategies**.
 - The consultation involved diverse and leading public health experts, coordinated by **WHO Chief Scientist Jeremy Farrar** and **co-chair Gagandeep Kang**, reflecting a significant **collaborative effort** across **multiple disciplines**.
- **Infectious Respiratory Particles (IRPs)** are related to **respiratory infections** caused by **pathogens** such as **COVID-19, influenza, measles, MERS, SARS, and tuberculosis**, among others. These particles are **expelled** by **infected individuals** through various actions like **breathing, talking, and sneezing**.
- The **WHO** emphasized that **IRPs vary continuously in size** without a clear boundary to distinguish **smaller particles** from **larger ones**, helping move away from the previous binary classification of '**aerosols**' and '**droplets**'.
- **Global Collaboration:**
 - The **terminology** was finalized through a **global technical consultation report**, reflecting a consensus among the **WHO** and **major public health agencies** including the **Africa CDC, Chinese CDC, European CDC, and US CDC**.
- **Impact and Future Directions:**
 - The agreed terminology **aims to standardize communication** and **enhance public health responses to airborne diseases**.
 - It sets a **foundation for future research** and the **implementation of interventions**.
 - Further steps include **ongoing technical research** and **exploring broader implications** of these terminological updates.
- **Broader Transmission Descriptors:**
 - Additionally, the term "**through the air**" is recommended for **general use** in describing diseases with **airborne transmission**, with **sub-categories** of '**airborne transmission or inhalation**' and '**direct deposition**' for more specific cases.

Source: [TH](#)

Report claims Nestle adds 2.7 g sugar in every serving of Cerelac in India: What does this mean for you?

Subject: Science and tech

Sec: Health

Context:

- According to a report by a **Swiss NGO, Public Eye and International Baby Food Action Network (IBFAN)**, **Global food and beverage giant Nestle** sells baby products with higher sugar content in poorer south Asian (including India), African and Latin American countries as compared to markets in Europe.

More on news:

- Around 150 baby products sold in different countries were scrutinized for the report, which found them to contain sugar over and **above international food safety guidelines**.
- According to government officials, **lab reports of the Indian samples will be sought from IBFAN** and placed before the **Food Safety and Standards Authority of India (FSSAI) for examination**.
- The report claims that Nestle's wheat-based product, Cerelac, for six-month babies, which is sold without any added sugars in the UK and Germany, contained 2.7 grams of added sugar per serving in India.

What are added sugars?

- Added sugars are **sweetening agents such as syrups that are added in processed foods and beverages**.
- This is considered to be more harmful than the **naturally occurring sugars found in fruits and milk**.
- Added sugars or free sugars are **sugar carbohydrates (caloric sweeteners)** added to food and beverages at some point before their consumption.

- These include added carbohydrates (monosaccharides and disaccharides), and more broadly, sugars naturally present in honey, syrup, fruit juices and fruit juice concentrates.
- They can take multiple chemical forms, including sucrose (table sugar), glucose (dextrose), and fructose.



Why are added sugars harmful?

- The WHO advises against the introduction of added sugars before the age of two years to prevent addictive eating habits.
- This exposure can lead to weight gain, obesity and an increased risk of developing chronic diseases such as type 2 diabetes, heart disease and certain types of cancer later in life.
- Additionally, high sugar consumption in infancy has been associated with an increased risk of dental caries (tooth decay) and poor nutrient intake, as sugary foods often displace more nutritious options in a child's diet.

What do Indian guidelines say?

- They do not prescribe any upper limit for added sugars.
- The regulations allow use of corn syrup and malt in cereal-based infant food.
- It also allows the use of sucrose and fructose as a carbohydrate source, provided it makes up less than 20 percent of the carbohydrates in the food.

Glycemic index of diets: importance beyond diabetes control

Subject: Science and tech

Sec: Health

Glycemic Index (GI):

- The concept of the **Glycemic Index (GI)** was introduced by **Prof. David Jenkins** in **1981** to measure how different foods affect blood glucose levels.
 - **GI** is a number from **0** to **100** assigned to a food, with **pure glucose** arbitrarily given the **value of 100**, which represents the **relative rise in the blood glucose level two hours after consuming that food**.
 - The **GI** of a **specific food** depends primarily on the **quantity** and **type of carbohydrate it contains**, but is also affected by the **amount of entrapment of the carbohydrate molecules** within the food, the **fat** and **protein content** of the food, the **amount of organic acids** (or their salts) in the food, and whether it is cooked and, if so, how it is cooked.
 - **Foods** are ranked based on how they **compare to glucose or white bread (GI of 100)**, and categorized into **low (less than 55)**, **medium (56-69)**, or **high (over 70) GI**.
- The **Glycemic Load (GL)** is calculated by multiplying the **GI** by the **amount of carbohydrates consumed**.
- While some nutritionists caution against **diets high in GI** due to their link to **type 2 diabetes** and **support low GI diets**, others argue that focusing solely on **GI** overlooks the **quality** of other **macronutrients** like **proteins and fats**.
- Significant research, including the **international PURE study** which included over **137,851 participants** from **20 countries**, supports the importance of **GI** and **GL** in diet.
- This research found that **high GI diets** are associated with a **higher risk of major cardiovascular events and mortality**, extending the concern over **high GI diets** beyond **diabetes** to include **heart health**.
- This is particularly relevant in regions like **India** and **South Asia**, where diets predominantly consist of **high GI foods** like **white rice and wheat**, leading to **high GL** and **increased risks of diabetes** and **early-onset cardiovascular diseases**.
- To combat these **health risks**, it is recommended to shift towards **lower GI diets**, including foods like **brown rice, legumes, fruits, and vegetables**, combined with regular **physical activity**.
- This could significantly help in **reducing the incidences of diabetes and cardiovascular diseases**.

Why are sugary processed foods harmful?

Subject: Science and tech

Sec: Health

Why is it problematic to label malt-based, sugary milk products as 'health' drinks?

- Labeling **malt-based, sugary milk products** like **Bournvita** as **'health' drinks** is problematic because they contain **high levels of sugar**, which can be misleading to consumers seeking healthy options.
- A typical product contains **86.7g of carbohydrates per 100g**, with **49.8g** being **sugars**, including **37.4g of added sucrose**.
- Each recommended **20g serving** includes nearly **10g of sugar**.
- The **malting process**, originally used in **whiskey production**, converts **cereal starch into sugar**, adding to the **drink's sugar content** through **naturally occurring sugars** like **maltose**, as well as **added sugars** such as **maltodextrin** and **liquid glucose**.
- This **high sugar content** poses a **health risk**, particularly in terms of **obesity** and **diabetes**, contradicting the **'health' drink label**.

What is FSSAI's stand on sugar content?

- The **Food Safety and Standards Authority of India (FSSAI)** specifies in its **2018** regulations that **only products containing less than 5g of total sugar per 100g** can be marketed as **'low on sugar'** and by extension, potentially **'healthy.'**
- Products that do not meet this criterion but are still advertised as **'health drinks'** present a concern. This is particularly troubling for children who may consume multiple servings, potentially exceeding the **World Health Organization's recommended daily sugar intake of 25 grams (about six teaspoons)**.
- The issue is compounded in **Indian households** where it is **common to add extra sugar to these drinks**, further increasing sugar consumption.

What is the controversy over baby food?

- The controversy over **baby food**, specifically **Nestlé's Wheat Apple Cherry Cerelac** for **children aged eight to 24 months**, centers on its **high sugar content—24 grams per 100 grams**.
- This level of sugar intake, **primarily from ingredients like milk solids and maltodextrin**, is considered harmful by experts.

- The concern is that **infants transitioning from breast milk**, which contains the **naturally less sweet sugar lactose**, to these **sugary foods** are **exposed to excessive sugar**.
- This can **strain a baby's pancreas**, potentially leading to **increased insulin production**, and **raising risks of future diabetes and obesity**.
- Additionally, ingredients like **maltodextrin**, which has a **higher glycemic index than table sugar**, can contribute to conditions like **fatty liver** and **insulin resistance**.
- This issue is particularly alarming given the **high rates of diabetes in India**, with an estimated **101.3 million people** possibly affected.

Will an FSSAI probe be enough to curb the practice of misleading labels?

- The FSSAI's **draft notification** from September 2022 defines **high fat, sugar, salt (HFSS) foods** and aims to **guide consumer awareness through front-of-pack labelling**.
- However, the **regulation** remains ambiguous about whether companies are required to **explicitly declare fat, sugar, and salt content** on the **front of packaging**.
- Additionally, the FSSAI proposes using '**health rating stars**' instead of more **direct warning labels**.
- Critics argue that **health stars might confuse consumers** who lack the time or expertise to interpret these ratings based on the **FSSAI's criteria for sugar and fat content**. This suggests that an FSSAI probe, in its current form, may not sufficiently curb the practice of misleading labels without clearer, more direct labeling requirements.

Way forward:

- The way forward in addressing misleading food labels and marketing involves **revising current regulations** and **developing clearer definitions** of '**healthy**' and '**unhealthy**' foods and beverages.
- The existing regulations, like the **Food Safety and Standards (Foods for Infant Nutrition) Regulations of 2019**, **permit certain sugars in infant nutrition**, suggesting these **rules need reconsideration to better protect consumers**.
- Additionally, comprehensive regulations on **front-of-pack labeling** and **definitions of high fat, sugar, and salt foods** have been proposed but have not progressed effectively.
- Despite regulations that **prohibit the promotion of infant foods** through advertising, **violations occur**, including **promotions by social media influencers**.
- Moreover, partnerships like that of **Hindustan Unilever Limited** with the **Pune Zilla Parishad**, where **Horlicks is added to midday meals** and **branded as a health food**, demonstrate the ongoing challenges in ensuring truthful health claims.

Amid avian flu fears, Kerala's Alappuzha district reports more bird deaths

Sub: Science and tech

Sec : Health

Context:

- **Mass bird deaths** in **Muttar** and **Ambalappuzha North, Alappuzha**, have raised concerns about a potential **avian flu outbreak**.

Details:

- Samples from these locations have been sent to the **Avian Disease Diagnostic Laboratory** in Thiruvalla, which suspects **avian flu**.
- For confirmation, these samples are being forwarded to the **National Institute of High-Security Animal Diseases** in **Bhopal**. Results are expected soon.
- After confirming the **H5N1 subtype** of the **Influenza A virus** in **ducks** at **Edathua** and **Cheruthana panchayats**, rapid response teams from the Animal Husbandry Department culled 17,480 birds, primarily ducks, within a one-kilometre radius of the identified hotspots.
- Given the **rare possibility of avian influenza transmitting to humans**, the Health Department has intensified **preventive measures** and **surveillance** within a 10-kilometre radius of the affected areas, urging the public to remain cautious.

H5N1 subtype of Avian Influenza A virus:

- **Animal influenza A viruses** usually **infect animals** but **can infect humans** primarily through **direct contact with infected animals or contaminated environments**.
- **Influenza A viruses** are categorized based on their **host origin**, such as **avian influenza**, **swine influenza**, or **other animal influenza viruses**.
- **Human infections** with **avian influenza** can range from **mild respiratory issues** to **severe and fatal diseases**. Symptoms can include **conjunctivitis**, **gastrointestinal issues**, and **neurological symptoms like encephalitis**.
- Some cases of **A(H5N1) avian influenza** have been found in **asymptomatic individuals** who had contact with infected birds.

- **Prevention and cure:**
 - Diagnosis of human influenza infection requires laboratory tests, with RT-PCR being a key method as updated periodically by the WHO.
 - **Antiviral drugs**, particularly **neuraminidase inhibitors** like **oseltamivir** and **zanamivir**, have shown **effectiveness in reducing viral replication** and improving survival chances.
- **Spread across species:**
 - The **A(H5N1) virus** from the **Gs/GD lineage, clade 2.3.4.4b of Eurasian origin**, has been found in **U.S. birds** since **2022** and in **dairy herds** in **Texas** and **Kansas** as of late March 2024.
 - The **first human case of A(H5N1)** in the **U.S. in 2024** involved **transmission from an infected mammal**, marking a **rare occurrence of mammal-to-human transmission** for this **virus subtype**.
 - Previous instances of **A(H5) virus** in **humans** have seen small clusters, including health workers, with potential limited human-to-human transmission, but **no sustained human-to-human transmission has been recorded**.

ICAR- National Institute of High-Security Animal Diseases:

- Located in **Bhopal, Madhya Pradesh**.
- **Vision-** Mitigating risks of known and unknown **emerging infectious diseases** in animals including **zoonotic infections** at the **human-animal interface** through the **forecast, early detection of pathogens, emergency preparedness with diagnostics and vaccines** while keeping vigil on **changing host-pathogen and environment interactions** and creating understanding of **potential bio-risks and disease threats** among stakeholders.

Source: [TH](#)

The 'genomic accordion' mpox viruses use to evolve, infect humans

Sub: Science and tech

Sec : Health

Smallpox and its eradication:

- **Poxviruses**, particularly **smallpox**, have historically been a **major concern, killing over 500 million people** in the **last century**. **Smallpox** affected people regardless of **age, wealth, or status**, with a **mortality rate of about one-third of those infected**.
- The discovery of the **vaccine's effectiveness** marked a turning point, leading to a **global vaccination campaign** that **successfully eradicated the disease**.
- This achievement highlights the impact of **persistent global public health efforts**.

Mpox:

- It is a **viral zoonotic disease** caused by the **monkeypox virus**.
- The **first human case of mpox** was recorded in **1970** in the **Democratic Republic of the Congo (DRC)**.
- There are **two known types (clades) of mpox virus** — one that originated in **Central Africa (Clade I)** and one that originated in **West Africa (Clade II)**.
- **Symptoms:** Common symptoms of mpox are a skin rash or mucosal lesions, which can last 2–4 weeks accompanied by fever, headache, muscle aches, back pain, low energy, and swollen lymph nodes.
- **Transmission:** Human-to-human transmission of mpox occurs through direct contact with body fluids, lesions, prolonged face-to-face contact, including sexual contact, and indirect contact with contaminated clothing or bedding.
- **Treatment:** There are no specific treatments for monkeypox virus infection. Early and supportive care is important to help manage symptoms and avoid further problems.
- **Global outbreak:**
 - **Mpox**, previously known as **monkeypox**, gained significant attention during a **global outbreak spanning 2022-2023**.
 - The virus, initially identified after a **spillover event** in **1958**, was found to have **adapted and mutated over time**, largely influenced by **APOBEC proteins**.
 - The spread was **primarily** due to the **highly transmissible IIB clade**, which spread through **close personal and sexual contact**.

Genomic accordions:

- **Mpox**, part of the **DNA-based poxvirus family**, has a **genome** of approximately **197 kilobases (kb)** that **includes core genes shared among poxviruses** and **two unique sections** of about **6.4 kb each** at the **genome ends**, though their **functions are not yet fully understood**.
- Researchers believe these **sections** might affect the **virus's ability to infect different hosts**.
- Additionally, the **genome features repeating base sequences** thought to influence the **virus's evolutionary path**.

- **Mpox** can respond to **evolutionary pressures** by either **expanding its genome through gene duplication and mutation accumulation** or **contracting by deleting or deactivating gene segments**, a process known as **genomic accordions**.

Study on Mpox outbreak of 2022:

- Conducted by: **Icahn School of Medicine in New York** along with several Spanish institutions.
- Used **advanced genome sequencing** to analyze the **mpox virus** from the **2022 outbreak**.
- **Key highlights:**
 - **Previously underestimated 6.4-kb sections** of the **virus's genome**—referred to as **genomic accordions**—significantly **influence its transmissibility between humans**.
 - Additionally, variations in **three specific genes** were noted to potentially affect the **virus's evolution**.
 - The study also underscored that the **2022 outbreak** was predominantly caused by a **new lineage within Clade IIb**, which was found to be **more adept at human-to-human transmission** compared to the earlier **clades I or IIa**.

The outbreak in DR Congo:

- A significant **mpox outbreak (2023-24)** occurred in the **Democratic Republic of the Congo (DRC)**, originating in a **mining village** and **rapidly spreading to various regions**.
- This outbreak, characterized by a **broader spread** and **higher mortality**, was linked to the **mpox Clade I**. Unlike previous outbreaks that were **sporadic** and **limited to spillover events**, this one propagated through **human-to-human contact** and **predominantly affected young adults instead of children**.
- The analysis indicated a **specific lineage of Clade I** that facilitated **human-to-human transmission**, with **evidence** suggesting this **lineage may have arisen from a recent zoonotic spillover**.

Source: [TH](#)

Is your masala pack upping your cancer risk? FSSAI doesn't permit use of ethylene oxide in any food product.

Subject: Science and tech

Sec: Health

Context:

- Authorities in **Hong Kong and Singapore** withdrew four spice mixes from two of India's top manufacturers, **MDH and Everest**, after finding high levels of the carcinogen ethylene oxide in them.

More on news:

- If the **two manufacturers are found guilty**, **action would be taken as per the Food Safety Act**.

What is ethylene oxide?

- **Ethylene oxide is a pesticide that has been classified as a Group 1 carcinogen** by the International Agency for Research on Cancer, meaning there is sufficient evidence from human studies that it can cause cancer.
- It is used by the **spice industry as a fumigant to reduce microbial contamination**, such as **E. coli and Salmonella**.
- It is a **colorless, highly flammable and very reactive gas that kills bacteria, viruses and fungi**.
- **It is an industrial chemical**.

'HEALTH, INT'L TRADE WILL BE HIT'

<ul style="list-style-type: none"> • Public policy expert D Narasimha Reddy terms decision to raise in pesticide limits in spices as most unscientific 	
<ul style="list-style-type: none"> • Earlier, maximum residue limit (MRL) was 0.01 mg/kg & now it has been raised to 0.1 mg/kg which is 10 times higher, he said 	
<ul style="list-style-type: none"> • Central Insecticides Board and Registration Committee (CIBRC) does not do field trials of pesticides 	<ul style="list-style-type: none"> • However, FSSAI order stated that CIBRC field trial data has been relied upon to arrive at MRLs
<ul style="list-style-type: none"> • Pesticide Action Network's Dileep Kumar said presence of residues increased from 22.6% in 2018 to 35.9% in 2022 	<ul style="list-style-type: none"> • This relaxation will mean Indian spices export will face more rejections, he said

How can ethylene oxide impact your health?

- Ethylene oxide can damage **DNA during sterilization procedures.**
- While the risk from **occasional, low-level exposure may be minimal, spices and spice blends** like those flagged are commonly used in household cooking across multiple dishes.
- This can lead to **chronic, persistent exposure over time, which has been linked to an increased risk of cancers like leukemia, stomach cancer and breast cancer.**
- It can even lead to **respiratory irritation and lung injury, headache, nausea, vomiting, diarrhea and shortness of breath.**

Where else is ethylene oxide banned?

- **Ethylene oxide was banned by the European Union (EU) in 2011** for fumigation of food and animal feed during transport and storage.
- The use of **ethylene oxide is now only permitted** in disinfection and sterilization of medical devices.

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Powerful antidote to toxins in cobra, krait venoms developed

Subject: Science and tech

Sec: Health

Context:

- Annually, **snakebites** result in over **100,000 deaths** and leave **approximately 400,000 people permanently disabled**. The burden is particularly severe in **low and middle-income countries in Africa and Asia**.

Details:

- In **India** alone, about **58,000 people die each year from snake bites**, as reported in 2020.
- Despite its **severity**, **snakebite envenoming** is often overlooked and termed a "**poor man's disease**," leading to insufficient attention and resources directed toward addressing its impacts.
- **High incidence rates of snakebites combined with poor access to adequate healthcare** in some countries result in a **high number of fatalities**.
- In **2017**, the **World Health Organization (WHO)** recognized the severity of the issue by classifying **snakebite envenoming** as the **highest priority neglected tropical disease**, aiming to **raise global awareness and response**.

Antivenom:

- **Antivenom**, also known as **antivenin**, **venom antiserum**, and **antivenom immunoglobulin**, is a **specific treatment for envenomation**.
- It is composed of **antibodies** and used to treat certain **venomous bites and stings**.
- Antivenoms are recommended **only if there is significant toxicity or a high risk of toxicity**.
- The specific antivenom needed depends on the species involved. It is given by **injection**.
- Due to the **high cost of producing antibody-based antivenoms** and their **short shelf lives when not refrigerated**, alternative methods of production of antivenoms are being actively explored.
 - One such different method of production involves **production from bacteria**.
 - Another approach is to **develop targeted drugs** (which, unlike antibodies, are usually synthetic and easier to manufacture at scale).
- Antivenom was **first developed** in the **late 19th century** and came into common use in the **1950s**.
- It is on the **World Health Organization's List of Essential Medicines**.

Traditional method used for the production of antivenom:

- The **production of antivenom** currently relies on an outdated method where **horses** are injected with **snake venom**, and their **blood is harvested for antibodies**.
- However, this process also **yields antibodies irrelevant to human treatment** and **increases the variability and dosage required for antivenoms**.
- Moreover, the **use of animal-derived antibodies** heightens the **risk of adverse or allergic reactions in humans**.

Development of synthetic human antibodies to neutralize venoms:

- Prompted by concerns about **traditional antivenom production**, a consortium funded by the **Wellcome Trust** and led by scientists, including **Kartik Sunagar** of the **Indian Institute of Science in Bengaluru**, has **developed a synthetic human antibody** that can broadly **neutralize a common toxin found in various snake venoms**.
- This new approach **addresses the problem of regional and species-specific venom variations** that make existing **antivenoms less effective**.
- The researchers **aim** to create a more **universally applicable antivenom solution**.

Three-finger toxins (3FTxs) and α -neurotoxins:

- Researchers focused on creating an **antivenom against α -neurotoxins**, a subtype of **three-finger toxins (3FTxs)** found in the **venom of elapids** like **cobras** and **mambas**.
- These **toxins block receptors** that respond to the **neurotransmitter acetylcholine**, leading to **paralysis and potentially death**.
- To find an **effective antibody**, the team synthesized **variants of these toxins** and screened **billions of human antibodies displayed on yeast cells**, identifying those that most effectively bound to the toxins.
- This process enabled them to select a group of antibodies that could **neutralize various 3FTx variants**, offering a potential advancement in antivenom development.

Antibody 95Mat5:

- Researchers conducted **in vitro tests** on **human cells with various antibodies**, identifying one named **95Mat5** as **highly effective** against **α -neurotoxins**.

- Dr.Sunagar’s group further tested this antibody **in vivo** in mice, using **lethal doses** of **α -bungarotoxin** from **many-banded kraits** and **whole venoms from king cobras, black mambas, and monocled cobras**.
- The **antibody 95Mat5** successfully protected mice from **all tested venoms except for king cobra venom**, where it **only delayed death**.
- Researchers noted a surprising **synergistic effect**, where **neutralizing a minor component of the black mamba’s venom** provided complete protection against the other toxins.

Potential for development of a ‘universal antivenom’:

- The antibody **95Mat5** could be key in **developing future antivenoms for snakes** like **mambas and cobras** in **Africa and Asia**.
- The study revealed that **95Mat5 binds precisely where the toxin would typically affect human nerve and muscle cells**, effectively **neutralizing the toxin** by preventing its deadly interaction.
- This finding is a significant step toward a **universal antivenom**, with ongoing research aimed at identifying similar antibodies for other snake venom toxins.

Source: [TH](#)

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Rising incidence of IBD cases across the globe is a cause for concern, say experts

Subject: Science and tech

Sec: Health

Context:

- The **global increase in Inflammatory Bowel Disease (IBD)** cases is **raising concerns among healthcare professionals.**

Details:

- **IBD**, which includes **Ulcerative Colitis** and **Crohn's Disease**, involves **inflammation** and **differs** from the **non-inflammatory Irritable Bowel Syndrome.**
- **Diagnosing IBD** is **complex** due to its **symptoms' similarity to other conditions.**
- Both **Ulcerative Colitis** and **Crohn's Disease** are **immune-mediated**, involving a **dysregulated immune response** influenced by **genetic markers, environmental factors, and gut bacteria.**
- Current trends show a **rising prevalence of IBD** in regions like **North America** and **Western Europe**, with predictions that the **prevalence in America** will **increase from 0.5% to 0.6%.**

Ulcerative Colitis and Crohn's Disease:

- Ulcerative colitis is a chronic inflammatory bowel disease (IBD) in which abnormal reactions of the immune system cause inflammation and ulcers on the inner lining of your large intestine.
- **Crohn's disease** is a **chronic (long-lasting) disease** that causes inflammation in one's digestive tract. It can affect any part of one's digestive tract, which runs from mouth to anus. But it usually affects the small intestine and the beginning of the large intestine.

Early onset:

- There is a **rising trend in early onset cases of Inflammatory Bowel Disease (IBD)** among those **under 18**, particularly noticeable in **India.**
- The challenge of diagnosing **Crohn's disease in India** is due to **its similarity in presentation to intestinal tuberculosis**, which is common in the region.
- **Lifestyle changes**, including a **Westernized diet high in fats and sugars**, along with **processed and packaged foods**, have **exacerbated the incidence of IBD** by **damaging the gut epithelium** and **promoting inflammation.**
- The **incidence of IBD in India** has **nearly doubled from 1990 to 2019**, with an accompanying **rise in the death rate.**
- A specific study in **Tamil Nadu** revealed a **higher prevalence of Crohn's Disease** compared to **Ulcerative Colitis**, with **50% of IBD cases being Crohn's Disease** and **40% Ulcerative Colitis.** Emphasis was placed on the importance of **early diagnosis** for more effective treatment.

Diagnosis of IBD:

- Challenges include- the **lack of a single diagnostic test** and the **necessity to differentiate** these from other mimicking diseases and infections.
- Diagnosis typically involves a **combination of physical exams, laboratory tests, and endoscopy.**
- **Treatment for IBD** includes- **faecal microbiota transplantation, biological therapies** that use **monoclonal antibodies**, targeting **specific inflammatory pathways**, thereby **reducing the need for hospitalizations and surgeries** and the **development of orally administered small molecules.**
- **The high cost of diagnosis** is a challenge.
- **Environmental factors** such as **smoking, antibiotics** and **highly processed foods** can **exacerbate inflammation.**
- Recommendations include **adhering to a healthy diet**, like the **Mediterranean diet**, which **avoids highly processed foods.**

Source: [TH](#)

Druggist association opposes Centre's move to sell over-the-counter medicines without license

Subject: Science and tech

Sec: Health

Context:

- The Central Government's proposal to permit the sale of **Over-The-Counter (OTC) drugs without a license in India** is **a cause of deep concern**, **warned the All India Organization of Chemists and Druggists (AIOCD).**

More on news:

- Such a move would contravene existing drug laws, pharmacy regulations, and pertinent legal frameworks, including directives from the Supreme Court.

About this Centre's move:

- Allowing OTC drug sales without proper regulation poses serious threats, **including drug abuse, increased risk of adverse drug reaction, delayed access to healthcare, possible compromise in storage of medicines etc.**
- The absence of **pharmacist consultation services, proliferation of counterfeit drugs, delayed access to healthcare services and inadequate pharmacovigilance measures are also cause of concern.**
- The group has also urged the government to consider the multifaceted implications of this proposal, emphasizing that unregulated availability of medications in general and grocery stores does not serve the best interests of society.

About Over-The-Counter (OTC) drugs:

- **OTC treats common, self-treated medical problems and symptoms like colds, mild discomfort, allergies, and other benign health issues.**
- The Union Government has proposed to bring **OTC medications into India through an amendment to the Drugs and Cosmetics Regulations** and permit their retail market sales without the need for a prescription.
- A list of OTC medicines which are permitted to be sold in shops will be authorized by the Drug Technical Advisory Board (DTAB) and could include drugs like — **antifungal creams, cough syrup, laxatives etc.**

Bombay HC prevents Cognizant from using trademark logo in India

Subject: Science and tech

Sec: IPR

- The Bombay High Court **issues a temporary prohibition against Cognizant Technology Solutions, preventing them from using their new trademark logo in India.**
- Allegations arise that Cognizant's logo closely resembles that of Bengaluru-based Atyati Technologies Pvt Ltd.
- Court acknowledges that a prima facie case in favor of Atyati Technologies and stating that the balance of convenience favors the plaintiff.
- The court's decision *mandates Cognizant to refrain from utilizing the trademark logo in India until further orders.*

Arguments presented in favor of Atyati Technologies:

- Atyati Technologies asserts that **Cognizant's logo closely resembles its own, discovered last October during Cognizant's provision of nearly identical services in IT infrastructure, software development for banking and financial services, and consulting services.**

Absence of justification from Cognizant

- Cognizant's use of the similar mark/logo could potentially lead to confusion among the public and within the trade community regarding any affiliation between the two entities.

Bombay High Court's ruling:

- The court acknowledges Atyati Technologies' strong case, asserting that **Cognizant's use of the impugned mark/logo is almost identical and/or deceptively similar to Atyati's registered marks.**
- Cognizant is directed to refrain from prominently featuring the mark/logo as its leading and essential feature until further orders.

What is a Trademark?

- A trademark is a symbol, word, phrase, design, or combination of these elements that distinguishes the goods or services of one company from another.
- **Protected by Intellectual Property Rights (IPR).**
- **Can be registered with government agencies for legal protection.**
- Governed by laws such as the Trade Marks Act 1999 in India and its subsequent amendments.

Key Aspects of Trademark Protection:

- **Registration:** Trademarks can be registered to prevent unauthorized use.
- **Legal Framework:** Laws such as the Trade Marks Act 1999 provide guidelines for registration and penalties for infringement.
- **Enforcement:** Infringement occurs when a mark is used without permission, leading to legal consequences.
- **Regular Use:** Trademark owners must use their mark regularly to maintain legal protection.
- **Consequences of Non-Use:** Failure to use a mark may result in cancellation or invalidation.

Trademark Infringement:

- Occurs when someone uses a mark identical or deceptively similar to a registered trademark without permission.

- **Legal Action:** Infringement can lead to legal action, including damages, injunctions, and criminal sanctions.

Importance of Trademark Protection:

- **Brand Recognition:** Trademarks help consumers identify and distinguish between products and services.
- **Business Identity:** They represent the identity and reputation of a business in the marketplace.
- **Market Exclusivity:** Trademark protection provides businesses with exclusivity in the market, preventing others from using similar marks.
- **Asset Value:** Trademarks can be valuable assets for businesses and are often associated with brand value and goodwill.

Physicist Peter Higgs passes away: What is the ‘God particle’, which he theorized in the 1960s?

Subject: Science and tech

Section: Nuclear Sector

Context:

- Nobel prize-winning physicist **Peter Higgs**, who proposed the existence of the so-called “**god particle**” that helped explain how matter formed after the **Big Bang**, has died at age **94**.

More on news:

- It required **nearly 50 years**, and the **world’s biggest and most complex machine**, to detect the Higgs boson in 2012.
- An **elementary particle like electrons, quark, photons or neutrinos, the Higgs boson**, is known to impart mass to every other particle.
- Its existence was predicted in the 1960s, but it was found only in 2012 through elaborate experiments carried out at the Large Hadron Collider, located on the border of France and Switzerland, the **world’s biggest and most expensive machine** till then.
- The discovery of the **Higgs boson** completed the **Standard Model of Particle Physics**, which describes all the fundamental particles, **like electrons and protons, and the forces, like electromagnetism, gravitation or nuclear forces, that build up the material part of the world.**

God Particle:

- Much of the hype surrounding the **Higgs boson** amongst the common people comes from the fact that it **got dubbed as the ‘God particle’**.
- The expression was first used by **Nobel Prize winning physicist Leon Lederman** who wrote a book by that title in the 1990s about the continuing search for the Higgs boson.
- Many scientists detest that expression, mainly because the particle acquired religious connotations in some circles because of that name.
- **Boson is the name** given to a family of **elementary particles** that are known to be carriers of fundamental forces like electromagnetism.
- **Photon**, which carries the **electromagnetic force, is a boson.**
- On the other hand, **the matter particles, like electrons or protons**, belong to the class called fermions.
- The big significance of the **Higgs boson is that it is the particle that is supposed to account for the mass of every other fundamental particle.**
- A photon, which is a **light particle, does not interact with electric and magnetic fields at all, and is thus massless.**
- There are other particles that are massless as well.
- Particles like electrons and protons, do interact, and have masses.
- **The Higgs boson itself interacts with this field, and thus has mass.**
- The concepts of the **Higgs field and Higgs particle** are not very intuitive, but these are fundamental to our current understanding of the way nature works.
- The main fame for the **Higgs boson came from its elusive nature.**
- Scientists kept frantically searching for it for more than **four decades but could not find it.**
- One of the main science objectives of the LHC, which is the **world’s biggest particle accelerator and cost about US\$ 9 billion to build, was to find the Higgs boson.**

How and why US wants to establish a time standard for the Moon

Subject: Science and tech

Section: Space sector

Context:

- Last week, the US White House officially directed the National Aeronautics and Space Administration (NASA) to create a time standard for the Moon.

More on news:

- This time standard will help **different international bodies and private companies** to coordinate their activities on the lunar surface.

How does Earth's time standard work?

- Most of the clocks and time zones — a geographical region which uses the same standard time — of the world are based on Coordinated Universal Time (UTC), which is set by the International Bureau of Weights and Measures in Paris, France.
- **UTC is essentially** an internationally agreed upon standard for world time.
- It is tracked by a weighted average of more than **400 atomic clocks** placed in different parts of the globe.
- **Atomic clocks measure time in terms of the resonant frequencies — the natural frequency of an object where it tends to vibrate at a higher amplitude — of atoms such as cesium-133.**
- In atomic time, a second is defined as the period in which a **caesium atom vibrates 9,192,631,770 times.**
- As the vibration rates at which **atoms absorb energy are highly stable and ultra-accurate, atomic clocks make for an excellent device for gauging the passage of time.**
- To obtain their local time, countries need to subtract or add a certain number of hours from UTC depending on how many time zones they are away from 0 degree longitude meridian, also known as the Greenwich meridian.
- If a **country lies on the west of the Greenwich meridian**, it has to be subtracted from the UTC, and if a country is located on the east of the meridian.

Why do we need a time standard for the Moon?

- A fundamental aspect of nature in the Universe is that time is not absolute.
- But if you travel to the Moon, the clock would be ticking slightly faster than if you had stayed on the Earth.
- This is a consequence of Albert Einstein's Theory of General Relativity which tells us that gravity bends space and time.
- The discrepancy may seem small but it can create problems for situations such as a spacecraft seeking to dock on the Moon, data transferring at a specific time, communication, and navigation.
- Currently, handlers of each lunar mission use their own timescale that is linked to UTC.
- This approach can work for a handful of independent lunar missions, but issues will arise once there are multiple spacecraft working together at the same time — a situation which is bound to become a reality in the near future.

How will a lunar time standard be established?

- The specifics for creating a time standard for the Moon are not clear yet.
- Like on the Earth, atomic clocks can be deployed on the lunar surface to set a time standard.
- There will be a need to place at least three atomic clocks on the lunar surface that will tick at the Moon's natural pace, and whose output will be combined by an algorithm to generate a more accurate virtual timepiece.
- Mascons or mass concentrations are so dense that they alter the Moon's local gravity field.
- These effects are minor but the output from these clocks can be synthesized to give the Moon its own independent time, which can be tied back to UTC for seamless operations from Earth as well.
- **Even on Earth, atomic clocks have been placed at different locations or rather latitudes.**
- These clocks tick at different rates due to changes in Earth's rotational speed varying from the Equator to the poles, which also affects time.
- The planet rotates faster at the Equator than it does at the poles as it is wider at the Equator.

Ahead of Elon Musk visit, Finance Ministry notifies new rules backing FDI tweaks for space sector

Subject: Science and tech

Sec: Space sector

Context:

- The Finance Ministry has notified amended rules under the **Foreign Exchange Management Act** to operationalise its earlier decision to allow up to **100 per cent foreign direct investment (FDI)** for the space sector through three categories of liberalized entry routes.

More on news:

- The notification dated April 16 comes ahead of **Tesla chief Elon Musk**'s visit to India early next week where he is expected to meet space startups, make a push for his space venture **Starlink's plans and announce his electric vehicle (EV) investment plans.**

About Starlink:

- **Starlink** is a project by **SpaceX**, the company founded by Musk, to provide high-speed internet access to anywhere on the planet using a constellation of thousands of low-earth-orbit satellites.

100% FDI for manufacturing, operation of satellites:

- As per the latest **Finance Ministry notification, 100 percent FDI** has been allowed for the space sector category of manufacturing and operation of satellites, satellite data products, and ground segment and user segment, out of which up to 74 per cent would be through the automatic route and government nod would be required for investment beyond 74 per cent.
- Under the earlier policy, any **foreign investment in manufacturing and operating satellites** is allowed only with government approval.
- Automatic FDI has also been permitted up to **49 per cent for launch vehicles and associated systems or subsystems, and creation of spaceports for launching and receiving spacecraft.**
- Government approval would be required for **investments beyond 49 per cent.**
- Manufacturing of components and systems or sub-systems for satellites, ground segment and user segment will be fully under the 100 per cent automatic route.
- The investee entity shall be subject to sectoral guidelines as issued by the Department of Space from time to time.
- The new rules came into effect from April 16.

About Satellites – manufacturing and operation:

- **Satellites – manufacturing and operation** has been defined as **end-to-end manufacturing and supply of satellite or payload, establishing the satellite systems including control of in-orbit operations of the satellite and payloads.**

About Satellite data products:

- **Satellite data products** have been defined as **reception, generation or dissemination of earth observation or remote sensing satellite data and data products including Application Interfaces (API).**

About Ground segment:

- **Ground segment** refers to the supply of satellite transmit or receive earth stations including **earth observation data receive station, gateway, teleports, satellite telemetry, Tracking and Command (TTC) station, and Satellite Control Centre (SCC)** etc..
- **User segment** refers to the supply of user ground terminals for communicating with the satellite, which are not covered under the ground segment.

About launch vehicles and associated systems or subsystems:

- The ministry has also defined “**launch vehicles and associated systems or subsystems**” as a **vehicle and its stages or components that is designed to operate in or place spacecraft with payloads or persons, in a sub-orbital trajectory, or earth orbit or outer space.**
- **Spaceport** refers to the base from which spacecraft are launched, and consists of facilities involving devices for transportation to, from and via outer space.
- Space activities largely encompass the **launch vehicle and launch service, the satellite, ground stations that can detect the signals, and user products where the data from satellites is utilized.**

125 years of Kodaikanal Solar Observatory: How the Great Drought of 1876 led to its establishment

Subject: Science and tech

Section: Space tech

History of Observatories in India:

- In **1792, the British East India Company** established the **Madras Observatory**, a first of its kind in this part of the world.
- Astronomical observations of the **Sun, the Moon, bright stars** and planets recorded during 1812-1825 were preserved in two large data volumes.
- The **first dedicated solar observations** were recorded later in **1878 from the Trigonometrical Survey Office in Dehradun.**
- The spectroscopic observations taken during the **August 18, 1868, total solar eclipse from Guntur in Andhra Pradesh** led to the **discovery of helium**, the Universe's second-most abundant element after hydrogen.

- For the first time, **celestial and solar photography** were attempted from the **Madras Observatory** during the **total annual solar eclipse on December 12, 1871.**

Links to the Great Drought:

- **India, along with China, Egypt, Morocco, Ethiopia, southern Africa, Brazil, Columbia and Venezuela,** suffered concurrent multi-year droughts during 1876-1878, later named the Great Drought, and an associated global famine that killed nearly 50 million.
- Based on the evidence that **solar activity** was linked to the **seasonal rainfall distribution over India,** the specially constituted **Famine Commission of the British Raj** recommended that the Government of India take regular solar observations.

Why study the Sun?

- Being the **primary source of energy, life on Earth is supported by the Sun.**
- Any change on the **solar surface or its periphery could significantly affect the Earth's atmosphere.**
- **Powerful solar storms and solar flares** can be potentially harmful to Earth's satellite-based operations, power grids and navigational networks.
- **The KoSO (Kodaikanal Solar Observatory),** which has been imaging the Sun for over a century now, has a rich repository of data.

Solar Physics Observatory in Palani Hills:

- The **Indian solar observatory** was established for **carrying out systematic examinations** and the study of changes in progress in the Sun and their co-relations with the larger features of Indian meteorology.
- The **hills of Leh, Mussoorie and Shimla** were rejected for being dusty and cloudy and the atmosphere around them being unstable.
- Hill stations located over **2,000 meters above the mean sea level in Tamil Nadu i.e. Kodaikanal in the Palani hills and Kotagiri in the Nilgiris** were surveyed.
- The survey of rainfall, cloud cover and sky transparency, haze, atmospheric stability, humidity, fog and mist was completed and Kodaikanal was chosen as the ideal location for the observatory.
- In **August 1893, the Government of India sanctioned a Solar Physics Observatory under the meteorological budget.**
- In **1895, Lord Wenlock, the then Governor of Madras, laid its foundation stone.**
- Supervised by **Smith, who went on to become the first director of the renamed Kodaikanal Solar Observatory (KoSO), the ongoing civil construction picked pace.**
- The **Madras Observatory** was merged with the **KoSO** following the reorganization of all Indian observatories implemented by the Government of India on **April 1, 1899.**
- The **Bhavnagar Telescope, named after Maharaja of Bhavnagar, operated during KoSO's nascent years.**
 - This **16-inch Newtonian (later Cassegrain)** mobile telescope remained India's largest from 1888-1968. It was imported from Dublin, Ireland, and was first established at the Maharaja Takhat Singh Ji Observatory in Poona (now Pune) around 1888.
- The **radial motion of sunspots, better known as the Evershed Effect, was discovered from the sunspot observations made at KSO by John Evershed.**
- The continuous recording of the solar radio noise flux commenced in 1952 is considered the earliest solar radio observations in the country.
- The contemporaries – Maharaja Takhat Singh Ji Observatory, Lucknow Observatory, and Calcutta Observatory – did not stand the test of time.

KoSO @125:

- The Government of India separated Astrophysics from the **India Meteorological Department (IMD) in April 1971.**
- The **KoSO was brought under the Indian Institute of Astrophysics (IIA), Bengaluru on April 1, 1971.**
- **KoSO is the only observatory offering high-resolution digitized images** for such a long period (with coverage of more than 75 per cent).
- It houses a spectrum of advanced instruments like the **H-alpha telescope to perform full disc imaging, a White light Active Region Monitor (WARM) with calcium and sodium filters** to make full disc simultaneous observations of the photosphere and chromosphere layers of the Sun, a solar tunnel telescope and more.

What is Evershed Effect:

- The Evershed Effect is an observational effect in the penumbra of SUNSPOTS consisting in displacements of the spectral line profiles towards either shorter wavelengths (that is, blueshifts) in the zones closest to the Sun's disk center or larger wavelengths (that is, redshifts) in those zones closest to the solar limb.
- The Evershed effect was first detected at Kodaikanal observatory in January 1909.

About Kodaikanal Hills:

- **Kodaikanal is a town and hill station in Dindigul district in the state of Tamil Nadu, India.**
- It is situated at an altitude of 2,225 m (7,300 ft) in the **Palani hills of the Western Ghats.**
- The earliest references to **Kodaikanal and the Palani hills are found in Tamil Sangam literature.**
- **Kodaikanal Lake also known as Kodai Lake, is a manmade lake located in the Kodaikanal city in Dindigul district in Tamil Nadu, India.**

New map of universe may open a window to dark energy

Subject: Science and tech

Sec: Space

Context:

- An international team of researchers has just released the **most comprehensive “three-dimensional” map of the universe,** which could reveal some clues about dark energy.

More on news:

- The researchers have published its findings from the first year of observations by the **Dark Energy Spectroscopic Instrument, or DESI,** a unique piece of equipment that, once fitted over a telescope, can capture light from 5,000 galaxies at the same time.

About Dark Energy Spectroscopic Instrument (DESI):

- Using DESI, which is mounted over the **Mayall 4-Meter Telescope in Arizona, United States,** researchers have been able to measure light from six million galaxies-some of which existed as far back as 11 billion years ago.
- **It aims to prepare the most detailed map of the universe** as yet with very precise information about the distances between these galaxies.
- The key thing is that we **have been able to measure the distances between these galaxies with a very high degree of accuracy.**
- DESI is a collaboration of more than **900 researchers in institutions across the world.**
- From India, TIFR is the only participating institution.

About Dark Energy:

- The hypothesis of **dark energy comes mainly from the observed phenomenon** of the universe expanding at a rapid rate.
- The **vast empty spaces between stars and galaxies** have been measured to be expanding at an accelerating pace, despite the countervailing force of gravitation that has the effect of pulling things together.
- It can reveal **new fundamental forces at work,** and could unravel our entire knowledge of the **physical world.**

Nobel laureate Peter Higgs, who proposed existence of ‘god particle’, dies at 94

Subject: Science and tech

Section: Space

Context:

Nobel prize-winning physicist Peter Higgs, who proposed the existence of the so-called “god particle” that helped explain how matter formed after the Big Bang, has died at age 94.

More on news:

- In 2012, in one of the biggest breakthroughs in physics in decades, **scientists at CERN, the European Organization for Nuclear Research,** announced that they had finally found a Higgs boson using the \$10 billion particle collider built in a 17-mile (27-kilometer) tunnel under the Swiss-French border.
- **Higgs won the 2013 Nobel Prize in Physics** for his work, alongside Francois Englert of Belgium, who independently came up with the same theory.

About Higgs Boson Particle:

- Higgs predicted the existence of a new particle, the **so-called Higgs boson in 1964.**

- In 2012, the **Nobel-winning discovery of the Higgs boson**(also known as ‘**God particle**’) validated the **Standard Model of physics**, which also predicts that about 60% of the time a Higgs boson will decay to a pair of bottom quarks.
- In the **1960s Peter Higgs was the first person** to suggest that this particle might exist.
- The **Standard Model of particle physics** is the theory which describes three of the four known fundamental forces (**the electromagnetic, weak, and strong interactions, and not including the gravitational force**) in the universe, as well as classifies all known elementary particles.
- Scientists do not yet know how to combine gravity with the Standard Model.
- The **Higgs particle is a boson**.
- **Bosons are thought to be particles which are responsible for all physical forces**.
- Other known bosons are the **photon, the W and Z bosons, and the gluon**.
- It would be almost 50 years before the **particle’s existence could be confirmed at the Large Hadron Collider**.
- **Higgs’ theory relates to how subatomic particles** that are the building blocks of matter get their mass.
- This theoretical understanding is a central part of the **so-called Standard Model**, which describes the physics of how the world is constructed.

SRO’s ‘zero orbital debris’ milestone & the space debris crisis

Subject: Science and tech

Section: Space

Context:

- The **Indian Space Research Organisation (ISRO)** has successfully **minimized space debris** from its **PSLV-C58/XPoSat mission**.

Details:

- After the **mission's primary goal of satellite deployment was achieved, ISRO** converted the **PSLV's fourth stage** into the **PSLV Orbital Experimental Module-3 (POEM-3)**.
- This module was then **intentionally lowered in orbit** from **650 kilometers** to **350 kilometers** to facilitate its **re-entry and disintegration** in the **Earth's atmosphere**.
- Additionally, **ISRO** took measures to "**passivate**" the stage by **draining its fuel to prevent any risk of explosion** and the **resultant debris scattering in orbit**. This approach ensured that the **mission produced negligible debris**.

What is POEM (Polar Satellite Launch Vehicle Orbital Experimental Module)?

- **POEM** is a **cost-effective orbital platform** developed by the **Vikram Sarabhai Space Centre (VSSC)**.
- It **repurposes the spent fourth stage of a PSLV rocket**, utilizing it as a **stable platform for conducting scientific experiments in orbit**.
- First used during the **PSLV-C53 mission** in **June 2022**, **POEM** is equipped with **solar panels** and a **lithium-ion battery for power**.
- It features a dedicated **navigation, guidance, and control (NGC) system** with **helium control thrusters to maintain its altitude**.
- This system includes **Sun sensors, a magnetometer, gyroscopes, and communication** with **ISRO’s NavIC satellite constellation for precise navigation**. Additionally, **POEM** can **communicate with ground stations** via a telecommand system.
- The concept of **reusing the rocket's fourth stage** was **first demonstrated by ISRO** in the **PSLV C-44 mission** in **2019**, where the stage, carrying a student payload, was relocated to a higher orbit for extended observational activities.



What has POEM-3 achieved?

- The **POEM-3**, a component of **ISRO's PSLV C-58 mission** launched on **January 1, 2024**, successfully achieved its **mission objectives** before **reentering the Earth's atmosphere** on **March 21, 2024**.
- After deploying the **XpoSat satellite** into a **650 km orbit**, **POEM-3** was subsequently lowered to a **350 km orbit**. This **lower orbit increases atmospheric drag**, requiring **more energy to maintain position**.
- Notable achievements include the completion of experiments like **ARKA200**, **RUDRA**, and **LEAP-TD**, with **other experiments collecting data for ground analysis**.
- **Two fuel cells demonstrated power generation capability**.

Payload	Purpose	Agency/Company
Radiation Shielding Experiment Module (RSEM)	Evaluation of Tantalum coating effectiveness	TakeMe2Space
Women Engineered Satellite (WESAT)	Comparison of Solar Irradiance and UV Index	LBS Institute of Technology foWomen
BeliefSat0	Amateur radio satellite	K J Somaiya Institute of Technology
Green Impulse TrAnsmmitter (GIT)	Green bipropellant CubeSat propulsion unit	Inspecty Space Labs Private Limited
Launching Expeditions for Aspiring Technologies Technology Demonstrator (LEARTD)	Demonstration of subsystem of microsatellite	Dhruva Space Private Limited
RUDRA 0.3 HPGP	Green Monopropellant Thruster	Bellatrix Aerospace Private Limited
ARKA200	Heater less Hollow Cathode for Hall thrusters	Bellatrix Aerospace Private Limited
Dust Experiment (DEX)	Interplanetary dust count measurement	PRL, ISRO
Fuel cell Power System (FCPS)	Demonstration of fuel cell	VSSC, ISRO
Si based High Energy cell	Demonstration of Silicon based High Energy cells	VSSC, ISRO

Why is it significant?

- The **increasing number of satellites** and consequent **space debris in Low Earth Orbit (LEO)** poses significant risks due to **high-speed collisions** that can **damage active satellites and other space assets**.
- **LEO**, ranging from **100 km to 2000 km above Earth**, is crowded with operational satellites and millions of debris pieces, including those from spacecraft, rockets, and defunct satellites.
- The **Space Situational Assessment report** by **ISRO in 2022** noted a **sharp increase in objects placed in space**, rising from **1,860 in 2021 to 2,533 in 2022**.
- Additionally, incidents such as the **intentional destruction of satellites and accidental explosions** have contributed significantly to **debris accumulation**.

- This issue is not only a risk in space but also on **Earth**, as demonstrated by an incident where a piece of space debris damaged a house in Florida.
- The **rapid expansion of satellite constellations**, notably **SpaceX's Starlink project** planning **42,000 satellites**, further underscores the **urgent need for effective debris management and mitigation strategies to safeguard space infrastructure** and ensure **long-term sustainability in space operations**.

How are space agencies dealing with debris?

- Space agencies globally are addressing the problem of space debris through various initiatives, despite the **absence of specific international laws governing debris in Low Earth Orbit (LEO)**.
- Agencies adhere to the **Space Debris Mitigation Guidelines** endorsed by the U.N. in **2007**, which **aim to reduce risks associated with debris in space**, including **preventing long-term presence in LEO** and **limiting interference in Geosynchronous Earth Orbit (GEO)**.
- **NASA**, which started its **Orbital Debris Program** in **1979**, focuses on **tracking and studying space debris**, though it has yet to implement **debris removal technologies**. The **U.S. Space Force** actively monitors **space debris to prevent collisions**.
- The **European Space Agency (ESA)** has pledged to **achieve zero space debris by 2030** through its '**Zero Debris charter**' and encourages other agencies to adopt similar policies.
- **China** recently launched a spacecraft with a **solar sail designed to accelerate the de-orbiting of defunct spacecraft** by utilizing **solar radiation pressure**.
- **Japan's Aerospace Exploration Agency (JAXA)**, in partnership with **Astroscale**, is advancing the **Commercial Removal of Debris Demonstration (CRD2) project**, which involves capturing and removing space debris.
- Private companies are contributing too, with ventures like **Astroscale in Japan** working on technologies to **refuel and repair satellites to extend their operational life and enhance debris removal efficiency**. **China's Origin Space** has developed a prototype for **capturing debris with a large net**.
- In **India**, **ISRO** is actively working on **debris mitigation** with initiatives like the **POEM missions** and the establishment of the **Space Situational Awareness Control Centre** to safeguard satellites against potential collisions.
- '**Project NETRA**' of **ISRO** is also an **early warning system in space to detect debris** and other hazards to **Indian satellites**.
- **Indian startups like Manastu Space** are developing technologies for in-space refueling, satellite life extension, and de-orbiting strategies.

Source: [TH](#)

Gopi Thotakura to be the first Indian space tourist: What is space tourism?

Subject: Science and tech

Section: Space

Context:

- **Entrepreneur and pilot Gopi Thotakura** is set to become the first Indian to venture into space as a tourist on the **NS-25 mission of Blue Origin** — a company founded by Jeff Bezos, who is also the founder of Amazon.

More on news:

- According to **media reports**, in **2023**, the **space tourism market** was valued at **\$848.28 million**.
- **It is expected to grow to \$27,861.99 million by 2032**.
- Thotakura would be the **second Indian** to go into space.
- **The first one was Wing Commander Rakesh Sharma**, who flew to the **Salyut 7 space station** on a Soviet spacecraft in **1984**.
- In **September 2021**, **Space X's Falcon 9** took four passengers to an altitude of **160 km** where they spent three days orbiting the **Earth**.

What is space tourism?

- **Space tourism** is essentially a section of the **aviation sector which seeks to provide tourists with the opportunity to become astronauts and experience space travel for recreational, leisure, or business purposes**.
- There are two main types of **space tourism, sub-orbital and orbital**.
- The **sub-orbital spacecraft** takes passengers just beyond the **Kármán line** — it lies nearly **100 kilometers above our heads** and is considered to be the boundary between Earth's atmosphere and outer space.
- The passengers get to spend a **few minutes in outer space and then come back to Earth**.
- The **NS-25 mission, which Thotakura is a part of, is a sub-orbital mission**.

- **Thotakura and his other crew members** will be taken to outer space via New Shepard, a fully reusable suborbital launch vehicle developed specifically for **space tourism by Blue Origin**.
- The orbital spacecraft, on the other hand, takes **passengers much further than the Kármán line**.
- Usually, passengers can spend from a couple of days to more than a week at an **altitude of nearly 1.3 million feet**.

What are the challenges?

- Currently, **space tourism is expensive**.
- A passenger generally has to pay at least a **million dollars to reach outer space**.
- This amount is **out of reach for almost everyone**.
- Several studies have pointed out that space tourism may lead to **environmental damage as rockets emit gaseous and solid chemicals directly into the upper atmosphere**.
- **Soot emissions from rocket launches** are far more effective at warming the atmosphere compared to other sources.
- **Safety is also a concern** when it comes to space tourism.
- Despite high safety standards, **a total of 676 people** have flown into space and 19 of them have died, as of November 2023.
- This means that **approximately 3% of astronauts** died during their space flight which is quite a high fatality rate.

World's most powerful laser points to uncharted arenas

Subject: Science and tech

Section: Msc

Context:

- **Antonia Toma**, an engineer at a research centre in **Romania**, activates the **world's most powerful laser** as part of the **European Union's Infrastructure ELI project**, aiming for **significant advances across various sectors** including **health and space**.

Details:

- The **laser facility** is located near **Bucharest, Romania**, and is operated by the **French company Thales**, leveraging inventions that **won the Nobel Prize**.
- The **2018 Nobel Physics Prize** was awarded to **France's Gerard Mourou** and **Canada's Donna Strickland** for **developing precision instruments using laser technology**, which the Nobel Academy cited as **opening new avenues for understanding and shaping the world**.
- **Gerard Mourou** describes the process of amplifying a "**small luminous seed**" of energy millions of times to achieve "**phenomenal powers**."
- **Mourou** envisions applications for the laser including **treating nuclear waste to shorten its radioactivity** and **cleaning space debris**, marking a shift from the "**century of the electron**" to the "**21st century being that of the laser**."

Extreme Light Infrastructure (ELI) Project:

- **ELI** is an **international laser user facility** open to the **global scientific community**, representing the **first ESFRI Landmark in newer EU Member States**.
- **ELI** aims to study **extreme light-matter interactions at unprecedented intensities and time scales**, contributing to pan-European research efforts.
- **Three high-power, high-repetition-rate laser facilities** have been established in **Czech Republic (ELI Beamlines)**, **Hungary (ELI-ALPS)**, and **Romania (ELI-NP)** through this investment.
- The **three ELI pillars** will be managed by the **European Research Infrastructure Consortium (ERIC)**, involving governance and funding aspects.
- **ELI ERIC's** Founding Members include the **Host Countries (the Czech Republic and Hungary)**, **Italy** (a supporter since ELI's preparatory phase), and **Lithuania** (noted for its contributions to laser physics).
- **Germany** and **Bulgaria** are participating as **Founding Observers**, with the prospect of **future membership**.

Romania, which hosts the **ELI-NP facility**, is expected to join **ELI ERIC** shortly after its establishment.

Gene involved in cell shape offers clues on left-handedness

Subject: Science and tech

Section: Msc

Context:

- Notable figures across various fields, such as Lady Gaga, Barack Obama, and Bill Gates, share a common trait of being **left-handed, a characteristic found in approximately 10% of the population.**

Role of the TUBB4B gene:

- Recent research has highlighted a **genetic component to left-handedness, identifying rare variants of the gene TUBB4B, which are 2.7 times more common in left-handed individuals.** These variants are involved in **cell shape control** but **only account for a very small percentage of left-handedness cases.**
- The **gene TUBB4B** may **influence brain asymmetry development,** which is associated with the **determination of the dominant hand.** Typically, **brain hemispheres have different functions,** with most people exhibiting **left-hemisphere dominance for language.**
- The **study,** involving **genetic data** from over **350,000 individuals** in the **UK Biobank,** suggests that while **genetics can play a role,** the **majority of left-handedness cases likely result from random developmental variations in the embryonic brain.**
- Historically, **left-handedness** was **stigmatized,** with **cultural and linguistic biases favouring right-handedness.** This stigma has led to efforts to **convert left-handed individuals to right-handedness in various cultures.**
- The **prevalence of left-handedness varies globally,** with **lower rates observed in Africa, Asia, and the Middle East,** possibly reflecting **cultural suppression of left-handedness.**
- The study also explores the **potential link** between **left-handedness** and **psychiatric conditions** like **schizophrenia and autism,** suggesting that **genes influencing early brain development** may **contribute to both brain asymmetry and certain psychiatric traits.**

Source: [TH](#)

Why green hydrogen presents both major opportunities, significant challenges

Subject: Science and tech

Section: Msc

Context:

- The **Ministry of New and Renewable Energy (MNRE)** has announced a **Rs-496-crore (until 2025-26)** scheme to support pilot projects that either test the viability of green hydrogen as a vehicle fuel or develop secure supporting infrastructure such as refueling stations.

Hydrogen as a fuel:

- **Hydrogen is a clean fuel that, when consumed in a fuel cell, produces only water.**
- Hydrogen can be produced from a variety of domestic resources, such as natural gas, nuclear power, biomass, and renewable power like solar and wind.
- **Hydrogen is a versatile energy** carrier that can be produced from a wide range of sources and used in many ways across the **entire energy sector.**
- It can be produced from **Solar-driven processes** using light as the agent for hydrogen production
- Water can be separated into oxygen and hydrogen through a process called electrolysis

Types of Hydrogen:

- **Hydrogen is colorless, and green hydrogen is ‘green’** only by virtue of the way it is produced, and the source of the energy used to manufacture it.
- **Green hydrogen** refers to hydrogen that is produced from the electrolysis of water — **splitting it into hydrogen and oxygen — using an electrolyser powered by renewable energy.**
- This is considered to be a virtually emission-free pathway for hydrogen production — it is **‘end-to-end’ green** because it is powered by green energy, uses water as feedstock, and emits no carbon on consumption.
- Currently, **most hydrogen** produced for industrial consumption and applications is **‘gray’ hydrogen,** which is produced from natural gas through energy-intensive processes, and has high carbon emissions.
- Except for a difference in the **production pathway and emissions, green hydrogen is essentially the same as gray — or hydrogen categorized by any other color.**
- When hydrogen is produced from natural gas but carbon emissions are captured and stored, or reused it is called **“blue” hydrogen.**



An October 2020 file photo of a hydrogen fuel pump in Torrance, California. Shell has now shut its hydrogen refuelling stations for cars in the state. *The New York Times*

THE COLOURS OF HYDROGEN

GREY hydrogen constitutes the bulk of India's production currently. It is extracted from hydrocarbons (fossil fuels and natural gas), and carbon dioxide is the byproduct of consumption.

BLUE hydrogen is also sourced from fossil fuels, but byproducts such as

carbon monoxide and carbon dioxide are captured and stored, so it is better than grey hydrogen.

GREEN HYDROGEN is an 'end-to-end' green fuel. Electricity generated from renewable sources such as wind or solar is used to electrolyse water. Byproducts are water or water vapour.

Transport sector scheme

The major objectives of the MNRE scheme, guidelines for which were issued in February, include

- (i) validation of technical feasibility and performance of green hydrogen as a transportation fuel,
- (ii) evaluation of the economic viability of green hydrogen-powered vehicles, and
- (iii) demonstration of safe operation of hydrogen-powered vehicles and refueling stations.
- The Ministry of Road Transport & Highways will appoint a scheme implementation agency that will invite proposals for pilot projects.
- The selected company or consortium will be the project's executing agency.
- Based on the recommendation of a Project Appraisal Committee, the MNRE will approve viability gap funding (VGF) for the project.
- The VGF amount will be finalized after considering specific needs, merits, and feasibility of each project.
- The executing agency will be required to complete the pilot project within two years.

Hydrogen fuel cell vehicles

- A hydrogen internal combustion engine (ICE) vehicle utilizes hydrogen through combustion — which is similar to cars running on diesel and petrol, except there are no carbon emissions.
- A hydrogen fuel cell electric vehicle (FCEV) utilizes hydrogen electrochemically by converting hydrogen stored in a high-pressure tank into electricity, leaving water as the byproduct.
- Even though hydrogen ICE vehicles do not emit carbon, research suggests that burning hydrogen is far less energy efficient than converting it into electricity in a fuel cell.
- Compared to battery electric vehicles (BEVs), in which the battery is the heaviest part, hydrogen FCEVs are typically much lighter because hydrogen is a light element, and a fuel cell stack weighs lesser than an electric vehicle (EV) battery.
- This makes hydrogen fuel cell technology a viable alternative to EV battery technology, especially for heavy-duty trucks that can benefit from an increased payload capacity — without coughing clouds of smoke from burning diesel.

A number of challenges

- There are significant challenges to the large-scale use of green hydrogen in the transportation sector.
- The foremost among these is the prohibitive cost of production, followed by challenges of storage and transportation at scale.
- With more innovation in technology and scaling-up of production though, costs are likely to come down in a few years.

- Green hydrogen-powered vehicles are not yet seen as a **suitable alternative to four-wheel BEVs due to challenges arising from fuel costs and building supporting infrastructure.**
- Currently, most cylinders manufactured in India are designed to carry compressed **natural gas (CNG).**
- But **hydrogen is stored at a much higher pressure, and CNG cylinders cannot carry hydrogen.**
- For cylinders to carry a high mass of hydrogen, the carbon fiber needs to be stronger, which makes high-pressure hydrogen cylinders expensive.
- This is a key barrier to the adoption of hydrogen as a transport fuel.
- For the same reason, the existing natural gas pipeline infrastructure is also not seen as viable.
- Hydrogen is extremely flammable, which means that special care would be needed in handling the fuel at retail stations compared to diesel, petrol, or even CNG.

GPS Jamming

Subject: Science and tech

Section: Msc

Incidents of GPS Jamming:

- Cargo ships in the **Mediterranean and Black Sea regions are facing an increase in incidents of GPS jamming.**
- This interference **manipulates or disrupts the ship navigation data, especially near conflict zones.**

Specific Incident on April 4:

- On April 4, around 117 cargo-carrying vessels were **reported at Beirut-Rafic Al Hariri International Airport in Lebanon.**
- Information sourced from vessel-tracking data by **Lloyd's List Intelligence.**

Trend Since October 2023:

- The trend of ships appearing on land-based systems, like airports, has become more common since the Hamas attacks on Israel in October 2023.
- Initially observed in the eastern Mediterranean at the end of October.

Spoofing vs. Jamming:

- Spoofing AIS signals to ***create false vessel locations*** is a known tactic to circumvent sanctions.
- ***Widespread GPS signal jamming in the Black Sea marks a potentially dangerous form of AIS manipulation.***

Lloyd's List Findings:

- Lloyd's List analysis reveals a significant increase in incidents of ***third-party interference in Global Navigation Satellite System (GNSS) signals.***
- Over 655 individual incidents identified in the past year, with a majority since January 2024.

Expert Insights:

- Highlights the seriousness of war zone GPS jamming, particularly for military operations.
- ***Disruption of navigation, targeting systems, communication, and countermeasures can significantly impact military activities.***

These points outline the recent incidents of GPS jamming affecting cargo ships in the Mediterranean and Black Sea regions, emphasizing key details and potential risks to navigation systems.

GPS Spoofing and Jamming

- ***GPS Spoofing:*** An attempt to **alter the initial location of a GPS-enabled device.**
- ***Purpose:*** Sends false data to a receiver, diverting traffic, goods, or people with falsified information.

Method:

- ***Transmission of False Data:*** Involves sending false coordinates and information to the receiver.
- ***Radio Transmitter:*** A radio transmitter near the target interferes with actual GPS signals.
- ***Signal Override:*** Stronger transmitter overrides weak GPS signals from satellites.

Impact:

- ***Course Alteration:*** Can send people or vehicles off course.
- ***False Locations:*** Indicates someone is in a location they are not actually present.

Difference from GPS Jamming:

- ***GPS Jamming: Interfering with GPS signals.***

- *Spoofing vs. Jamming:* **Spoofing is more dangerous and involves sending false data, while jamming disrupts GPS signals.**
- *Detection Difficulty:* **Spoofing is harder to detect compared to jamming.**

What is a Bambi Bucket, being used by an IAF helicopter to fight Nainital forest fires?

Subject: Science and tech

Sec: Msc

Context:

- **Indian Air Force's MI 17 V5 helicopter was deployed on Saturday (April 27) to extinguish the raging forest fires in Nainital district, Uttarakhand, according to the state's Chief Minister Pushkar Singh Dhami.**

More on news:

- The helicopter used a "**Bambi Bucket**", also known as helicopter bucket or a heli bucket, to collect water from Bhimtal lake, located near Nainital, and pour it over the burning forests. Here is a look at what a Bambi Bucket is and how it was invented.
- Forest officials said the IAF helicopter collected water from the **Naini and Bhimtal lakes in a Bambi bucket** and poured it over the burning forests of the **Pines, Bhumiadhar, Jyolikot, Narayan Nagar, Bhawali, Ramgarh and Mukteshwar areas.**

What is a Bambi Bucket?

- **Bambi Bucket is a specialized aerial firefighting tool which has been in use since the 1980s.**
- It is essentially a **lightweight collapsible container that releases water from underneath a helicopter to targeted areas.**
- The water is released by using a **pilot-controlled valve.**
- One of its **key features is that it can be quickly and easily filled.**
- The bucket can be filled from **various sources, including lakes and swimming pools, which allows firefighters to swiftly refill it and return to the target area.**
- Bambi Bucket is available in a variety of sizes and models, with capacities ranging from 270 liters to more than 9,840 liters.

How was the Bambi Bucket invented?

- The Bambi Bucket was invented by **Don Arney, a Canadian business, in 1982.**
- Arney came up with the idea after he realized that the aerial firefighting water buckets in use at the time were not efficient and had a high failure rate.
- These water buckets **were generally made of solid fiberglass, plastic, or canvas with metal frames and were too rigid to fit inside the aircraft and had to be trucked to fire sites or flown in on the hook of a helicopter thereby slowing the aircraft down.**

Advantages of Bambi Bucket:

- One, it can be stored within the **helicopter until development.**
- Two, it discharges a **solid column of water, resulting in a more accurate and effective water dump, less evaporation on the descent, and greater impact force.**



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